# HBS X-DOS 5

## PC Disk Operating System

## User's Manual

**(Revision 1.0)**

For Free X-DOS :

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# Acknowledgements



# Websites

DM&P Group provides free X-DOS on DM&P SBC serials.for interested party and User. Please contact by email with our Tech Support at tech@dmp.com.tw to get X-DOS.

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# Table of Contents

## CHAPTER 4

## INSTALLING X-DOS

## Chapter 5

## Internal Configuration Commands



## Chapter 6

## X-DOS Command Reference

## Chapter 7

## The X-DOS Batch Language

## Chapter 8

## The X-DOS Shell Program

## CHAPTER 9

## THE X-DOS FULL SCREEN EDITOR

## CHAPTER 10

## THE X-DOS BACKUP/RESTORE PROGRAM

## CHAPTER 11

## THE X-DOS DEBUG PROGRAM

## CHAPTER 12

## THE X-COM COMMUNICATIONS PROGRAM

## CHAPTER 13

## MEMORY MANAGEMENT

# Chapter 1

# An Introduction to X-DOS

## Introduction

X-DOS 5.0 is an enhanced Disk Operating System (DOS) for personal computers. It runs on 8080, 8086, 80186, 80286, 80386, i486 and compatible microprocessors and supports a wide variety of addltlonal hardware. X-DOS Is versatile, fast, user-friendly and Is designed as a replacement for other disk operating systems for personal cornpulters.

## What is a Disk Operating System?

You may be wondering why you need a disk operating system like X-DOS 5.0 in the first place. The reason Is simple; you will not be able to run any existing application programs on your personal computer without first loading a disk operating system. The disk operating system isl link between the hardware (your computer) and the software（any program that you may wish to use on your computer）. Without going Into too much detail, disk operating systems handle all input and output between the computer, its peripheral equipment, and the software program.

## What is Special about X-DOS?

If you have a PC you must already be using a disk operating system, so you may well may be wondering why you should switch to X-DOS.

If you start using X-DOS, you will soon find out that there are many reasons. X-DOS 5.0 has a user-friendly interface as well as an extensive help on all commands, to guide you through the initial stages.

In addition, X-DOS 5.0 includes a number of security measures that were not previously available at the operating system level. These security features Include the following:

- Partition password protection for partitions on bud disks with the FDISK command.
- Management of password protection on partitions with the LOCK and UNLOCK commands.
- Read-Only protection for partitions on hard disks with the FDISK command.
- FIle encryption with the ENCODE and DECODE commands.
- The capability to hide files and directories from prying eyes with the ATTRIB command.
- Deletion of files so they cannot be undeleted with the WIPEFILE command.

Besides protecting your data X-DOS also provides utilities to ensure the Integrity of your data. These features Include:

- Checking of up to 256 files for a possible virus attack with the VIRUSCHK command.
- Making FORMAT perform a SAFE FORMAT of diskettes and hard disks so that all data can be recovered from an accidentally formatted hard disk ·
- Making CHKDSK perform a surface analysis of a diskette or hard disk to check for bad sectors which may have developed since the disk(ette) was formatted.
- CHKDSK will mark any bad sectors unusable and try to recover any data which Is located in the same area (cluster) as the bad sector.
- Recovering of accidentally deleted files with the UNDEL command.

In addition to the above mentioned features, X-DOS 5.0 gives you many other commands and utlllties which are not included in other DOSes.

# How to Use this Manual

Below is given a brief overview of the contents of each chapter in this manual to enable you to quickly find the information that you require.

## Chapter 1. — An Introduction to X-DOS

A brief overview of the X-DOS operating System.

## Chapter 2. — Special Terms and Features in X-DOS

An Introduction to the terminology used when discussing the components of an operating system · Most of this terminology Is common to the Industry, therefore the experienced users will not need to read a large part of this chapter.

This chapter also introduces some of the special features of X-DOS, and how X-DOS differs from the other operating systems; so we suggest that all users glance through this chapter in order to appreciate some of the advanced features of X-DOS.

## Chapter 3. — Backing Up your X-DOS Diskette

Details of how to boot your PC with X-DOS operating diskette and use the X-DOS Diskcopy command to create a backup copy of the diskette · All users should read this chapter.

## Chapter 4. — Installing X-DOS

This chapter provides all Introduction to the files on the X-DOS diskette and instructs you how to install X-DOS on a diskette or hard disk using the X-DOS INSTALL program. A brlef description of the settings that can be automatically made in your CONFIG.SYS file using the X-DOS INSTALL program is also given. All users should read this chapter.

## Chapter 5. — Internal Configuration Commands

A detailed description of the internal configuration commands that can be entered in the CONFIG.SYS file, as introduced in Chapter 4. You can refer to this chapter if you wish to understand more about the full range of settings available with the X-DOS internal configuration commands or would like to modify your CONFIG.SYS file.

## Chapter 6. — X-DOS Command Reference

A complete reference to all the internal and external X-DOS commands. You should refer to this chapter when you do not understand how to use a command and wish to fully understand the range of options available with each command.

## Chapter 7. — The X-DOS Batch Language

A complete reference to the commands and parameters that can be used to create batch files. Batch files of which AUTOEXEC.BAT is the most common example, which can be used to automate repetitive tasks.

## Chapter 8. — The X-DOS Shell

A complete explanation of how to use the X-DOS Shell that provides a full screen menu drive interface to carry out all your file and disk drive operations. Instructions are also given as to how to use the Applications function in the shell to create your own easy to use menus to run your favorite programs.

## Chapter 9. — The X-DOS Editor

Detailed instructions on all the functions of ED, the X-DOS full screen editor.

## Chapter 10. — The X-DOS Backup and Restore Program

Full instructions on using the XBACK program to backup the data on your hard disk(s).

## Chapter 11. — Debug Command Reference

A complete command reference for the X-DOS DEBUG program.

## Chapter 12. — Using X-COM

Complete Instructions as to how to use the X-COM data communications program which can be run from the command line or from the X-DOS shell. This chapter includes the baslc information about using a data communications program and a detailed command reference.

## Chapter 13. — Memory Management

Included with X-DOS 5.0 is the EMM386 program which provides powerful memory management functions for 80386 and 80486 PCs. This chapter details how to use the EMM386 programs to enhance the utilization of extended memory (memory above 1 megabyte) and high memory (memory between 640K and 1024K).

## Hardware Requirements

The following minimum system configuration is required for you to be able to use the X-DOS 5.0 disk operating system on your personal computer:

- A personal computer based on the Intel 8088, 8086, 80186, 80286, 80386, or 80486 microprocessor or compatible.
- A monochrome, Hercules, CGA, MCGA, EGA, or VGA graphics adapter and supporting monitor.
- An minimum of 256K of memory recommended.
- One 360K, 720K, 1.2M, or 1.44M floppy drive.

# Chapter 2

## Special Terms and Features in X-DOS

This chapter will assist you in familiarization of the terminology used in this manual and introduce you to the basic rules of DOS usage. Most of the terms used are standard terms throughout the computer industry, but if you have not previously worked with computers, many of the terms in this manual will be new to you. Users that are already acquainted with other disk operating systems for personal computers should at least browse through this chapter since It contains information that is unique to X-DOS 5.0.

### The Command Line

Whenever you want to issue a X-DOS command or want to run an application program, you will have to be at the command line. The command line is also referred to as the X-DOS prompt, since you will always be prompted for Input at the command line. The X-DOS prompt can easily be customized by the user with the PROMPT command but the default X-DOS 5.0 prompt appears like this：

A : \DOS|

Where A : shows the default disk drive, \DOS shows the default directory (i.e. path) and I is the prompt delimiter.

The path is shown above the line where you will enter your commands.

Whenever you see the X-DOS prompt, this means that X-DOS is waiting for you to enter a command, which can be any X-DOS command or a command to load an application program.

To run a command, you must type the name of the command and press the [Enter] key on your keyboard. X-DOS will then try to carry out the command that you have entered. You must always press the [Enter] key on your keyboard following the name of the command to carry out any command.

# Files and Filenames

To keep track of data, X-DOS stores the data in a file on a disk(ette), just like a folder in a drawer of a filing cabinet. Files can contain any kind of information from normal text to computer understandable information.

To distinguish different files, they must all have a name. A filename Consists of two parts: a name and an extension.

The name usually describes the contents of file while the extension is often used to specify the type of file. Here Is an example of a filename:

FILENAME.DOC

Where FILENAME is the name of the file and DOC is the extension. The filename and the extension together are often referred to as the filespec. You can enter a filename in either upper or lower-case, since X-DOS does not distinguish case for filenames. The name part of a filename must always be present and it can consist of one to eight characters.

The extension is optional except for program files that must have an extension of either **.EXE** or **.COM** and batch files which must have the **.BAT** extenslon.

It is normally a good idea to include the extension as part of the filespec to describe the type of file, like.DOC or .TXT for text files. The extension can be up to three characters long and must always be preceded by a period ( · ).

The following characters can be used in both the name part and the extension of X-DOS filespecs:

- All letters in both upper and lower-case from A to Z.
- All digits from 0 to 9.
- The following special characters: ： ！ @ # $ % & （ ） - { } ’

Even though X-DOS lets you use special characters in the filenames, you should normally try to avoid using these characters unless you have a good reason to do so.

## Directories

To organize your files into groups of related files, X-DOS 5.0 lets you create directories. A directory is an area on a disk or diskette which contains information concerning the files related to that directory such as the filename, the file size, and the last modification date for each file. A directory can be compared to a drawer in a filling cablnet, containing folders of related data.

If you do not use directories to organize your files, you will probably soon experience problems keeping track of your different files.

There are also certain limitations to how many files that you can store in the main directory of adisk, which is called the root directory.

The root directory Is automatically created when a disk(ette) is formatted and must always be present on a disk(ette). You can create directories in the root directory, you can also create sub-directories in a directory of the root directory, and so on.

Directories below the root directory are called sub-directories. You can create sub-directories many levels deep, but you should try to keep the number of levels in your directory structure to as few levels of sub-directories as possible, or it may otherwise be very difficult to keep an overview o fyour directory structure.

The naming convention of directories follows that of filenames. You can have a directory name of one to eight characters and an optional directory extension of up to three characters. Extensions on directory names are seldom used since the name normally Is enough to describe the contents of the directory.

The directory in which you are currently residing in is called the default directory. You will have a default (current) directory for each of your drives.

A directory one level above the default directory is called the parent directory and sub-directories to the default directory are called child directories.

When you display the contents of a directory, you have to be able to distinguish between files and sub-directories in the dlrectory that you are displaying the contents of.

When you dlsplay the contents of a directory other than the root directory, you will probably notice that the dlrectory seems to contain two directories which are named “ · ” and “ · · ”.

These two directory entries are available in all directories except for the root directory. The “ · ” entry is a substitution character for the default directory and the ” · · ” entry is a substitution character for the parent directory.

Here is an example on how you can use these substitution entries. Let us for a moment assume you’re your default directory is **C : \ PROGRAMS \ WORDPROC** and you want to display the contents of the **C : \ PROGRAMS** directory with the DIR command. Normally, you will have to type：

DIR C : \ PROGRAMS

Since the **C : \ PROGRAMS** directory is the parent directory to the **C : \ PROGRAMS \ WORDPROC** directory you can save a lot of typing by using the parent substitution entry “ · · ”, instead of specifying the directory path.

By doing so you can display the contents of the **C : \ PROGRAMS**

DIR · ·

## The Path

The Path in X-DOS is like a road map through directories, describing how to get to your files.

PATH is an X-DOS command but is also used to describe a range of successive directories to reach a specific file. Look at the following example.

You have a file by the filename EXAMPLE.COM stored in a sub-directory of the root directory called PROGRAMS.

If the default directory is the root directory then you can specify the road to the EXAMPLE.COM file like this:

PROGRAMS \ EXAMPLE · COM

where **PROGRAMS** is the path to the file **EXAMPLE.COM**. Since **EXAMPLE.COM** is an executable file, you could type the above line followed by [Enter] to run the program. Lf you want to be able to reach **EXAMPLE.COM** from anywhere on the drive, you only have to precede the previous example with a backlash ( \ ) like this :

\ PROGRAMS \ EXAMPLE.COM

This tells X-DOS to start looking for the PROGRAMS directory from the root ( \ ) directory of the default drive, no matter what the default directory is.

This can be expanded even further slnce you might not be on **the same drive as the EXAMPLE.COM file. To reach the EXAMPLE.COM** program from anywhere on your disk drlves, you should type：

d : \PROGRAMS\EXAMPLE.COM

where **d:** can be any valid drive specification, such as the **A:** drive.

If the file **EXAMPLE.COM** resided in a sub-directory of a sub-directory, it could get rather tedious to execute the program since you would either have to be in the same directory as the file or you would have to issue a lengthy path along with the filename.

To avoid this, X-DOS lets you specify a path with the PATH and ADDPATH commands. In this path, you can insert the route to the directories that you want X-DOS to search through when you want to run a program.

To avoid having to type a lengthy path every time you you're your Computer, insert the PATHi command with your preferred range of directory paths in the **AUTOEXEC.BAT** file. The **AUTOEXEC.BA**T file is a configuration file that Is automatically executed every time you reboot your computer.

You will probably want to include a path to all of the directories that contains executable files that you often use. If you temporarily want to append a path to a directory that is not normally included in your **PATH** statement, you can use the **ADDPATH** command to add this path to the end of your current path.

# Memory

You need memory (also called RAM or Random Access Memory) in your computer to be able to run any kind of program.

Whenever you want to issue an X-DOS command or run an application program, it must first be loaded into memory before your computer can execute it. Even when you you're your computer, X-DOS 5.0 takes up some memory by placing some of its system files permanently in your memory.

There are different kinds of memory; conventional (base) memory, extended memory, and expanded memory.
The conventional memory on a personal computer is the memory used by programs to execute from within and can be no larger than 640K.

This due to the design of the early of the early versions of IBM's personal computers and limitations of the Intel 8088 microprocessor for the chosen for these personal computers.

Today many personal computers are shipped with more memory than 640K as a standard. The memory above 1MB is normally what is called extended memory. The kind of memory, expanded memory, is often referred to as EMS or LIM memory. This kind of memory will let you run large programs that would otherwise not be able to run or would run inefficiency in conventional memory.

To be able to use expanded memory with a program must be specifically designed to take advantage of expanded memory.

You will normally have to get a special memory expansion card to acquire this type of memory out more and more personal computers are shipped with utilities that allow you to transform extended memory into expanded memory such as the VRAM/386 program included in the Professlonal X-DOS diskette.

The virtual disk manager **(VDISK.SYS)** in X-DOS lets you create a virtual disk in expanded memory or extended memory.

Another kind of memory is ROM **(Read Only Memory)**. All PCs have ROM and this usually contains the BIOS（**Basic Input Output System**）which is firmware that ensures your PC is compatible with the industry standard. The X-DOS operating system can also be stored in the ROM depending on the design of the PC being used.

# File Types in X-DOS

In this sectlon, you will learn about the different file and program types that X-DOS 5.0 uses and recognizes.

## The System FIles

X-DOS 5.0 has three system files called **X-DOS.SYS**, **COMMAND.COM**, and **MAX.COM**. Two of these, **X-DOS.SYS** and **COMMAND.COM**, are essential for X-DOS and must always be present for X-DOS to work.

The third system file, **MAX.COM**, is the second command processor and is not essential for running X-DOS 5.0, although the absence of this file greatly reduces the number of commands available In X-DOS.

The **X-DOS.SYS** file must always be In the root directory of your boot drive. It is a Hidden file which means that you will not normally be able to see it when you list the contents of the root directory. **COMMAND.COM** and **MAX.COM** are Read-Only flies that means that you will not be able to accidentally overwrite these files.

## Executable Files

Any files with an extension of **.COM**, **.EXE** or **.BAT** are treated by X-DOS as executable files. You can always run an executable file by typing its name at the command line followed by pressing the [Enter] key.

When you run a program, you do not need to type the extension since X-DOS automatically looks for a file with one of the three extensions above.

All of X-DOS 's external commands have an extension of **.COM** or **.EXE** as do all application programs. If you try to execute a different extension other than the three of the listed above, X-DOS will display an error message.

## The CONFIG.SYS File

You can use the configuration file **CONFIG.SYS** to customize X-DOS to your needs. The **CONFIG.SYS** file is an ASCII text file and is used by the system files to install X-DOS during start-up according to the contents placed in it.

If you have a **CONFIG.SYS** file, it must always be present In me root directory on your boot disk(ette) or X-DOS will not be able to find it.

## Device Drivers

Excluding **CONFIG.SYS**, files ending with **.SYS** and sometimes **.BIN** are device drivers and are normally related to the hardware configuration of your computer. To install a device driver, you must list it in the CONFIG.SYS file.

## Internal Commands

Internal commands are X-DOS commands that are inside either one of the two command processors **COMMAND.COM** or **MAX.COM**. You will not be able to see an internal command if you list the contents of your disk(ette) but you can still execute them the same as an executable files.

Since some internal commnds are already In memory, they will execute very

fast and you can call them from anywhere on your disk. X-DOS has more than 80 internal commands **.DIR** , **CLS** , **CD ,** and **MD** are examples of internal commands.

## External Commands

External commands are X-DOS commands located on your Disk(ette) with either an extension of **.EXE** or **.COM** . It is important for you to make sure that X-DOS can find its external commands when you need them.

As a default, X-DOS assumes that they are in a **\DOS** directory on your boot disk(ette). You can change this by using the PATH command to look for executable flies In other directories. **CHKDSK.COM** , **DEBUG.COM** , **FORMAT.COM**, **ED.EXE**, and **SETUP.COM** are examples of external X-DOS commands.

## Batch FIles

Files with a **.BAT** file extension are batch files and are sometimes referred to as command scripts and are essentially plain text (ASCII) files.

In batch files, you can list any commands or programs that you wish and want to run, line by line, and X-DOS will process each line one at a time. This allows you to link a series of commands and programs to one filename. During boot-up, X-DOS always looks for one specific batch file called **AUTOEXEC.BAT** that is executed if it exists. Insert any statements in this file that you want to run every time that you boot your computer.

## Application Programs

An application program refers to any program like a word processor, a database, a spreadsheet, and so on. As a guideline, application programs are often large programs consisting of multiple files. Wordstar and Lotus 1- 2-3 are examples of application programs.

# Error Messages

The X-DOS operating system uses error messages to tell you when it encounters a problem while processing X-DOS command or any other program.

Probably the most common error message that you are going to see is:

Specified filename invalid

This error message tells you that X-DOS could not find the command or program name that you Just tried to execute. You either type incorrectly or X-DOS was not able to find it on the specified path.

Another kind of error message requires that you take action before you can continue. An example is when you try to access a floppy drive without any diskette or with the floppy drive door open. In that case, you will see the following error message :

Fatal Error occurred on drrve A
Operation was：reading from drive A
Error reported：Drive not ready, Disk area error: Dos area
You can（A）bort，（R）etry，（F）ail?

# External and Internal Storage Devices

Since all of the information In your computer's memory is lost when you turn off your computer, you must have some kind of external storage medium to store your files onto. The most common external storage media are diskettes and hard disks.

X-DOS references all drives on your computer with a drive letter. Two letters are reserved for floppy drives; **drlve A:** and **drive B:**.

Even if your computer only has one floppy drive, X-DOS still reserves the drive letter **B:** for a future floppy drive. Drives on your hard disk will therefore be designated with a drive letter beginning from drive **C:** .

Drives can be referenced from drive **A:** to drive **Z:**. Virtual (RAM) disks are internal storage devices and are also referenced with drive letters, beginning with the designator after your last logical drive, if your virtual disk statement follows any partition manager statement, you may have in your **CONFIG.SYS** configuration file.

You can make any of the available drives the default (current) drive by typing the drive letter followed by a colon **( : )** and then pressing the [Enter] key. If your default drive is drive **C:** , and you want to change to drive **A:** at the command line, you should type :

**A :**

## Floppy Drives and Diskettes

Vlrtually all personal computers have one or two floppy drlves. You use floppy drives to store and retrieve data from diskettes. A diskette is a flexible plastic disk that stores the data magnetically.

Diskettes come in many formats for personal computers, the most common of whlch are： 5¹/4” 360K diskettes, 3¹/2” 720K diskettes, 5¹/4” 1.2M diskettes and 3¹/2” 1.44M diskettes.

## Hard Disks

Hard disk drives are storage devices of large capacity, normally mounted inside of a computer. A standard 20M hard disk can store an amount of data equal to the contents of more than fifty-five 360K diskettes. A hard disk also retrieves and stores data many times faster than a floppy drive. These features make hard disks preferable as a storage device. Hard disks comes in sizes of 10M（the equivalent of 10,000,000 characters）to more than 1,000M (more than 1,000,000,000 characters) but most hard disks range between 20M and 80M.

## Virtual Disks

X-DOS 5.0 lets you create one or more virtual (RAM) disks in memory. The reason for using a virtual disk Is that tile access time to a virtual disk is extremely fast; many times faster than a hard disk.

You can install virtual disks in the conventional memory, extended memory, and expanded memory with the virtual disk driver VDISK.SYS.

## ROM Disks

If you are using X-DOS 5.0 from ROM, X-DOS will consider your ROM space as a disk too where one or more files have been stored for you. Refer to the X-DOS In ROM section to obtain more details.

# Wildcard Characters

Two special characters called wildcards can be used in filespecs. These two characters are the question mark **( ? )** and the asterisk **( * )** . The wildcards are used in the specification of the filenames to abbreviate the typing of filenames or to specify a range of files. As a unique feature, X-DOS also allows the use of wildcards with the CD command.

The **“ ? ”** wildcard is used in a filespec to replace any one character in the name or extension part. This way, character can fill this place when X-DOS tries to match filenames.

You can use multiple **“ ? ”** wildcards in the filespec, each of which takes up the space of one character. Look at the following example :

DEL LETTER?**.** T??

The following files will match this filespec and will be deleted from the default directory.

LETTER1.TXT & LETTER4.TXT & LETTERS.TEX

The following files will not match the **LETTER?.T??** specification, since the **“ ? ”** wildcard only replaces one character in the filespec, and they will therefore be left intact :

LETTER10.TXT & LETTERS1.EXT

The **“ * ”** wildcard is used in filespecs to replace a range of characters. Lf you use the **“ * ”** wildcard in the name part of a filespec, it will replace the rest of the characters up to the extension part.

If you have a filespec like **LET * .DOC**, X-DOS will try to match any files that have LET as the first three characters and **.DOC** as an extension.

Look at the following example：

```
COPY LETTER *.*
```

X-DOS will copy all files with LETTER as the first six letters and and characters as the next two characters of the name part.

The extension can be any valid extension.

An often used wildcard combination is the ***.*** filespec specification. X-DOS will treat a specification like this as concerning all files in a specified directory. This allows you to easily copy, modify, or delete all files In a directory.

## Using Parameters (Options and Switches)

Many of the X-DOS commands use parameters (switches) that modify the operation of the commands.

X-DOS command parameters are always preceded with a delimiter, often a slash（/）or a space.

## Command Line Editing

You should fully understand the functions and the power that you always have readily available from your keyboard to utilize X-DOS to its optimum.

One of the very power features of X-DOS is its ability to let you save time by allowing you to recall previously executed commands and edit the current command displayed at the command line.

Whenever you type a command or recall a previously executed command, you can always edit any part of it without having to delete portions of it.

As a default X-DOS sets aside 256 bytes o fmemory to hold previously executed commands. This memory is called a history buffer.

If you wish to increase the amount of memory allocated to the history buffer, you can insert the HISTORY statement in your CONFIG · SYS file and specify a value up to 2,048 bytes that should hold more than 100 previously executed commands.

## Command Line Editing Keys

The following keys can be used to edit commands at the command line:

| | | |
|---|---|---|
| **[ UP ] arrow key** | ..... | Recalls the previously executed command. |
| **[ F3 ] function key** | ..... | Recalls the previously executed command the same way as the [Up] arrow key. This function key is set up to repeat the previously executed command for compatibility with the DOS standard. |
| **[ Down ] arrow key** | ..... | Recalls the last command in the history buffer. |
| **[ Left ] arrow key** | ..... | Moves the cursor one character to the left in the command which is currently displayed at the command line. |
| **[ Right ] arrow key** | ..... | Moves the cursor one character to the right in the command which is currently displayed at the command line. |
| **[ Home ] key** | ..... | Moves the cursor to the beginning of the command currently displayed at the command line. |

| | | |
|---|---|---|
| **[ End ] key** | ..... | Moves the cursor to the end of command currently displayed at the command line. |
| **[ Ins ] key** | ..... | Toggles between Insert and overwrite mode when editing commands . |
| **[ Del ] key** | ..... | Deletes the character at the current cursor postion. |
| **[ Backspace ] key** | ..... | Deletes the character to the left of the cursor. |
| **[ Esc ] key** | ..... | Clears the command line. |
| **[ Enter ] key** | ..... | Executes the command currently displayed at the command line. You can execute a command even if the cursor is in the middle of the command. |

# Function Keys

X-DOS allows you great flexibility in the use of function keys by letting you set up to 39 function key assignments. You will not be able to redefine the [ F3 ] function key since it is always set up so it repeats the previously executed command. This option can only be usedif you set the **FKEYS = ON** switch in the **CONFIG.SYS** . By default and to respect compatibility with the DOS standard, this switch was set to OFF.

By assigning X-DOS commands or any other program names to function keys, you only need to press one key to execute X-DOS commands or programs.

## The Default Function Key Assignments

If you choose not to define the function keys, X-DOS automatically assigns the following ten commands to the ten functlon keys [ F1 ] to [ F10 ].

＜FI＞ …… HELP
＜F2＞ …… ED
＜F3＞ …… Cannot be redefined
＜F4＞ …… DIR
＜F5＞ …… MAPMEM
＜F6＞ …… CLS
＜F7＞ …… **DISKCOPY A: A:**
＜F8＞ …… TREE
＜F9＞ …… CHKDSK
＜F10＞ …… XSHELL

The ten function key assignments can be as long as 20 chlaracters each. If you want to make permanent changes to the function key definitions, yon can use enter for the ALIAS command in your **AUTOEXEC.BAT** file ·

You can also change function key definitions permanently if you load the **ANSI.SYS** screen driver. Please refer to the **ANSI.SYS** command description later in this manual.

X-DOS features five other hot keys that can be used to terminate the execution of programs, reboot the computer, or print the screen :

| | | |
|---|---|---|
| **[Ctrl] C or** | ..... | Stops the execution of a batah file or program. |
| **[Ctrl] [Break]** | | |
| **[Ctrl] [Alt] [Del]** | ..... | Reboots the computer and loads the system flies again |
| **[Ctrl] S** | ..... | Temporarily halts scrolling of the screen. Pressing any key will continue the scrolling. |
| **[Pause]** | ..... | Many of the newer keyboards feature a [Pause] key which works like the [Ctrl] S hot key sequence. |
| **[Shift] [PrtSc]** | ..... | Prints the Contents of the screen to the default printer. |

## Quick Keys

A quick key is a highlighted letter within a menu. Quick keys are only used in those X-DOS commands that feature a full-screen display with menus. Every menu item in a menu has a highlighted letter assigned to it.

Quick keys are used to select menu items dlrectly wlthou first having to use the [Up] and [Down] arrow keys to highlight the appropriate menu item followed by [Enter].

**XSHELL**, **ED**, **FDISK**, **INSTALL**, **DEBUG** and **SETUP** are examples of full-screen, menu-based commands that feature Quick keys.

## Obtaining Help on Commands

X-DOS provides several means of obtaining help on commands without having to reference the manual all the time.

Most of the external X-DOS commands with full-screen displays and menus feature on-line help. This will allow you to call up help screens from within these programs, using the [F1] function key or the [Alt] H hot key.

Many of the other X-DOS commands can display help at the command line if you either use the wrong parameters or if you use the command line parameter / h in conjunction with these commands.

## Using X-DOS in 43 or 50 Line Mode

X-DOS gives you the ability to work at the command line in either 43 line or 50 line mode if your computer has an EGA or VGA compatible graphics adapter.

As a default, X-DOS works in 25 line mode so, with 43 or 50 line mode chosen, you can have the possibility to display from 18 to 25 lines more information on the screen before data starts to scroll off the screen.

All of the commands in X-DOS supports these two modes In one way or another, either by working automatically in 43 or 50 line mode or by switching to 25 line mode while the command Is running and switching back to 43 or 50 line mode when the command terminates.

Certain application programs do not support these extended display modes, so you will have to create a batch me for each of these programs, switching to 25 line mode when you run any of these programs and switching back to 43 or 50 line mode when you terminate those programs.

# Chapter 3

# Backing Up Your X-DOS Diskettes

## Introduction

Since you now have a basic knowledge of the structure of the X-DOS 5.0 disk operating system, it is time to try using it. This chapter will take you through the procedure of making a backup copy of your original X-DOS diskette.

## Booting your Computer with X-DOS

It is possible to run most of the X-DOS utilities with another DOS installed, but this is not advisable. To obtain the most reliable performance, we strongly recommend that you only use the X-DOS Utilities after you have booted with X-DOS.

To do this, you should take your original X-DOS diskette labeled Disk 1 (Boot Disk) and insert it Into you're **A :** floppy drive.

Close the drive door and turn on, or reboot your computer. Your computer will go through its normal system initialization and then begin loading X-DOS from the diskette. This is called booting your computer.

The loading of X-DOS will take approximately 5 seconds, depending on your processor and diskette drive characteristics. When X-DOS is finished loading, you should see the X-DOS copyright message as well as the default prompt.

## Making a Backup Diskette

You should now make a working backup copy of your original X-DOS diskette(s) and use this backup for normal operation. This will ensure that you can always make a new working copy if your backup diskettes should become Is damaged or lost.

## The DISKCOPY Command

To make a working backup copy of your X-DOS diskettes, you should use the X-DOS command DISKCOPY, which makes an image copy of your original diskettes onto two backup diskettes if your X-DOS diskettes are 5¹/4" 360K diskettes. If your version of X-DOS is on 3¹/2" 720K media, then you will only have one X-DOS diskette. Please follow the instructions as outlined below, depending on the type of original X-DOS diskette that you have.

## Making Working Copies of 5¹/4" diskettes

If your version of X-DOS on two 5¹/4" diskettes, you will need either a 5¹/4" 360K floppy drive or 5¹/4" 1.2M floppy drive.

This installation procedure assumes that you only have one 5¹/4" floppy drive and this floppy drive designates the drive letter **A :** . If you have more than one 5¹/4" floppy drive, you can still use this installation procedure.

1. Insert the original X-DOS diskette labeled Disk 1 (Boot Disk) in your floppy drive and boot your computer.

2. When the X-DOS prompt **A:\ I** appears, type :

   **DISKCOPY A: A:**

3. DISKCOPY will prompt you to insert the target diskette in the drive. Since Disk 1 (Boot Disk) is already in the drive, press any key (except the <Esc> key) to begin the disk copying process.

4. When DISKCOPY has read all information from Disk1 (Boot Disk) into the memory, it prompts you to remove the source diskette and insert the target diskette into the same drive.

   The target diskette can be any formatted or unformatted 5¹/4" diskettes capable of holding 360K of data. Please remove the original X-DOS diskette from me floppy drive and insert the target diskette, which should be a new, unused diskette. When this is done, press the [Enter] key to continue the disk copying process.

5. DISKCOPY now copies the contents from the original Disk 1 onto the target diskette. If the target diskette is unformatted, DISKCOPY will first format the diskette before writing the data onto it.

6. When DISKCOPY has finished writing the contents from the Original X-DOS Disk 1 (Boot Disk) diskette onto the first working backup diskette, it will ask you If you want to diskcopy another diskette. Remove the first working backup diskette from the floppy drive and press the **" Y "** key on your keyboard to confirm that you want to dlskcopy one more diskette. DISKCOPY will now prompt you to insert the source diskette into drive **A :** .

   Take the second original X-DOS diskette labeled Disk 2 (Utilities), insert it into floppy drive, and press any key to begin the disk copying process.

7. Repeat steps 4 and 5 to make a working backup diskette of the second X-DOS diskette. When DISKCOPY has finished writing the data to the target diskette, it will prompt you to want to diskcopy another diskette. This time you should press the **'' N "** key to exit the DISKCOPY command.

8. You now have two working backup diskettes of the original X-DOS diskettes. Remember to label the two working backup diskettes so you can tell them apart. Take the original X-DOS diskettes and store them in a safe place. You should never use the original diskettes as working diskettes.

## Making a Working Copy on a 3 1/2" Diskette

If your verslon of X-DOS is on 3 1/2" diskette, you will need either a 3 1/2" 720K floppy drive or 3 1/2" 1.44M floppy drive. This installation procedure assumes that you only have one 3 1/2" floppy drive and this floppy drive is designated as the drive letter **A :**. If you have more than one 3 1/2" floppy drive, you can still use this installation procedure.

1. Insert the original X-DOS diskette labeled X-DOS 5.0 in your floppy drive and boot your computer.

2. When the X-DOS prompt **A:\ |** appears, type :

**DISKCOPY A: A:**

3. DISKCOPY will prompt you to Insert the target diskette in the drive. Since the original X-DOS diskette is already in the drive, press any key （except the [Esc] key to begin the diskcopying process

4. When DISKCOPY has read as much information as will it reside in the memory from the original diskette, it prompts you to remove the source diskette and insert the target diskette Into the same drive. The target diskette can be formatted or unformatted on a 3 1/2" diskette capable of holding a 720K of data. Please remove the original X-DOS diskette from the floppy drive and insert the target diskette, which should be a new, unused diskette. When this is done, press the [Enter] key to continue the diskcopying process.

5. DISKCOPY now copies the contents from the original X-DOS diskette onto the target diskette. If the target diskette is not formatted, DISKCOPY will first format the diskette before writing the data onto the diskette.

6. Depending on the memory configuration of your computer, you may have to repeat steps 3 and 4 a few times for DISKCOPY to copy all the contents from the original diskette onto the working backup copy. When DISKCOPY has finished writing the contents from the original X-DOS diskette onto the working backup diskette, it will prompt you if you want to diskcopy another diskette. Press the " N " key on your keyboard to exit the diskcopy command.

7. You now have a working backup diskette of the original X-DOS diskette. Remember to label the working backup diskette so you can always recognize it. Now take the original X-DOS diskette and store it in a safe place. You should never use the original diskette as a working diskette.

# Chapter 4

# Installing X-DOS

## The X-DOS Diskette(s)

X-DOS comes on two 360K diskettes or one diskette of superior density. In the two disks 360K version, Diskette 1 is bootable diskette and contains the system files and most of the external DOS commands in a subdirectory called DOS. Diskette 2 contains some extra commands and features, including the X-DOS shell that provides an easy to use menu driven command interface.

If you are familiar with DOS and look through the list of the files in the DOS directory on the first diskette and on the second diskette, you will notice some commands that are not found in other versions of DOS. Amongst the new files present, are :

| | |
|---|---|
| **- ED · EXE** | : the X-DOS editor |
| **- XBACK · COM** | : the X-DOS backup utility |
| **- SHELLF · EXE/SHELLA · EXE** | : the X-DOS SHELL overlay files |
| **- VIRUSCHK · COM** | : a virus checker |
| **- SETUP · COM** | : a hardware setup |
| **- INSTALL · EXE** | : the X-DOS install utility |
| **- MAX · COM** | : the command processor overlay |
| **- X-COM · EXE** | : X-DOS Communications program |

If you are familiar with all MS-DOS commands, you will also notice that some files that appear in MS-DOS are not found on the X-DOS diskettes. This is because some of the commands in X-DOS are present In the **MAX.COM** file that contains small commands such as the **ATTRIB**, **LABEL**, **COMP**, **FIND** … commands.

### How To Install X-DOS On A Disk(ette)

Before you take the major step of installing X-DOS on your hard disk (please

note that you do NOT haVe to reformat your hard disk to do so) you may wish at first to install X-DOS on to a floppy diskette and try it.

You must use the **INSTALL** utility file included with X-DOS to make a disk(ette) bootable with X-DOS. A DOS is not an ordinary program. It cannot be activated like a spreadsheet or a database utility. The media on which X-DOS is installed, a floppy or a hard disk, must be made aware of the X-DOS system files. That information is contained in the boot sector of the media. The **INSTALL** program transfer the X-DOS files to the target media and will build the boot record of the destination drive to make it recognize X-DOS.

To activate the **INSTALL** utility insert the first X-DOS diskette in your PC's A：floppy disk drive and turn on your system. Your system will be booted with X-DOS and you will see the X-DOS prompt on the screen. Type **INSTALL** and press [ENTER].

The main screen will ask you for the target drive onto which you wish to install X-DOS. X-DOS can only be installed onto a media that can be bootable. It will be therefore the **" A "** drive or the **" C "** drive, since you can only boot a PC from these drives. The **" B "** drive is made available in case you want install X-DOS onto a different media such as a 3.5" diskette. Usually you cannot boot from the **B :** drive though some BIOS's allow you to do this.

Choose the target drive and press [ENTER]. The **INSTALL** utility will then ask you – if you want to copy the files or just modify the X-DOS configuration file. The INSTALL program can also be used to change the **CONFIG.SYS** or **AUTOEXEC.BAT** parameters without having to edit them. From now on, choose the " Copy files " option.

The **INSTALL** program will copy the X-DOS files onto the target media in the DOS directory, displaying files that are copied. If you are installing X-DOS on a 360K diskette, the **INSTALL** program will warn you that the diskette Is full and that you need to insert a new diskette. Remove the first diskette and insert the second 360K diskette and the process will be continued.

If you decide to install X-DOS on your hard disk, and the target drive already has a DOS directory containing the MS-DOS files, **INSTALL** will save the

contents of the previous DOS directory. The MS-DOS files will be copied to a directory named **OLDDOS** and the X-DOS commands will be copied to the DOS directory. One of the important features of X-DOS is that you can retain the original DOS on your disk and switch back to this DOS whenever you wish to, by booting with original DOS diskette and using the original DOS's SYS command. It is not necessary to reformat your hard disk drive or delete the old DOS in order to install X-DOS.

When all the files are copied, **INSTALL** will ask you to remove the second diskette and insert the first one again, if you changed diskette. At this stage, follow the Instructions, and insert the first diskette. This step is necessary for INSTALL to write the **CONFIG.SYS** and the **AUTOEXEC.BAT** files onto the bootable diskette. The **CONFIG.SYS** and **AUTOEXEC.BAT** files are important DOS files that allow you to automatically configure your system at boot up.

Once all the X-DOS files have been copied, **INSTALL** presents you a screen with a menu. The first selection enables you to set the **CONFIG.SYS** parameters, the second entry enables you to set the **AUTOEXEC.BAT** parameters automatlcally. Even if you are not familiar with PCs and DOS, using the X-DOS install facility, it will be easy to edit the **CONFIG.SYS** and **AUTOEXEC.BAT** files, unlike in other DOSes which require the use of cryptic commands to be entered at the command line.

If the target media already has **CONFIG.SYS** and / or **AUTOEXEC.BAT** files, **INSTALL** will rename them as **CONFIG.OLD** and **AUTOEXEC.OLD**, so that your previous configuration is preserved. However, the **INSTALL** program will take into account the content of the existing **CONFIG.SYS** and **AUTOEXEC.BAT** files. For instance, if you had a device driver statement in your original **CONFIG.SYS** file for a tape backup unit, the new **CONFIG.SYS** file created by X-DOS will still contain the statement to run this device. The same applies to the **AUTOEXEC.BAT** file.

You may need to modify some parameters of your **CONFIG.SYS** and **AUTOEXEC.BAT** files because X-DOS will not run properly with them or does not need them because of enhanced iInternal support in X-DOS. For example, if your **CONFIG.SYS** file contains a driver for a **DISK MANAGER** or a **SPEEDSTOR** partition for your hard disk drive, you can remove it since

X-DOS already recognizes those partitions internally without the need for an external device driver. Indeed, if you leave the statement, this may cause conflict.

If your **AUTOEXEC.BAT** contains reference to the **FASTOPEN** command found in Microsoft's MS-DOS, remove them since this command is not supported by X-DOS.

You are now ready to tailor your **CONFIG.SYS** and **AUTOEXEC.BAT** files to take full advantage of the features of X-DOS. The **INSTALL** utility will help you to do that.

Choose the Boot Up parameters, and a second menu will appear on the right side of the screen with the current default parameters.

If you do not know the meaning of a parameter, press the **F1** key to get on line help or refer to the section concerning the parameter in the manual. Each entry is outlined below. A more complete reference to each item is given in the next chapter.

## ANSI

If you want to install **ANSI.SYS** console driver than you should select this menu item. Highlight the menu item and press [Enter] or use the quick key. Install **ANSI.SYS** by pressing [Enter] in the next menu. The **ANSI.SYS** driver does not need to be installed unless you have some applications which use it.

## BREAK

When you select this menu item, you will be prompted with a menu with two items, ON and OFF. The ON item is currently selected so press [Enter] to se**t BREAK** to ON.

## BUFFERS

Highlight this menu item and press [Enter] to change the default number of buffers. You will be prompted with an entry box that already contains the default value. Type in a new value and press

[Enter] to change the default setting. X-DOS defaults the BUFFERS statement to 20 buffers for all computers.

## CACHE

Please take note that the **CACHE** function of X-DOS is not available in the evaluation version. The documentation is provided here for your information only.

If you wish to install the **CACHE** utility which can greatly enhance the access time when retrieving data, press the [ENTER] key and **INSTALL** will assist you in setting all the necessary parameters. First select the physical disk(s) where the cache should be installed, then choose the type of memory where the cached data will be stored and finally select the size of the cache. Note that **INSTALL** does not perform any test to see the parameters are correct. Any possible errors will be reported when the cache is activated at boot time.

## COUNTRY

This command is used to set the **TIME** and **DATE** format for your specific country. If you select this menu item, you should enter the country where you reside. **INSTALL** will then translate the country name Into the country's international telephone code which Is used by the COUNTRY parameter.

## ENVIRONMENT（SHELL）

Highlight this menu item and press [Enter] to change the default size of the environment. **INSTALL** will prompt you with an entry box which already has a default value in it. Type in a new value and press [Enter] to change the default value. The size is shown in bytes with a default value of 384 bytes. Maximum value is 65,536 bytes. Note that X-DOS requires more space In the environment than MS-DOS because the default setup and default aliases are stored in the environment. The environment size is adjusted with the **SHELL** command.

## FILES

Highlight this menu and press [Enter] to change the number of file handles that X-DOS can have open at one time. X-DOS prompts you with an entry box that already has a default value in it. Type in any new value and press [Enter] to change the default setting. The default value for FILES is 20 open file handles.

## FUNCTION KEYS

Highlight this menu and press [ENTER] to change the **FKEY** filter. **INSTALL** lets you set or reset the X-DOS filter that translate the Function keys **(F1**, **F2**, …). The default is OFF. Set the filter to ON if you want function key translation. Note the enabling function key translation might disrupt the function key allocations used by your applications software.

## DOS

X-DOS can be loaded in High Memory also called HMA. If your computer has a 286 or above processor, and you have more than 64K of extended memory, your machine has the High Memory Area necessary for X-DOS to be relocated. Turn this switch ON, If you want X-DOS to free most of the low memory.

## HISTORY

The History buffer is used to store the command line typed at the prompt. The **INSTALL** defaults to 256 bytes but you can change that size up to 64K.

## LASTDRIVE

Highlight this menu item and press [Enter] to change the default setting for the **LASTDRIVE** variable. **INSTALL** will prompt you with an entry box which already contains the default value **E** . Type another drive letter to change the default value. The largest value you can specify for **LASTDRIVE** is **Z** . In case you are using the SUBST or JOIN commands, make sure that you leave enough drives available after your last partition drive.

## VIDEO

If you want X-DOS to speed the output to the screen, choose the option VIDEO is ON the submenu. If you have a CGA or EGA screen, the video on output will appear much faster with video ON. Take note, however, that only the speed of text mode will be enhanced and graphics mode will not be affected.

## VIRTUAL DISK

If you want to install a virtual (RAM) disk in the memory, then you should select this menu item. If you want to install a virtual disk, you will be prompted with a menu from which you will have to choose, either you want to install the virtual disk in conventional (base) memory, in extended memory, or in expanded memory. If your computer does not have either extended memory or expanded memory, you will not be able to set up a virtual disk in this kind of memory. If you plan to install a virtual disk in conventional memory, you should remember that your programs will not be able to use any conventional memory that you allocate for a virtual disk. Once you have decided where you want to Install your virtual disk and how much memory you want to use for it, you should make your choice. If you select a virtual disk, then you must type the number of K (kilobytes) that you want to use for a virtual disk. The maximum amount of extended or expanded memory that you can allocate for a virtual disk Is 16,384K (16 megabytes).

When your Boot Up parameters are defined, go back to the main menu and choose the General configuration to modify some switches of the **AUTOEXEC.BAT**. A new menu will appear and each entry is listed in detail below.

## COPY COMMAND (XCOPY)

The **XCOPY** command in X-DOS has many command line switches to control the copying process. This menu selection lets you specify any switches that you want it to use as a default. If you select certain switches then whenever you run the XCOPY command, the specified switches will be used without having to type it in each time. When you select XCOPY and press [Enter], you will have ten switches to choose from. Highlight any of the switches that you want as a default by moving tile highlight bar with [Up] and [Down] arrow keys

and pressing the [Enter] key on the selections you would like. Alternatively, press the quick keys of the menu items that you want to install. If by mistake, you select a wrong switch, you can deactivate it again by highlighting it and pressing the [Enter] key or by pressing the quick key for that item again. You can normally select more than one switch as a default setting, but you should check if the switches that you select, can work in combination with each other. When you have made your default selections, press [Esc] to exit back to the General Configuration menu.

## DIRECTORY COMMAND (DIR)

You can highlight this menu item to select the command llne switches that **DIR** will use by default whenever you use the DIR command. Pressing [Enter] with DIR highlighted in the General Configuration menu will pop up a menu with the available DIR switches. Use the [Up] and [Down] arrow keys to scroll between the different switch options, and press the [Enter] key over any of the switches that you want to set as a default. You can also use the quick keys. If by mistake, you select a switch and you can de-activate it again by highlighting it and pressing the [Enter] key. You can normally select more than one switches as default setting, but you should check if the switches that you Select can work in combination with each other. When you have made your default selection, press [Esc] to exit back to the General Configuration menu.

## EDITOR COMMAND（ED）

X-DOS includes a full screen editor with word processing capabilities. You can set certain default settings that will be activated every time you run **ED**. You will still be able to alter these settings from within ED as required. Highlight this menu item, if you want to set different values of the four available options. The X-DOS editor, ED, lets you specify default settings for Wrap Mode, Automatic Indent, Left Margin, Right Margin and Tab. The first item, Wrap Mode, prompts you with a menu from which you can Enable or Disable wordwrap. Selecting any of the four other items will make **INSTALL**

prompt you with an entry box in which you should type in a value indicating a column number.

## PATH

Highlight this menu item if you want to specify a PATH with directories that you want X-DOS to look through when you execute programs or command scripts. Remember to include the complete path with both drive and leading directory specifications. The default is the boot \DOS directory which contains all the X-DOS utilities. You should not remove it from your path.

## VIDEO MODE（MODE）

If your computer is equipped with an EGA or VGA graphics adapter and equivalent monitor, you can use X-DOS in 43 line text mode which gives you almost double the information on the screen at the command line. If you want to install this feature, select this item and you will be prompted with a new menu. Select the 43 Line Mode item. If you are not sure if your computer is capable of displaying text in 43 line mode, you can try to Install this feature. If your screen does not change into 43 line text mode, then your graphics adapter does not support this. You should then run INSTALL again and un-install this option.

## VIRUS CHECK

X-DOS is equipped with a virus checker that can check any files up to a total of 256 files for a possible virus. It is recommended that you install this option, if you are using public domain or shareware programs. The X-DOS virus checker does not remove viruses from any files. It simply warns you if a file has been modified.

## XSHELL

X-DOS 's SHELL parameters can be set from the **INSTALL** program. The first option Is to set which mode **XSHELL** will be in when activated **:** File section or Application section.

The second option is to choose to activate the X-DOS **XSHELL** automatically or not. If you choose to start **XSHELL** automatically, the Command Processor will activate the **SHELL** at the boot time. For details of what the shell is, and what you can do with it, please refer to the relevant section in this manual.

Now that your Boot Up parameters and the general configuration parameters are ready, select the " **Save Changes and Exit** " to store **CONFIG.SYS** and **AUTOEXEC.BAT** files on the target disk(ette).

The target disk(ette) now contains the necessary system files to boot X-DOS as well as all the utilities in the **\DOS** directory. In the root directory, the **CONFIG.SYS** and the **AUTOEXEC.BAT** files contain the parameters an choices that you made using **INSTALL**. A file called **X-DOS.CFG** will appear on the target disk(ette). This file contains an duplication of your choices in case you wish to change something again in the boot up parameters, which you can do by running INSTALL again. Do not delete the **X-DOS.CFG** file.

It is now time to boot your computer and if you installed X-DOS onto a diskette, make sure that first diskette is in the drive (with the door closed!) and then turn on your PC. Within a few seconds, the X-DOS copyright message should appear on your screen followed by the default X-DOS prompt.

# Chapter 5

# Internal Configuration Commands

## Introduction

Chapter 4 explained how the **AUTOEXEC.BAT** and **CONFIG.SYS** files can be configured using the installed program provided with X-DOS. The various commands which can be entered into the **AUTOEXEC.BAT** and **CONFIG.SYS** files, are called the Internal Configuration Commands, were briefly introduced to help you decide which of these commands you should use during installation. In this chapter, a detailed explanation of the functions of all the internal configuration commands, and the various parameters and switches that can be used with these commands, is given.

We suggest that after you have been using X-DOS for a while, and are ready to start taking advantage of the full power offered by this operating system, you read through this chapter to get a good understanding of what you can do with the internal configuration commands. You may then use the install program to configure these commands in your **AUTOEXEC.BAT** and **CONFIG.SYS** files. Please take note that you can also edit the **AUTOEXEC.BAT** and **CONFIG.SYS** files directly using the editor provided wit X-DOS.

# The ANSI.SYS Device Driver

## Purpose

This device driver enables you to use ANSI escape sequences to the extend of your control of the screen and keyboard. ANSI escape sequences are tedious to use but they can create quite a remarkable results when used properly. You can, for example, totally remap your keyboard, make fancy command line prompts, and much more.

## Type

External Device Driver

## Syntax

DEVICE = [d ： ] [path] ANSI · SYS [Inserted in your CONFIG.SYS file]

## Where

d : path — is the drive and path to the direct in which the ANSI.SYS device driver resides.

# BREAK Configuration Command

## Purpose

This configuration command is used to set the circumstances under which [Ctrl] —C and [Ctrl] [Break] are allowed to terminate program execution.

## Type

Internal Configuration Command

## Syntax

BREAK [ON] [OFF]

## Where

**ON** — specifies that BREAK mode will be turned ON.
**OFF** — specifies that BREAK mode will be turned OFF.

## Remarks

X-DOS ‘s default setting is BREAK = OFF. Therefore, X-DOS only checks for a [Ctrl]—C or [Ctrl] [Break] sequence during：

- Standard Input functions
- Standard output functions
- Print operations
- Auxiliary operations

To make X-DOS check [Ctrl]—C or [Ctrl] [Break] whenever it is requested, set BREAK＝ ON in the CONFIG.SYS fil.

# BUFFERS Configuration Command

## Purpose

This configuration command specifies the number of disk buffers that X-DOS allocates. A larger number normally increases the speed of disk intensive applications but also consumes more memory

## Type

Internal Configuration Command

## Syntax

BUFFERS＝xx [/E] [/A]

## Where

xx — is the number of buffers that X-DOS will allocate in the memory. The default value for xx is 20 and must be in the range of 5 to 4,095. If you install X-DOS with the INSTALL command, the default value is set to 20.

**/ E** – tells X-DOS to put the buffers in the extended memory.
**/ A** – tells X—DOS to put the buffers in the expanded memory.

## Remarks:

Please take note that the buffers cannot be put in the extended or the expanded memory in the evaluation version of X-DOS.

The Extended Memory allocation requires the XMS driver loader. Either the internal X-DOS XMS driver can be used (see below) or any other commercial product. Please take note that though the BUFFERS can be put in the extended or the expanded memory, some buffers have to remain in lower memory for DMA transfer.

## Examples：

If you want to modify the BUFFERS size to 15, you should load the CONFIG.SYS file into ED and add the following line：

BUFFERS ＝ 15

# The CACHE Configuration Command

## Purpose

This configuration command increases the speed of disk intensive programs. It works best if you have extended memory or expanded memory available, and normally glves better results than increasing the number of disk buffers. The cache only works on hard disks.

## Type

Internal Configuration Command

## Syntax

CACHE = /D0 [/D1] [/Mxxxx] [/E] [/A]

## Where

**/D0** – specifies that you want to cache the first physical disk, including all partitions on that disk.

**/D1 –** lets you optlonally cache a second physical disk if your computer has two hard disks installed.

**/M**xxxx – sets the amount of memory that CACHE will use for disk caching. You can speclfy a cache size up to 8,192K in size. You must enter the cache size In K (kilobytes). If you do not specify a CACHE size with the **/Mxxxx** parameter, CACHE automatically sets up a 64K cache.

**/E** – sets up a disk cache in extended memory.

**/A** – sets up a disk cache in expanded memory.

## Remarks：

Please take note that the CACHE command cannot be activated in the evaluation version of X-DOS.

CACHE uses the memory that you allocate for cachlng to store data most recently read from the disks. Additionally, CACHE reads more data into memory than it is actually needed, forecasting whlch data may be needed on the following disk access. By doing this, there is a good possibility that the next data your program needs to read from disk is already in the memory area of your cache. Since reading from memory is much faster than reading from even the fastest hard disk,

a cache will dramatically improve the performance of disk intensive programs. The larger the cache, the better the probability is that the needed data is already in memory. You can only cache hard disks. The CACHE statement does not support caching of removable media.

You must always specify at least one physical drive to cache or you will get an error message. It is mportant that you understand what a physical drive is. A physical drive is refers to a complete hard disk, including all partitions on the hard disk. If your computer has one hard disk with three partitions set up as **drive C :**, **drive D :** , and **drive E :** , you only need to specify the **/D0** parameter after the CACHE statement to all of the three drives since they all reside on your first, and only, physical disk.
If your computer has two hard disks installed and you choose to install a cache for both of them, the total amount of memory used by **CACHE** (as specified with **/Mxxxx** parameter) will double.

If you set up a cache for your hard disk(s), you may want to reduce the number of buffers you have set up with the BUFFERS statement, since CACHE essentially does the same job as BUFFERS but in a much mlore efficient way. By reducing the amount or buffers, you can save some precious memory. Just keep In mind that CACHE does not support floppy drives, so you should not set the number of BUFFERS too low since this can dramatically decrease the performance on floppy drives.

If you specify more memory for caching than is available in your system, CACHE wlll display an error message and remain un-installed. Since certain programs such as backup programs may have problems working with a cache in memory, X-DOS provlde‌s a way of disabling CACHE from the command line. The X-DOS cache is a write through cache that means that it will ilncrease the speed of the reading process while not affecting writing operations.

Examples :

If your computer has one hard disk installed and youl want to set up a cache of 2MB in XMS memory on you hard disk, you should include the following statement in your CONFIG.SYS configuration file :

```
CACHE = /DO /M2048 /E
```

# The COUNTRY Configuration Command

## 2 Purpose

This configuration command sets the time format and date format for the selected country.

## Type

Internal Configuration Command

## Syntax

COUNTRY = xxx

## Where

xxx – is the international telephone code for your country.

## Remarks :

The default value for COUNTRY is 001 that is the international country code for the United States. The following list shows countries supported by X-DOS :

| COUNTRY | INT'L CODE |
|---|---|
| Australia | 061 |
| Belgium | 032 |
| Canada, French | 002 |
| Denmark | 045 |
| Finland | 358 |
| France | 033 |
| Germany | 049 |
| Italy | 039 |
| Israel | 972 |
| Middle East | 785 |
| Netherlands | 031 |
| Norway | 047 |
| Portugal | 351 |
| Spain | 034 |
| Sweden | 046 |
| Switzerland | 041 |
| United Kingdom | 044 |
| United States | 001 |

# The DEVICE Configuration Command

## Purpose

This configuration command makes X-DOS install devlce drivers during start-up.

## Type

Internal Configurailon Command.

## Syntax

DEVICE = [d] [path] filename

## Where

**d：path** – is the drive and path to the directory which contains the device driver that you want to install.

**filename**— is the name of the device driver to install.

## Remark :

Device drivers are normally used to control certain parts of hardware on your computer. X-DOS supplies you with four device drivers on the X-DOS disk.

These drivers have the following functions :

**ANSI.SYS** : Is a console drlver whlch can be used to enhance standard Input and output. Since X-DOS already implements enhancements for standard Input and output, this device driver Is normally not required.

**EMM386.SYS** : Used for the advanced memory management employed by X-DOS. Please refer to Chapter 13. for details.

**HRAMDEV.SYS** : Used for the advanced memory management employed by X-DOS. Please refer to Chapter 13. for details.

**VDISK.SYS** : Is the virtual disk driver which can be used to install disks in either conventional memory, extended memory, or expanded memory.

Virtual disks are often referred to as RAM disks and are much faster storage media than normal disk drives. You can set up several virtual disks, each o fwhich can be a maximum of 16,384K（16 megabytes）in size. If you purchase certain hardware add-on products for your computer, you may have to install a devlce driver in the CONFIG.SYS file to use this product.

Just include the name of that particular products device drive in your CONFIG.SYS file including drive specification and the path, and this driver will automatlcally be installed the next time you boot your computer.

## Examples :

If you want to create a RAM disk in the extended memory with the size 384K and assuming that the VDISK.SYS device driver Is located in the C : \ DOS directory, then you should add tile following statemen on a separate line in your CONFIG.SYS file.

```
DEVICE = C : \DOS\VDISK.SYS 384 /E
```

# The DOS Configuration Command

## Purpose

This configuation command will load the kernel of X-DOS in the High Memory AIea ·

## TyPe

Internal Configuration Command

## Syntax

DOS = HIGH

## Where

HIGH – Is the parameter for relocating the X-DOS kernel into HMA.

## Remarks：

Please note that the DOS relocation into HMA is not provided in the evaluation version of X-DOS.

High Memory Area is only available on 286, 386 and 486 computers. It consists of the first 64K (-16 bytes) of the extended memory area.

This segment of memory has the particularity ot being in the extended memory, but still being accessible in the real mode, thus allowing it to be viewed as the memory by DOS.

By setting the DOS switch to HIGH, the kernel will attempt to detect the availability of the HMA and relocate itself in this portion of memory. It will leave in the low memory, some data used by DOS that cannot be put in HMA.

Upon activation of the DOS = HIGH switch, X-DOS will also activate the internal XMS driver, that manages the rest of the Extended Memory (see below).

# The FCBS Configuration Command

## 3 Purpose

This configuation command sets the number of files that the file control blocks can open at one time.

## Type

Internal Configuration Command

## Syntax

FCBS = x

## Where

X – Is the number of files that the file control blocks can open at one time. The default value for x is 4 and must be in the range of 1 to 255.

## Remarks :

File control blocks are used to control open files. Programs that use file control blocks to access flles will have one file control lock assigned to each open file.

File control blocks were originally implemented in the first version of the MS-DOS operating system for compatibility with the old CP/M operating systems.

Now, programs mostly use the more powerful file in handling to control open files. X-DOS, however, support file control blocks for compatibility with older programs.

# The FILES Configuration Command

## 4 Purpose

This configuration command sets the number of file handles which can be opened at one time.

## Type

Internal Configuration Command

## syntax

FILES = xxx

## Where

xxx – Is the number of file handles which can be opened at the same time. The default value for xxx is 20 and must be In the range of 8 to 255.

## Remarks :

The default setting of FILES= 20 is enough in most cases but certain programs like the accounting programs, database programs, and desktop publishing programs often need to be able to open a larger amount of file handles at the same time. If you encounter an error message, stating that there are not enougn file handles available, you will have to increase the number of file handles with the FILES statement in CONFIG.SYS. You can do this either by using the X-DOS program INSTALL or by editing the CONFIG.SYS file and adding the FILES = statement.

## Examples :

If you want to modify the number of file handles in the FILES statement to 30, you should load the CONFIG.SYS file into ED and insert a line with the following contents :

FILES = 30

# The FKEY Configuration Command

## 5 Purpose

This configuration command is used to turn off the default X-DOS function key definitions.

## Type

Internal Configuration Command

## Syntax

FKEY = ON

## Where

**ON** – enables the use of the default function key definition and redefinition of function keys from the command line with the ALIAS command.

## Remarks：

You can ask X-DOS to assign commands to some of the function keys and redefine function keys to execute different commands. You can even combine [Shift] , [Ctrl] , or [Alt] keys with the function keys so you can define a total of 39 commands to be executed by the touch of the hot key.

You may wonder why you can only define 39 commands, not 40 commands. The reason for this is compatibility. X-DOS does not allow you to redefine the [F3] function key, which is used by MS-DOS to recall the previous command.

# The HISTORY Configuration Command

## Purpose

This configuration command sets the amount of memory allocated for the command line history buffer. The history buffer allows you to recall and edit previously executed commands.

## Type

Internal Configuration Command

## Syntax

HISTORY = xxxx

## Where

xxxx – Is the number of bytes which will be allocated to the history buffer. The default value for xxxx is 256 and must be in the range of 256 to 2,048.

## Remarks :

The default setting of HISTORY = 256 should be enough in most case since this amount of memory can hold about 15 to 20 previously executed commands.

You can increase the history buffer, so it will be able to hold more than 100 commands. Just keep in mind that if you have to scroll through dozens of commands to find a particular command, it would probably be faster to type it again. Also, when you allocate memory for the history buffer that you are using precious memory which will not be available application program.

## Examples :

If you want to increase the amount of memory allocated for the

History buffer to 512 bytes, you should load the CONFIG.SYS file into ED and insert a line with the following contents :

HISTORY = 512

# The LASTDRIVE Configuration Command

## 6 Purpose

This configuration command sets the last available drive letter X-DOS can access. You only need to change this if you plan to use the SUBST command or a similar utility.

## TyPe

Internal Configuration Command

## Syntax

LASTDRIVE = x

## Where

x – Is a character between A and Z, describing a drive letter. This drive letter will be the last available drive that you can access with X-DOS.

## Remarks :

You can never set LASTDRIVE eqtlal to a drive letter less than the number of drives that you have installed in your computer. If you do set the LASTDRIVE equal to a drive letter less than the number of installed driyes. X-DOS will ignore this statement in the CONFIG.SYS file.

## Examples :

If you want to set the number of available drlves to 10 which is the drive letter J , yon should Include the tollowing command in the CONFIG.SYS file :

LASTDRIVE = J

# The SHELL Configuration Command

## 7 Purpose

This configuration command sets the name and location of the primary command processor. It can also be used to specify the size of environment of the primary X-DOS command processor, **COMMAND.COM** .

## Type

Internal Configuration Command

## Syntax

SHELL = [d :] [path] COMMAND.COM [/P] [/E : xxxx]

or

SHELL = [d :] [path] filename [params]

## Where

**d : path** – Is the drive and path to the directory in which the command processor Is located.

**/ P** – Is a parameter used by COMMAND.COM which makes the current command processor permanent.

**/ E : xxxx** – Is the number of bytes allocated to file environment of the COMMAND.COM command processor. The default value of xxxx is 384 and must be in the range of 160 to 9,999.

**filename** – Is the filename of a new command processor ·

**params** – are any valid parameters used by the new command processor.

## Remarks :

The SHELL command can be used for several purposes which are split into two main areas; using SHELLwith COMMAND.COM and using SHELL with a new

command processor.

Using the SHELL command with COMMAND.COM allows the user to copy the COMMAND.COM file to a different location, i.e., a virtual disk, and tell X-DOS where to find it. Also, it is often used to set a different size for the environment. Since X-DOS lets the user set environment variables for some of its commands, and many applicatlon programs also use the environment, it may be necessary to use the SHELL command to extend the environment size.

The second major purpose of the SHELL command is to install a new command processor which takes over the Job of COMMAND.COM. Note that you can theoretically replace X-DOS command processor with a command processor supplied by another vendor, such as 4-DOS COMMAND.COM from JP Software. However, please take note that such products may not work with the second command overlay and the SHELL. As such, we advise you to always use the X-DOS command processor.

## Examples :

If you want to relocate the COMMAND.COM file to the D\DOS directory and make it permanent, and also want to extend the size of the environment to 512 bytes, you should include the following statement in your CONFIG.SYS file :

```
SHELL = D : \DOS\COMMAND.COM /P /E : 512
```

# The TBOPCOD Switch

## 8 Purpose

This switch will force X-DOS to trap any bad opcodes. When enabled, if a bad opcode is encountered X-DOS will terminate the task and exit clearly without hanging the machine.

## Type

Internal Configuration Command

## Syntax

TBOPCOD = [ON] [OFF

## Where

**ON –** enables the TBOPCOD Switch

**OFF –** disables the TBOPCOD switch

## Remarks :

By default TBOPCOD is set to OFF in order to maintain compatibility with some DOS applications. Note that this command can only be used with 286 machines and above.

# The VDISK.SYS Device Driver

## 9 Purpose

This device driver lets you to set up temporary, simulated disk drives in conventional memory, extended memory, or expanded memory.

## Type

External Device Driver.

## Syntax

DEVICE = [d :] [path] VDISK.SYS [mem] [/E] [/A]

## Where

**d : path** – Is the drive and path to the directory in which the VDISK.SYS device driver resides
**mem** – is the amount of Kilobytes of memory that you wish to allocate to the VDISK. The default is 64K.
**/ E** – tells VDISK to use the Extended Memory (XMS).
**/ A** – tells VDISK to use the Expanded Memory.

## Remarks :

Virtual Disks are much faster than hard disks since the data resides in RAM rather than on the disk.

X-DOS's VDISK can take advantage ot XMS Memory or Expanded Memory to store data.

Note that, unlike MS-DOS's RAMDRIVE.SYS, X-DOS's VDISK only uses Extended Memory provided by the XMS driver, thus avoiding conflict with other programs that take over the extended memory resources.

## Examples :

Suppose that you wish to have a VDISK of 1MB of memory in extenided Memory, you would add the following statement in your CONFIG.SYS file:

DEVICE = C : \DOS \VDISK.SYS 1024 /E

# The VERSION Configuration Command

## 10 Purpose

This configuration command sets the DOS version that X-DOS should emulate. X-DOS emulates a DOS version of 3.3 as default.

## Type

Internal Configuration Command

## Syntax

VERSION = x.yy

## Where

x – Is the major version number that X-DOS should emulate.
yy – Is the minor version number that X-DOS should emulate.

## Remarks :

Certain application programs and device drivers may look for, and expect, a certain version number of the disk operating system in order for them to execute. If they do not find an expected disk operating system version number, they will normally terminate execution and display an error message similar to " Wrong version number ". To prevent any kind of version number problems, X-DOS provides the VERSION command.

If for any reason, you decide to change the version number at boot time, do not forget to reset it to 3.3, before loading the command processor of X-DOS. X-DOS has a data structure format similar to DOS 3.3, but has capabilities included in DOSV 4.x and 5.0. The choice for 3.3 compatibility was made due to the reliability of this version and its subsequent popularity with many users.

## Examples :

If you want to change the emulated disk operating system version number in your CONFIG.SYS file to the version number 3.10, then include the following statement in the beginning of your CONFIG.SYS file :

```
VERSION = 3.10
```

# The VIDEO Configuration Command

## 11 Purpose

This configuration command greatly increases the speed of the screen updating in text mode.

## Type

Internal Configuration Command

## SyntaX

VIDEO = ON

## Where

ON – Enables fast screen updating by allowing X-DOS to bypass the video BIOS when reading and writing to the screen.

## Remarks :

If you choose to set VIDEO = ON in your CONFIG.SYS file, you should notice a remarkable increase in the speed with which text based programs display information on the screen. The only penalty this increase in speed brings is a slight delay in cursor positioning.

If you are using a fast VGA display card, you will not neet to use VIDEO = ON option. However, for CGA, EGA and 8-bit VGA display cards the diffence in speed is very noticeable.

# The XMS Configuration Command

## 12 Purpose

This configuration command activates X-DOS's internal XMS driver.

X-DOS's XMS driver is compatible with the HIMEM.SYS driver available with MS-DOS 5.0. It has the particularlity of being directly integrated in the DOS kernel.

## Syntax

XMS = ON

## Where

ON – Is the parameter for activating the X-DOS XMS driver.

## Remarks :

Please note that the XMS driver cannot be activated in the evaluation version of X-DOS.

The XMS driver manages the Extended Memory, the way EMS drivers manage expanded memory. The XMS driver allows real mode application programs to use extended memory in a cooperative and hardware independent manner. It also manages the A20 line that enables the use of the High Memory Area.

If you relocate the X-DOS kernel in HMA, the XMS driver will be activated automatically.

# Chapter 6

## X-DOS Command Reference

### Introduction

Thls chapter contains a detailed explanation of the functions and features of all the X-DOS internal and external commands. Though X-DOS is command compatible wltll MS-DOS, many of the commands in X-DOS have been considerably enhanced, supporting switches are not available in MS-DOS with many being accessed from user friendly menus. For this reason, in order to get the most out of the powerful features offered by X-DOS, we suggest that you read the detailed explanation of the commands that you most frequently use in order to better understand these additional features.

In the explanation of each command, a number of headings appear which are explained below:

**Purpose :**
A brief descriptin of the general function of the command.

**Type :**
The command type, (i.e. external, or internal to COMMAND.COM or MAX.COM).

**Syntax :**
The syntax (format) to be used when typing the command at the command line.

**Where :**
A description of items listed under Syntax.

**Remarks :**
Special features or points that Should be noted when using this Command.

**Examples :**
Examples of usages ot the command.

# The ADDPATH Command

## Purpose :

This command adds a temporary path to the end of the current search which is defined by the PATH command.

## Type :

Internal to COMMAND.COM

## Syntax :

**ADDPATH [d :] [path] directory ; [d :] [path] directory [; (…)]**

## Where :

**d : path** – Is the drive and path to the directory that you want to add to the current search path.

**directory** – Is the name of the directory to add to the current search path.

**; ( … )** – Shows that you can add several paths, each separated with a semicolon.

## Remarks :

The ADDPATH command adds the path to one or more directories at the end of the current search path. This addition to search path is the active until you reboot your computer. To make permanent changes to search path, you must use the PATH command in your AUTOEXEC.BAT configuration file.

## Examples :

Suppose that you have a current search path like this :

**C : \DOS; C:\DOS\UTIL**

Your current search path will now look like this :

**C : \DOS; C:\BUSINESS; C:\DOS\UTIL**

The C:\DOS\UTIL path wlll remain active until you reboot your computer.

# The ALIAS Command

## Purpose :

This commands allows you to define aliases for commands and redefine the function keys on your keyboard.

## Type :

Internal to COMMAND.COM

## Syntax :

ALIAS [d :] [path] [filename]

Or ALIAS alias = command

Or ALIAS ~ mPFn = command

## Where :

**d : path** – Is the drive and path to the file which holds your alias definitions.
**filename** – Is the name of the file which holds your permanent alias definitions.
**Alias =** – Is the temporary alias that you want to define. This alias definition is lost when you reboot your computer.
**command** – Is the command, including any parameters, that you want to assign to a temporary alias or functlon key definitions.
**~mPFn =** – Is the function key that you temporarily want to redefine. The tild " ~ " indicates a function key translation. The " m " is optional and must be substituted with an A to specify the [Alt] key, a C to specify the [Ctrl] key, or an S to specify the [Shift] key. The " n " must be substituted with the number of the function key that you are redefining, 1 to 10.

## Remarks :

You cannot redefine the [F3] function key alone (it is fixed as repeat the last command as in MS-DOS), but it can be redefined in combination with the <Alt>, <Ctrl>, or <Shift> keys.

Also, the [F11] and [F12] function keys cannot be redefined since most BIOSes do not return any code when those keys are typed.

## Examples :

If you want to assign the command to run your favorite Word Processor to the key combination [Shift] [F2], you can type at the command line in the command :

```
ALIAS ~SPF2 = WORDPROC.EXE
```

Note that If you want to use the function keys, the statement FKEY = ON must appear in your CONFIG.SYS file.

# The APPEND Command

## Purpose :

This commands allows your programs to locate non-executable files such as overlay files, data files, and configuration files in other directories than the default directory.

## Type :

Internal to MAX.COM

## Syntax :

APPEND [d :] [path] [directory] ; [(…)]

## Where :

**d : path** – Is the drive and path to the directory that you want to include in the search for non-executable files.
**directory** – Is the directory that you want to include in the search for non-executable files.
**; ( … )** – Shows that you can include several directories, each separated with a semicolon.

## Remarks :

The PATH command searches only for files with the **.EXE** , **.COM** , and **.BAT** filename extensions. You can use the APPEND command to extend the search path to non-executable files.

## Examples :

Suppose you have your favorite Word Processor in the directory C :\ WORDPROC and it uses the file WORDPROC.INI in that directory, but you wish to access WORDPROC.EXE from anywhere, you would type the command :

**APPEND ‘ C : \ WORDPROC**

# The ATTRIB Command

## Purpose :

This commands lets you display or modify the Archive, System, Hidden, and Read-Only file attributes.

## Type :

Internal to MAX.COM

## Syntax :

ATTRIB [d : ] [path] [filesec] [+A / -A] [+S / -S] [+H / -H] [+R / -R]

## Where:

**d : path** – Is the drive and path to the files that you want to display or change attributes on..
**filespec** – Is the file or range of files to display or change attributes on.
**+** – Turns the specified attribute ON.
— – Turns the specified attribute OFF.
**A** – Indicates the Archive file attribute.
**S** – Indicates the System file attribute
**H** – Indicates the Hidden file attribute.
**R** –Indicates the Read-Only file attribute.

## Remarks :

If the ATTRIB is used with a file specification, but no attribute switches, ATTRIB shows all attributes for the specified files.

The wildcards " ? " and " * " can be used with the ATTRIB command to modify more than one file.

## Examples :

Suppose you want to make the X-DOS.SYS file read-write non-hidden, you would type the command :

ATTRIB –R –H X-DOS.SYS

# The BACKUP (XBACK) Command

## Purpose :

Backup is the default alias that is assigned to the XBACK program for compatibility reasons. Thus, there is no program on your X-DOS diskette called BACKUP, the actual command name being XBACK. *Please refer to Chapter 10. for full details on using the BACKUP (XBACK) program*.

This command can make backups of the data on your hard disk onto diskettes to reduce the possibility of data loss. You should make a backup of your hard disk data on a regular basis. Files that are backed up with the BACKUP command are stored in a special format and must be stored again with the X-DOS RESTORE command.

## Syntax :

XBACK [d1:] [d2:] [/switches] Running in manual mode

Or BACKUP d1:[path1][filespec1]d2:[switches] Running in automatic backup mode

Or RESTORE d3: d4: [path2] [filespec2] [/switches] Running in automatic restore mode

## Where :

**d1:** – Is the hard disk drive which contains the file that you want to backup.

**d2:** – Is the floppy drive to whlch you want to backup..

**path1** – Is the path to the files that you want to backup on hard disk drive d1:.

**filespec1** – Is the range of files that you want to backup.

**d3:** – Is the floppy drive from which you want to restore files.

**d4:**– Is the hard disk drive onto which you want to restore files.

**path2** – Is the path to the directory that you want to restore files to on the hard disk drive.

**Filespec2** – Is the range of files that you want to restore from the backup set.

# The BOOT Command

## Purpose :

This command reboots your computer.

## Type :

Internal to COMMAND.COM

## Syntax :

BOOT

## Remarks :

The BOOT command is a “ warm “ boot and does not completely reinitialize your computer. It is the equivalent of typing [CTRL] [ALT] [DEL].

# The BREAK Command

## Purpose :

This command changes or displays the [Ctrl] C and [Ctrl] Break checking mode.

## Type :

Internal to COMMAND · COM

## Syntax :

BREAK [ON | OFF]

## Where :

ON – specifies that BREAK mode will be turned ON ·

OFF – specifies that BREAK mode will be turned OFF ·

## Remarks :

When this command is used with no parameters, the current BREAK to ON, X-DOS will check for a [CTRL]C or [CTRL][BREAK] every time it is called, and will terminate the application if a break key has been pressed. If the BREAK state is OFF, X-DOS checks for the break key only when performing IO operations to the keyboard, the screen and the COM and LPT ports.

# The CACHE Command

## Purpose :

This command can be used to enable or disable, the internal X-DOS cache once it is installed.

## Type:

Internal to COMMAND.COM

## Syntax :

CACHE [ON | OFF ]

## Where :

**ON** – Turns on the internal X-DOS cache when it has previously been turned off with the CACHE OFF command.

**OFF** – Turns off the internal X-DOS cache, temporarily disabling it.

## Remarks :

You may wish to disable the cache when running a special disk programs such as defragmenters. This can easily be done by typing the CACHE = OFF command directly from the the command line avoiding the need to edit the CONFIG.SYS file. After completing your disk operations, you can then re-enable witn the CACHE = ON command.

# The CD (CHDIR) Command

## Purpose :

This command changes default directory to another directory. You can change directory without entering any path to the directory, and can even use wildcards in the directory specification.

## Type:

Internal to COMMAND.COM

## Syntax :

CD [d :] [Path] [directory]

## Where :

**d :** – Is the optional drive on which you want to change default directory. You will still remain in the default directory on the current drive..
**path** – Is the optional path to the directory to which yo want to change.
**directory** – Is the dlrectory that you want to change to. You can use the " ? " and " * " wildcards in the directory specification.

## Remarks :

If you do not specify a path, CD will display a TREE of the drive specified or the default drive if no drive is specified.

You do not need to specify a full path to access a subdlrectory. If CD cannot find it as it is typed, it will search for it in the whole drive.

You can specify wildcards such as " ? " or " * " to search for a subdlrectory, CD will stop at the first one that matches your specification.

## Examples :

Suppose you want to change to the directory UTIL, which can be accessed as C:\DOS\TOOLS\UTIL in your drive, you can type the command

CD UTIL or CD UT*

from anyhere in the current drive. Note that if you have two directories with the same name on your disk, you should input the full path with the CD command.

Note that each time you use the CD command, references to the directories that you access are stored in a special buffer, allowing you to use the POPD command to recall any directory that you have accessed.

# The CDD Command

## Purpose :

This command changes both the default drive and directory to another drive and directory. You can change directory without entering any path to the directory, and you can even use wildcards in the directory specification.

## Type:

Internal to COMMAND.COM

## Syntax :

CDD [d:] [path] [directory]

## Where :

**d :** – Is the optional drive on which the directory that you want to change is located.

**path** – Is the optional path to the directory to whlch you want to change.

**directory** – Is the dlrectory that you want to change to. You can use the " ? " and " * " wildcards in the directory specification.

## Remarks :

See the CD command.

# The CHGDATE Command

## Purpose :

This command allows you to change the time stamp and date stamp of file or range of files.

## Type:

Internal to MAX.COM

## Syntax :

CHGDATE [d:] [Path] [filespec] [/T HH:MM] [/D MM-DD-YY]

## Where :

**d : path** – Is the drive and path to the file or range of files that you want to change time and/or date stamp on.

**filespec** – Is the file or range ot files to change time and/or date stamp on.

**/T HH:MM** – Enters a new tlme stamp in the form HH:MM, where HH denotes hours in 24 hour format and MM denotes minutes.

**/D MM-DD-YY** – Enters a new date stamp in the form MM-DD-YY, where MM denotes the month, DD denotes the day, and YY denotes the last two digits of the year.

## Remarks :

If you do not specify switches for date and time, the current time and/or date will be used instead.

## Examples :

If you change the date and time of all the files with a .COM extension in the DOS directory to a certain date that you would type the command :

CHGDATE C:\DOS\ [*.COM /T 12:00/D 01-01-91

# The CHKDSK Command

## Purpose :

This command analyzes directories, files, and cluster allocation on hard disks and diskettes. CHKDSK provides information on disk usage and can optionally check a disk for bad sectors, mark them as bad, and try to save any data allocated to the cluster in which the bad sector Is located. CHKDSK can also display repeated files on your disk.

## Type:

External Command

## Syntax :

CHKDSK [d:] [/F] [/R]

## Where :

**d :** – Is the drive to analyze.
**/F** – Makes CHKDSK attempt to correct any errors encountered in the file allocation table and/or the files on the analyzed drive.
**/R** – Displays all repeated filenames on the drlve that you are analyzing.

## Remarks :

The CHKDSK command allows you to analyze the integrity of data structures on a drive. It checks to make sure that the amount of disk space allocated to each me matches the size recorded for it in its directory, and that there are no portions of files still allocated on the disk with no directory entries for them. If you do not specify the /F switch when executing CHKDSK, it displays any file and/or directory errors but it will not correct the errors.

If you do not specify a drlve for CHKDSK, it automatically checks the default drive. After checking and possibly correcting any file and/or directory errors, it displays a map of the disk usage of the drive.

You can check the entire drive for bad sector by pressing " C " when the disk map is displayed. If you do not wish to check for the sectors, press any other key and CHKDSK will dlsplay statistics for the drive that you are analyzing.

# The CLS Command

## Purpose :

This command clears the screen and returns the cursor to the upper left hand corner of the screen.

## Type:

Internal to COMMAND.COM

## Syntax :

CLS

## Remarks :

Some application programs might reset your screen color to a different color than the default. To reset the colors, type the CLS command.

# The COLORS Command

## Purpose :

This command allows you to define the colorsused by X-DOS for prompt, command line and on-screen TTY text.

## Type:

Internal to COMMAND.COM

## Syntax :

COLORS C1, C2, C3

## Where :

**C1** – Is a number defining the color of the DOS prompt
**C2** – Is a number defining the color of the command line
**C3** – Is a number defining the color of on-screen TTY text

The numbers which can be used to define the various colors are as listed below :

| | | |
|---|---|---|
| 0 | – | gray |
| 1 | – | white |
| 2 | – | black |
| 3 | – | light blue |
| 4 | – | cyan |
| 5 | – | green |
| 6 | – | light magenta |
| 7 | – | light red |
| 8 | – | light cyan |
| 9 | – | light green |

## Remarks :

The X-DOS defaults the colors to 7, 8, 0 which specifies a red prompt, a light blue command line and gray TTY output. If you do not want to use colors, type :

```
COLORS  0, 0, 0
```

## Examples :

To select a white prompt, a light red command line and light green TTY output, type :

```
COLORS    1, 7, 9
```

# The COMMAND Command

## Purpose :

This command executes an additional copy of the COMMAND.COM command processor.

## Type :

Internal to COMMAND.COM

## Syntax :

COMMAND [P] [/C string] [/E : xxxx]

## Where :

**/ P** – Keeps the new copy of the command processor In memory.

**/ C** – Passes a command to the new copy of the command processor and returns to the old command processor.

**/ E: xxxx :** – Sets the environment size for the new copy of the command processor in bytes. It must be a value between 160 and 9,999.

## Remarks :

You can use COMMAND /C to load a second batch file from the first batch file, and then return to the original batch file when the second batch file exits.

You can also use COMMAND /C to pass parameters to another batch files. With X-DOS, you can CALL other batch files, essentially using them as subroutines. This simplifies the use of calling other batch files and does not necessitate the loading of an additional command processor.

# The COMP Command

## Purpose :

This command compares the contents of two files or two sets of files. It will display any differences in both hexadecimal and ASCII formats.

## Type :

Internal to MAX.COM

## Syntax :

COMP [d :] [path] [filespec1] [d :] [path] [filespec2]

## Where :

**d:path** – Is the drive and path to the files to compare.The drive and path can be different for the two files or set of files.
**filespec1** – Is the name of the first file to compare. Use the " ? " and " * " wildcards to compare two sets of files.
**filespec2** – Is the name of the second file or set of files to compare. You can also specify wildcards for filespec2.

## Remarks :

TheCOMP command compares the contents of the two files or two sets of files, byte by byte. You can compare files that reside in the same directory, or the two files or file sets that can reside in different directories and drives.

If you do not specify a filespec for the first set of files to compare, COMP automatically assumes that you want to compare all files in the specified directory **( * . * )**. If you furthermore leave out a path for the first set of files, you must, as a minimum, specify whlch drive the first file set resides on, and COMP will then assume that the first set of files to compare, are all the files present in the default directory of your specified drive.

## Examples :

If you want to compare the file TEST1.EXE with the file TEST2.EXE In the default directory, you only need to type :

```
COMP TEST1.EXE TEST2.EXE
```

# The COPY Command

## Purpose :

This command copies flies, creates text files, sends the blnary files to a printer, and combines several files into one. Even though, not as powerful and fast as the XCOPY command, COPY has features which are not available in XCOPY.

## Type :

Internal to COMMAND.COM

## Syntax :

COPY [d:] [path] [filespec1] [d:] [path] [filespec2]

**(Normal Copying)**

or COPY CON [d:] [path] lfilename **(Creating a Text File)**

or COPY printfile port [/B] **(printing Files)**

or COPY file1 + file2 + ( … ) [dest-file] [/B] (Combining Files)

## Where :

**d: path** – Is the drive and path to the filespec to copy (source) of the filespec to the (destination). The drive and path specification for source and destination do not have to be the same.

**filespec1** – Is the file or range of files to copy. The filespec can include the wildcards " ? " and " * " .

**filespec2 –** Is the destination name(s) of the copied files. The destination filespec can also include wlldcards.

**CON –** Takes the input from the keyboard. Used to create text files.

**filesname –** Is the name of the text file to create with COPY CON

**printfile –** Is the name of the file to send to the printer.

**port –** Is any legal output device such as PRN , LPT1 , LTP2 , LTP3 , COM1, COM2 , COM3 , COM4 or AUX.

**/ B –** Copies a binary file to the printer by ignoring any ^ Z (end-of-file) characters in the file. The / B switch also allows you to combine several binary files into one binary file.

**file1 , file2 –** Are names of files to combine into one file.

**+ –** **–** Is the combine symbol used by COPY.

**( … ) –** Shows that you can combine several files at a time.

**dest-file –** Is the optional name of the file into which the contents of the source files is written. If you do not specify a destination file, the contents is written to file 1, overwriting the previous contents.

## Remarks :

If you need to copy a lot of files, you should rather use the XCOPY command.

## Examples :

If you want to copy the file MYFILE.TXT to another filename, MYFILE2, in the default directory, you should type:

```
COPY MYFILE.TXT MYFILE2.TXT
```

If you want to copy all files in the default directory with the extension *** . EXE** to the root directory of the **B :** drive, You should type :

```
COPY *. EXE B: \
```

You may find it useful to combine the contents of two or more files into one file. To combine multiple files into one file, you must separate all source files with a plus (+) sign. If the files you wish to combine are binary files, you will have to specify the / B switch so that COPY does not end the combining of files after it encounters the first ^ Z (end-of-file) character.

To copy the contents of the three files FILE1.TXT , FILE2.TXT , and FILE3.TXT to a file which you wish to call NEWFILE.DOC, you should type :

```
COPY FILE1.TXT+FILE2.TXT+FILE3.TXT NEWFILE.DOC
```

# The CTTY Command

## Purpose :

This command changes the way X-DOS handles the standard input and output and can be used to select other device drivers to input DOS commands.

## Type :

Internal to COMMAND.COM

## Syntax :

CTTY devicename

## Where :

**devicename** – Is AUX , COM1 , COM2 , COM3 or COM4 to set a new console; CON to restore control to the screen and the keyboard; NULL to disable the keyboard and screen.

## Remarks :

CITY NULL is often used to turn the monitor and keyboard off while certain processes are executing. The NULL bucket is used to inhibit messages dlsplayed from certain commands.

# The CURSOR Command

## Purpose :

This command turns the cursor ON or OFF which can be useful in batch files. Al so, so the programs may exist and leave you with the wrong type of cursor or no cursor at all. TheCURSOR command can restore your cursor back to normal again.

## Type :

Internal to COMMAND.COM

## Syntax :

CURSOR [ON] [OFF]

## Where :

**ON** – Turns ON the cursor.

**OFF** – Turns OFF the cursor.

## Remarks :

TheCURSOR command is handy when used in batch files. If you run a batch file menu system, you may not wish to display the cursor on the screen.If you insert a CURSOR OFF command in your batch file, it will turn of the cursor. Remember to insert the CURSOR ON command before existing the user to the command line or the cursor will remain turned off.

## Examples :

To turn off the cursor, type :

```
CURSOR OFF
```

# The DATE Command

## Purpose :

This command dlsplays the current date according to the system clock and allows you to reset the date.

## Type :

Internal to COMMAND.COM

## Syntax :

DATE [MM-DD-YY]

## Where :

**MM** – Is the number of the month (leading zeros are optional).
**DD** – Is the day of the month (leading zeros are optional).
**YY** – Are the las two digits of the year. You can specify all four digits for the year if you wish.

## Remarks :

If you execute the DATE command without any parameters, it displays the current date according to the system clock. If you want to reset the date, you must specify the current month, day, and year as the parameters. When setting the date, you should be aware that the format of the DATE command is dependent on the setting of the COUNTRY statement in the CONFIG.SYS file.

## Examples :

You can display the current date by typing :

```
DATE
```

The date is displayed slmilar to this :

```
Current date is Wed 4-11-1990
```

If a COUNTRY statement is not defined or if it is set to 001 (US tandard) in your CONFIG.SYS file, you can set the date to the 1st of February 1991 with the DATE command by typing : **DATE 02-01-91**.

# The DEBUG Command

## Purpose :

This command provldes you with a flexible environment which is especially useful for testing, modifying, viewing, and creating executable programs (.EXE and .COM files) and binary files and manipulating or modifying any disk data.

## Type :

External Command

## Syntax :

DEBUG [d: ] [path] [filename [parameters]]

## Where :

**d: path** – Is the drive and path to a file that you want to load into DEBUG.

**filename** – Is the name of the me to load into DEBUG ·

**parameters** – are any parameters needed by the file that you are loading into DEBUG.

## Remarks :

Please refer to Chapter 11. in this manual for full details on using the DEBUG program.

# The DECODE Command

## Purpose :

This command decrypts the contents of a file or range of files that have previously been encrypted with the ENCODE command. A file can only be decrypted correctly if you use the same password that was used to encrypt the file.

## Type :

Internal to MAX.COM

## Syntax :

DECODE [d1 :] [path1] filespec1 [d2 :] [path2] [filespec2]

## Where :

**d1: path1** – Is the drive and path to the file(s) that you want to decrypt.
**filespec1** – Is the name of the file(s) that you want to decrypt. You can use the " ? " and " * " wildcards in the file specification.
**d2: path2** – Is the drive and path to the destination of the decrypted file(s).
**filespec2** – Is the optional name(s) that you want to give the file(s) after they have been decrypted.

## Remarks :

When executing DECODE, you will be prompted for a password. The password must be equal to or less than 20 characters and will be used in the decryption algorithm. If you do not specify a name for the decrypted file, DECODE automatically creates a file called FILE.PWD with the decrypted information. There is no limit to the size of the file that you want to encrypt.

## Example :

We assume that you have a database file, TOPSEC, which has been encrypted with the ENCODE command. You now want to decrypt the TOPSEC file and you know that the password used to encrypt the file is SECRET. To decrypt the file TOPSEC with the password SECRET and give the decrypted file the name PUBLIC.DBF, type :

## DECODE TOPSEC PUBLIC.DBF

When DECODE prompts you for the password, type SECRET. The contents of the file is decrypted and copied to a fil called **PUBLIC.DBF** . The original encrypted file, TOPSEC, will still be present.

# The DEL Command

## Purpose :

This command deletes a file or range of files which you no longer need. Any files deleted with the DEL command can easily be recovered wlth the UNDEL command. If you want to ensure that the file(s) are deleting cannot be recovered, use the WIPEFILE command to delete them.

## Type :

Internal to COMMAND.COM

## Syntax :

DEL [d : ] [path] filespec

## Where :

**d: path** – Is the drive and path from which to delete
**filespec** – Is the file or range of files to delete. You can use the **“ ? ”** and **“ * ”** wildcards in the filespec.

## Remarks :

DEL supports the wildcard characters **“ ? ”** and **“ * ”**. This allows for the deletion of groups of files when required. Be very careful when you use wildcards to delete multiple files since it is easy to accidentally delete important files this way.

The DEL command will not delete files with the Read-Only, System, and / or Hidden attributes set.

## Examples :

You can delete all files in the default directory by typing :

DEL * **.** *

If you want to delete all files with the extension .BAK in the root directory of you’re **A :** drive and you are currently on the **C :** drive, you can type :

DEL A : \ * **.**BAK

If you are in the root directory on the **C :** drive and you want to delete all files with the first six letters 1990DT in the C:\ LAST YEAR directory, you should type :

DEL \ LAST YEAR \ 1990DT *** . ***

If you want to delete the full contents of a directory, X-DOS will prompt you for confirmation before proceeding.

Unlike the WIPEFILE command, DEL does not delete the file entirely. Rather, the sectors used by the erased files are simply made available for use by subsequently written files. Until these sectors are used, the files can be recovered using the X-DOS UNDEL command. If you want to ensure that deleted files cannot be recovered, use the WIPEFILE command.

# The DIR Command

## Purpose :

This command displays a file or list of files in a directory. Several available switches and different colors for different file groups makes the DIR command both very powerful and at the same time easy to use. Preferred switch settings can be set as default in the system environment with the SET command.

## Type :

Internal to COMMAND.COM

## Syntax :

DIR [d : ] [path] [filespec] [/switches]

## Where :

**d: path** – Is the drive and path that you want to display files from.
**filespec** – Is the range of files that you want to display. You can use the **" ? "** and **" * "** wildcards in the filespec.

## Available Switches

**/A** – Displays files including their file attributes.
**/B** – Sorts the files by filesize before displaying them.
**/D** – Sorts the files according to the date and time stamp before displaying them.
**/F** – Sorts the files in alphabetic filename order before displaying them.
**/N** – Displays the files in directory order (no sort performed).
**/S** – Includes hidden files in the directory output.

## Remarks :

The DIR command has many switches which allow you to tailor the output that you need. If you run the DIR command with no specifications or switches, you will get a two-column display of the default directory files, sorted by

filename extension. The output for each file consists of the filename, the extension, the size, and the time and date, the file was last written to disk.

To enhance the directory list, DIR will display files in different colors, according to the filename extenslon. Since different users may have different favorite DIR outputs, it is possible to set your preferred DIR output in the environment with the SET DIR = /switches command. Alternatively, you can set your favorite DIR switches using the X-DOS INSTALL program as detailed in chapters 4. and 5. .

DIR will stop automatically at the end of each page. So you do not need a /P switch (unlike the SDIR command) to stop the display.

## Examples :

If you want to display all files with a **.BAT** file extension in the BATCH directory ony our **C :** drive, you can type :

```
DIR C: \BATCH \ *.BAT
```

If you wish the directory display to be the same as the DOS standard, you can use the SDIR command or type the EMULATE ON statement. Note that the X-DOS DIR command also works with the redlrectlon character.

# The DISKCOMP Command

## Purpose :

This command compares the contents of two dlskettes of equal density and displays detailed information about any differences.

## Type :

External Command

## Syntax :

DISKCOMP d1: [d2:] [/1] [/8]

## Where :

**d1 :** – Is the floppy drive which holds the first diskette to compare
**d2 :** – Is the floppy drive which holds the second diskette to compare. If you leave out **d2:** , DISKCOMP automatically assumes **d1 :** for both diskettes and you will have to swap diskettes one or more times.
**/ 1** – Forces DISKCOMP to compare only the first side of each dlskette. This way, you can compare the contents of a 180K and 360K diskette.
**/ 8** – Forces DISKCOMP to compare only 8 sectors per track of each diskette. This way, you can compare the contents of a 320K diskette with a 360K diskette. If you include both the /1 and the /8 switches, you can also compare the contents of a 160K and 360K diskette.

## Remarks :

DISKCOMP will attempt to read the content of the source diskette in conventional, XMS memorys, expanded memory or hard disk if there is not enough memory. Therefore, even for large capacity diskettes, there is no need to change diskette. Note that DISKCOMP can only accept diskettes of the same density.

## Examples :

To compare the content of two 360K diskettes in the same physlcal drive, drive the command :

DISKCOMP A :A:

# The DISKCOPY Command

## Purpose :

This command compares the contents of two dlskettes of equal density and displays detailed information about any differences.

This command makes an image copy ot a diskette onto anotner diskette of the same density. The destination diskette does not need to be formatted.

## Type :

External Command

## Syntax :

DISKCOPY d1 : [d2 :] [ /1] [ /8]

## Where :

**d1 :** – Is the floppy drive which holds the source diskette to make an image copy from.
**d2 :** – Is the floppy drive that contains desination diskette which will hold the image copy. If you leave out d2 : , DISKCOPY automatically assumes d1 : for both diskettes and you will have to swap diskettes one or more times.
**/ 1** – Forces DISKCOPY to make an image copy of only the first side of each diskette. This way you can make and image copy from a 360K diskette onto a 180K diskette.
**/ 8** – Forces DISKCOPY to make an image copy of a 360K diskette and only use the first 8 sectors per track. This provides you with a way to make an image of a 360K diskette. If you include both the **/ 1** and the **/ 8** switches, you can also make an image copy of a 360K diskette onto a 160K diskette.

## Remarks :

DISKCOPY will attempt to read the contents ot the source diskette in conventional, XMS memory, expanded memory or hard disk if there is not enough memory. Therefore, even tor large capacity diskettes, there is no need to change diskettes.

If the target diskette is not formatted, DISKCOPY will lprompt you to format it.

## Examples :

To copy the contents of 1.2MB diskette in the **A :** drive to a blank 1.2MB diskette in the **B :** drive, type the command :

DISKCOPY A **:** B **:**

# The ED Command

## Purpose :

Full-screen editor with advanced features to create, dlsplay, and edit ASCll files. Use ED to create batch files and other simple text files.

## Type :

External Command

## Syntax :

ED [d :] [path] [filename] [ /W ]

## Where :

**d: path** – Is the drive and path to the file that you want to load into ED.

**filename** – Is the name of the file that you want to load into ED.

**/ W** – Enables you to edit files in " Wordstar format ".

## Remarks :

Please refer to Chapter 9. for a detailed explanation of how to use ED.

# The EMULATE Command

## Purpose :

This command allows you to substitute the STYPE and SDIR commands (detailed later in this manual) for the TYPE and DIR commands. The STYPE and SDIR commands emulate the look of the MS-DOS TYPE and DIR commands. This may be useful to require a hlgh degree of compatibility wlth other dlsk operating systems.

## Type :

Internal to COMMAND.COM

## Syntax :

EMULATE ON | OFF

## Where :

**ON** – Makes X-DOS emulate the TYPE and DIR similar to the one available in MS-DOS.

**OFF** – Turns OFF emulation and comes back to X-DOS DIR and TYPE commands.

## Remarks :

The EMULATE command renames the STYPE and SDIR commands to TYPE and DIR so that you can use these commands the same way as thelr counterparts in MS-DOS. With EMULATE ON when you do a DIR command, the directory of files will appear on your screen exactly as in MS-DOS. Some application programs may use these commands through DOS gateways. Therefore, if you experience problems running an application program, you should try to run the EMULATE command before running the applicatlon program, like this:

```
EMULATE ON
```

If the application command uses TYPE or DIR during execution, it will use the STYPE and SDIR commands instead of the more powerful TYPE and DIR commands, which cannot be accessed agaln before EMULATE is set to OFF.

To re-install the normal TYPE and DIR commands, you should type :

```
EMULATE OFF
```

Note that for compatibility reasons, in batch files EMULATE is set as ON.

# The ENCODE Command

## Purpose :

This command encrypts the contents of a file, renderlng it unreadable to anyone who does not know the chosen password. Encrypted files must be decrypted with the DECODE command, uslng the same password.

## Type :

Internal to MAX.COM

## Syntax :

ENCODE [d1 :] [path1] filespec1 [d2 :] [path2] [filespec2]

## Where :

**d: path1** – Is the drive and path to the file(s) that you want to encrypt.

**filespec1** – Is the name of the file(s) that you want to encrypt. You can use the **" ? "** and **" * "** wildcards in the file specification.

**d: path2** – Is me drive and path to the destination of the encrypted file(s).

**filespec2** – Is the optional name(s) that you want to give the file(s) lafter they have been encrypted.

## Remarks :

when executing ENCODE, you will be prompted for a password. The password must be equal to or less than 20 characters long and will be used in the encryption algorithm. If you do not specify a name for the encrypted file, ENCODE automatically creates a file called FILE.PWD with the encrypted information. There is no limitation to the size of the file that you want to encrypt.

## Examples :

To encrypt the file SECRET.TXT, you will run the command as

ENCODE SECRET.TXT SECRET.PWD

When ENCODE prompts you for the password, enter your personal password and type [ENTER]. ENCODE will generate the file SECRET.PWD . Note that the original file is still available and you should delete this fie to ensure that no-one can read its contents.

Oh, and one more thinlg. Don’t forget the password !

# The EXIT Command

## Purpose :

This command encrypts the contents of a file, renderlng it unreadable to anyone who does not know the chosen password. Encrypted files must be decrypted with the DECODE command, uslng the same password.

## Type :

Internal to MAX.COM

## Syntax :

EXIT

## Remarks :

The EXIT command is most frequently used when a local copy of COMMAND.COM has been invoked from the application program, when you issue a GATEWAY to thE DOS for instance.

Typing the EXIT command will return you to the previous application, and remove the local copy of the Command Processor from the memory.

# The FDISK Command

## Purpose :

This command can help you make the low-level format and partition hard disk.

It can also password protect the hard diks partitions and make them read-only.

## Type :

External Command

## Syntax :

FDISK

## Remarks :

FDISK is a menu-driven utility which allows you to perform the following tasks :

- Low level format MFM and RLL hard disks.
- Enter bad track iformation on your hard disk.
- Manage two hard disks.
- Set up eight partitions on two hard disks with four partitions on each hard disk.
- Create partitions up to 512 megabytes In size.
- Make partitions Read-Only.
- Password protect partitions.
- Activate a partition.
- Delete any existihg partitions.
- Display hard disk related data

FDISK is used to initialize and write partition data onto a new hard disk, or a hard disk which you want to prepare again, before the FORMAT command is

used. Prior to creating any partitions on a new hard disk that you may have to low-level format it. Once the media is low-level formatted, you can create one or more partitions, and finally, you can run the FORMAT command to prepare the partition(s) for data. You may not need to low-level format a hard disk more than once in the disk's lifetime unless you experience problems with the disk.

FDISK can be used to manipulate existing partitions that you have created with X-DOS. You can change the size of a partition, create a new partition, or delete an old partition. Whenever you create a partition or change the size of an existing partition, you need to reformat the affected partition(s).

Make sure that you do not use FDISK to modify a partition that contains valuable data, since the data will be lost. X-DOS allows you to create and access partitions up to 521 megabytes in size. X-DOS also lets you boot from partitions up to 512 megabytes. Please be aware that if you use X-DOS's FDISK to create one or more partitions larger than 32 megabytes, you may not be able to access the partitions larger than 32 megabytes with other disk operating systems.

One of the very powerful features of FDISK is its abiity to make one or more partitions Read-Only to prevent accidental deletion or modification of data. Another feature is the ability to create high security partitions with password protection. Without the password(s), no-one will be able to access the partition(s) you set up with password protection.

FDISK has on line help facility by pressing the F1 key.

## How to use FDISK

When you run FDISK, it displays a screen with one menu and two information windows. Before the main dlsplay of FDISK, you may see a message saying that FDISK encountered an Error Reading / Wrlting to your hard disk. If your hard disk has not been previously formatted, you should disregard this message and press any key to go to the main menu. The upper left window on the screen is the FDISK main menu and all main options are available from this menu. On the right of that screen, FDISK will show the current hard disk configuration of your system. In case you have two hard disks, FDISK will first

show the hardware information of your primary hard disk.

The main menu gives you six options to choose from, as detailed below.

---

## Hard Disk Operation

In this menu, you can peform two taks :

- Switch to another hard disk for installation, if you have more than one hard disk installed in your computer.
- Enter bad tracks, set the interleave, and low level format a hard disk.

The low level format necessitates explanation since its operation is risky and fairly technical. While you want to change partition sizes and partition information more than once, you normally only need to low level format a hard disk once. If you choose this option, FDISK will ask you if you want to input bad tracks. Normally, when you buy a new hard disk, it either has a sticker attached to the drive or comes with a separate piece of paper containing information about the bad tracks of the disk. Almost all hard disks contain bad tracks manually. Bad tracks are always identified by a combination of Cylinder and Head. FDISK expects you to enter both values in the bad track window. When you are finished to enter all the bad tracks, type [ESC] to return to the previous menu.

FDISK also expects you to enter the interleave factor of the drive. FDISK prompts you with 5 choices of interleave factors. The Interleave factor defines how many rotations of the disk it takes to read a complete disk track. And interleave of 1 to 1 means that a complete track is read in one rotation while it takes 3 rotations to read a complete track if the interleave factor is set to 3 to 1. You should consult the manual of your hard disk controller to find out which interleave to select. If you cannot find any information about the recommended interleave factor, you may choose factor 4 to 1 for older 8088 or 8086 computers, and factor 3 to 1 or 2 to 1 for faster computers.

Once you have specified the interleave factor, FDISK will prompt you with a menu to continue the low level format operation or aborting it. If your answer is Yes, FDISK will warn you for the last time about the consequences of proceeding with the low level formatting. Read it carefully and if you are still sure that you want to proceed with the low level formatting, then press a key. If not, simply press [ESC] to return to the main menu.

---

## Create Partition

Use this menu item to add partitions to the currently selected hard disk. You can have up to 4 partitions on each hard disk when installed with FDISK, altough X-DOS recognizes up to 16 partitions installed with other partition tools like DlskManager or Speedstor. If all the cylinders of the disk have already been allocated, FD ISK will display an error message. If you want to change the size of a partition, you must first remove it by using the Remove Partition function. Note here that removing a partition will make it impossible to access again.

---

## Active Partition

Use this menu to tell X-DOS which partition that you should boot from. This gives you the ability to have multiple operating systems on your hard disk. You could for instance have X-DOS on one partition, MS-DOS and UNIX on others. In order to boot with X-DOS, unlike UNIX, you must specify here the boot partition. Also make sure that you choose a bootable partition on which you have the X-DOS system or on which you plan to install IX-DOS. As an advice, choose the first partition as your boot partition.

---

## Remove Partition

With this menu, you can remove any partition declaration in your partition record. Please note that the X-DOS FDISK utility let you remove partitions even if they are not DOS partition. You are allowed to remove a UNIX partition if it exists. You must be very careful when using this option, since removing partition makes it unrecoverable. If the partition that you wish to remove has been password protected,you must remove the password first.

## Partition access

This is all interesting securlty feature of X-DOS, and you should read it carefully since it is not available on the other DOS. With this menu, you can assign safety precautions to any of your partition that you wish which are either X-DOS or normal DOS partitions. When choosing this menu, a submenu will appear and present to you with 4 new options :

The Read-Write option is the default option for X-DOS partitions. It is simply means that you can both read and write data from and to the hard disk.

The **Read-Only** option prevents data from being written to the disk. It Is especially useful if you allow other people to access data which does not change on a regular basis. You will, of course have to copy the information first to the partition,with the Read-Write attribute set, before you change it to Read-Only.

The **Add Password** option let you specify a password up to eight characters long for the password you have selected. If you choose to put a password to any of your DOS partitions, you will be prompted for a password at boot time for each of the protected partitions. If you faill 3 times to input a correct password or wait more than 20 seconds without typing anything, the system will boot normally, but you will not be able to access the drive for which a password has been set. Attempting to access the drive by changing drive at the DOS prompt will result in the error message : **Drive Invalid**. If you decided to protect a disk partition, you should make sure not to forget the password.

The **Remove Password** option enables you to remove a previously assigned password to a partition. For security reasons, you must first retype the correct password before you can remove it.

## Exit FDISK

When you have finished preparing your hard disk or changing any partition information, choose the Exit optlon. FDISK will warn you in some cases that it needs to reboot the system since some modifications have been made to it.

# The FIND Command

## Purpose :

This command searches for a specific text string in a file or range of files and displays any occurrences of the text pattern.

## Type :

Internal to MAX.COM

## Syntax :

FIND " string " [d :] [path] filespec [/C ] [/S ]

## Where :

**string** – Can be any combination of ASCII characters up to 64 characters long.
**d: path** – Is the drive and path of the filespec to search through.
**filespec** – Is the fiie or range of files whlch are searched by FIND. You can Include the **" ? "** and **" * "** wildcards in the file spedification.
**/ C** – Makes FIND perform a non case sensitive search.
**/ S** – Makes FIND include sub-directories in the search.

## Remarks :

FIND will search tor any combination of ASCII characters as defined in the string in all files that match the fllespec you enter. You must enclose the ASCII string in quotation marks. The filespec can contain tile wlldcards **" * "** and **" ? "** to extend the search to multiple files.

FIND will list the filename, the line number within the file and the line of text whlch contains the string for every matching string within given filespec. As a default, the search is performed in the default directory with case sensitivity. FIND has two switches to extend its use, **/ C** and **/ S**.

The /C switch will force FIND to make the search a non case sensitive.

The /S switch will allow FIND to search for a matching string in all files matching the filespec in the default directory including all sub-directories of that directory.

## Example :

If you want to find an  occurrences of the world “ message “ in a file named MAN.DOC, you should type :

FIND “message” MAN.DOC

# The FORMAT Command

## Purpose :

This command prepares a hard disk or diskette for use by X-DOS. You have safe format and quick format modes available besides the normal, destructive formatting.

## Type :

External Command

## Syntax :

FORMAT d : [/switches]

## Where :

**d:** – Is the drive you want to prepare for use by X-DOS.

## Available Switches :

**/1 or /180** – Will only format side one of a diskette.
**/3 or /720** – Will format a 720K diskette in a higher density floppy drive.
**/4 or /360** – Will format a 360K diskette in a higher density floppy drive.
**/8 or /320** – Will format a 360K diskette 8sectors per track, glving it a total capacity of 320K.
**/1/8 or /160** – Will format a 360K diskette to a capacity of 160K.
**/K** – Will perform a safe format of a hard disk by saving only the FAT table and directory table in a temporarily safe place.
**/Q** – Will perform a quick format which only erases the FAT table and directory table in on the hard disk or diskette.
**/R** – Will attempt to recover all filies on a hard disk which has previously been formatted with the /K (safe format) switch enabled.

## Remarks :

FORMAT is used to do the basic preparation of a diskette or hard disk for use by the operating system. It is the equivalent of drawing writing guidelines on a blank sheet of paper, to make it possible to write evenly across the paper.

Since disk operating systems rely so heavily on the use of external media such as diskettes and hard disks, it is required to have a FORMAT program that addresses all of the configurations of dlskettes and hard disks utilized by computers that might run the X-DOS operating system. X-DOS currently works with 160K, 180K, 320K, 360K, 720K, 1.2M, and 1.44M diskettes, in both 5¹/4" and 3¹/2" configurations, and any hard disk partitions up to 512 megabytes.

The X-DOS format command has a safety feature which will allow you to save the data on the disk if the appropriate switch is turned on. You can activate the FORMAT with the /K switch. Or you can set the FORMAT = /K in the enviroment. When formatting a hard disk, this will save the FAT table and the root directory for later recovery if needed.

## Examples :

If you want to format a 360K diskette in a 1.2MB diskeete drive, type the command as :

```
FORMAT A : /4
```

# The FORMFEED Command

## Purpose :

This command sends a formfeed command to a printer connected to the prInter port.

## Type :

Internal to COMMAND.COM

## Syntax :

FORMFEED

## Remarks :

This command is very useful when used with some laser prInters, as they leave one page in the machine, if the last page of a printout did not fill up with text.

When you print on continuous paper on a dot matrlx prInter and the last page or your prIntout does not fill up with text, you can use FORMFEED to advance the paper to the top of the next page.

## Examples :

If you want to eject the last page in your laser printer, type this command :

FORMFEED

# The INSTALL Command

## Purpose :

This command copies X-DOS onto a hard disk or set of diskettes and helps you to set up a range of configuration parameters. If you are setting up X-DOS on top of another operating system, INSTALL ensures that the destination drive will boot with X-DOS without you having to format the drive.

## Type :

External Command

## Syntax :

INSTALL [d: ]

## Where :

**d:** – Is the optional drive on which you want to install X-DOS.

Please refer to Chapter 4., Installing X-DOS, for more details.

# The JOIN Command

## Purpose :

This command assigns a drive to a specific path on another drive.

## Type :

Internal to COMMAND.COM

## Syntax :

JOIN d1: d2: \directory

Or JOIN d1: /D

## Where :

**d1:** – Is the drive letter to be jolned to another drlve.

**D2:** – Is the drive letter of the drive on which drive **d1:** is joined.

**path** – Is the path to the directory on drive **d2:** which drive **d1:** is joined to.

**directory** – Is the directory on drive **d2:** which drive **d1:** is joined to.

**/D** – Is a switch that disables the joining of drlve **d1:** and returns it to normal state.

## Remarks :

Once a drive is joined, it cannot be accessed unless the JOIN **:/D** is activated or the PC is rebooted.

If no parameters are given on the command line, JOIN will display the currently joined drive.

You can specify one directory from the root to join a drive. If the name of the directory already exists, it becomes unavailable until JOIN is active.

# The KD (KILLDIR) Command

## Purpose :

This command allows you to remove directories from a hard disk or diskette including all files and subdirectories below it.

## Type :

Internal to COMMAND.COM

## Syntax :

KD [d: ] [path] directory

## Where :

**d:** – Is the drive.

**[path]** – Is the path to the directory that you want to remove.

**directory** – Is the name of the directory that you want to remove

## Remarks :

Unlike the RD command which requires that a directory to be deleted is empty, with the KD command, the directory you want to remove can contain any level of sub-directories and files in it. Thus, this command is more powerful but more dangerous than the RD command. If a file in one of the sub-directories is a read-only file, the KD command will prompt you to confirm whether you wish to remove this file or not.

## Examples :

If you are currently in the root directory of the **C:** drive and you want to remove the **C: \ OLDDIR** directory and all the files and sub-directories in it you should type :

KD OLDDIR

# The KEYB Command

## Purpose :

This command lets you install one of the 14 foreign keyboard layouts.

## Type :

External Command

## Syntax :

KEYB xx

## Where :

xx =

**BL** . . . to install the Belgian keyboard layout.
**CA** . . . to install the Canadian/French keyboard layout.
**DK** . . . to install the Danish keyboard layout.
**DU** . . . to install the Dutch keyboardl layout.
**FR** . . . to Install the French keyboardl layout.
**GR** . . . to Install the German keyboad layout.
**IT** . . . to install the Italian keyboard layout.
**LA** . . . to install the Latin American keyboard layout.
**NW** . . . to— install the Norwegian keyboard layout.
**PO** . . . to install the Portuguese keyboard layout.
**SP** . . . to install the Spanish keyboard layout.
**SW** . . . to install the Swedish keyboard layout.
**CH** . . . to install the Swiss keyboardl layout.
**UK** . . . to install the United Kingdom keyboard layout.

## Remark :

KEYB re-assigns the layout of the keyboard for various foreign keyboards.

KEYB should be included in your AUTOEXEC.BAT file if you wish to use a keyboard layout, other than the United States default.

When KEYB has been activated from the command line, you can always switch between the United States keyboard layout with the [Ctrl] [Alt] [F1] hot key and your chosen foreign keyboard layout with the [Ctrl] [Alt] [F2] hot key.

As an added feature, you have instant access to a symbols keyboard by pressing [Ctrl] [Alt] [F3] hot key. You can then use the keys on the keyboard to type mathematical symbols and the numeric keypad for line and box drawing. In the symbols mode, you can switch between two sets of symbolic characters including single line and double line drawing characters by holding the [Shift] key down.

[Ctrl] [Alt] [K] will call up a layout display of the currently selected keyboard layout. Pressing the [Shift] key will show the Upper-case key definitions, pressing the [Alt] key will show the available keys, when pressing the [Alt] key at the command line and pressing the [Shift] keys will show the available keys when pressing the [Alt] [Shift] keys at the command line. Not all keyboard layouts support definitions with the [Alt] key and the [Alt] [Shift] keys.

## Examples :

If you want to install the French keyboard driver on your computer, you should type :

```
KEYB FR
```

# The LABEL Command

## Purpose :

This command lets you assign a volume label to a diskette or a partition on a hard disk to identify the disk(ette).

## Type :

Internal to MAX.COM

## Syntax :

LABEL [d: ] [labelname]

## Where :

**d:** – Is the drive.that you want to give a volume label.

**labelname** – Is the volume label that will be assigned to the drlve.

## Remarks :

LABELwill overwrite any existing volume label that has previously been assigned to the disk(ette). If no drive is specified when running LABEL, the default drive will automatically be assumed.

If labelname is not specified when running LABEL, you will be prompted for a volume label.

A volume label can be no longer than 11 characters long.

## Examples :

If you want to put the volume label " X-DOS 5-0 " on the default drive, type the command :

LABEL X-DOS 5-0

# The LOADFIX Command

## Purpose :

This command ensures that a program is loaded above the first 64K of conventional memory. It may be necessary to use this command if the error message “Packed file corrupted“ appears if you are running X-DOS in HMA.

## Type :

Internal to COMMAND.COM

## Syntax :

LOADFIX [d: ] [path] filename [program parameters]

## Where :

**[d: ] [path]** – Is the drive and path where the program is located.

**filename** – Is the name of the program that it is wished to run.

**[program parameters]** – Are any switches or parameters used when running the program.

## Example :

To ensure that a program named APPLICAT.EXE in the MISC directory on the **C:** drive is loaded above 64K that you would type :

LOADFIX C: \MISC\APPLICAT.EXE

# The LOCK Command

## Purpose :

This command prevents access to a partition on a hard disk. This partition must have been programmed by the FDISK utility to be password protected. You can access a locked partition again with the UNLOCK command.

## Type :

Internal to MAX.COM

## Syntax :

LOCK d **:**

## Where :

**d:** – Is the drive letter for the hard disk partition that you wish to lock so that a password is required to access it again.

## Remarks

You cannot lock a partition on the default drive.

# The MAPMEM (MEM) Command

## Purpose :

This command lets you display detailed information about the memory usage and available memory in your computer. A list of memory resident programs is also displayed.

## Type :

Internal to MAX.COM

## Syntax :

MAPMEM

## Remarks:

MAPMEM has many useful purposes but one of the most valuable purpose is its ability to tell you which programs are currently resident in the memory.

The MAPMEM display is split into two windows. The upper window gives you information on the conventional memory, DOS and data memory usage, expanded memory, and extended memory in your computer and tells you how much of each kind of memory is still available for your use. The lower window displays information on any programs currently resident in memory as well as the interrupt vectors hooked to these programs.

# The MD (MKDIR) Command

## Purpose :

This command creates new sub-directories on your diskettes and hard disk(s).

## Type :

Internal to COMMAND.COM

## Syntax :

MD [d: ] [path] directory

## Where :

**d: path** – Is the drive and path where you want to create a new sub-directory.
**directory** – Is the name of sub-directory that you want to create.

## Remarks :

The MD command is used to create new sub-directories. You have to specify a name for the new sub-directory which is different from any existing file or sub-directory in the directory where you want to create the new sub-directory. You cannot create a sub-directory to a non-existlng directory.

For example, MD cannot create the sub-directory \FINANCE\REPORTS if the \FINANCE directory does not already exist.

The root directory is automatically created when a disk(ette) is formatted and must always be present on a hard disk or diskette. You can create directories in the root directory, and you can create directories in a directory of the root directory. DIrectories below the root directory are called sub-directories.

## Examples :

If you want to create a sub-directory called NEWDIR in the root directory on your default drive, you should type :

```
MD \NEWDIR
```

# The MODE Command

## Purpose :

This command lets you control peripheral devices such as parallel printers, serial printers, graphics adapters, and keyboard speed from either the command line or from a full-screen dlsplay. The full screen display provides an easy menu driven environment for executing the MODE functions. In the full screen mode support for setting the cursor shape is also provlded. MODE also supports laptop displays from the command line. The current settings of the MODE command are stored in the file MODE.CFG for later retrieval and editing.

## Type :

External Command

## Syntax :

MODE [parameters]

## Remarks :

When you type MODE with no parameters, you get a full screen display command, from which all functions available at the command line are available in a more user friendly manner.

There are 6 different formats of the MODE command from the command line.

**Parallel Printer Mode**

**MODE LPT# [ : ] [,CPL] [,LPI]**

**LPT# Parallel printer port number # . #** can have a value from 1 to 3.
**CPL Characters Per Line. CPL** can be set to either 80 or 132 characters per line.
**LPI Lines Per Inch. LPI** can be set to either 6 or 8 lines per inch.

**Redirect Parallel Printer**

**MODE LPT# = COM#**

**LPT# The parallel printer port to redirect. #** can have a value from 1 to 3.
**COM# The serial communications port to redirect the parallel printer output to. #** can have a value from 1 to 4.

## Communication Mode

MODE COM# [ : ] = bps [, parity] [,databit] [,stopbits]

**COM# Serial communications port number # . #** can have a value from 1 to 4.
**= bps Sets the transmission speed.** Valid transmission speeds are : 110 , 150 , 300 , 600 , 1200 , 2400 (default) , 4800 or 9600.
**,parity Sets tile parity check.** Valid entries are : N for No parity (default), E for Even parity or O for Odd parity.
**,databits Sets the number of bits per character.** Valid entries are 7 or 8 (default) bits per character.
**,stopbits Set the number of bits ending a character.** Valid entries are for 1 or 2 (default) Stop bits.

## Video Mode

Video Sets the video mode. Valld video modes from the command line are : 40 , 80 , BW40 , BW80 , CO40 , CO80 , MONO , EGA or VGA.

## Keyboard speed mode

MODE KBx

x is F for Fast keyboard response, M for medium, S for Slow.

## Laptop Mode

MODE LAPTOP

LAPTOP translates color attributes into black and white which makes them easily visible on laptop dlsplays.

From the command line, you can only specify one peripheral change at a time. So if you want to change the parameters for both the video display and one of the communication port, you will have to issue the MODE command twice.

## Examples :

To set the parameters for serial communications port to COM1, 9600 bps, No parlty, 7 databits, ans 1 stopbit; to redirect the output for the parallel printer LPT1 to the serial port COM1; to set the video adapter into the 43 line mode (EGA mode); to set the keyboard response to Fast — from the command line, you should issue the following four commands :

```
MODE COM1 : 9600,N,7,1

MODE LPT1 = COM1

MODE EGA

MODE KBF
```

If you have configured your PC with the MODE command, you can automatically retrieve all the MODE parameters by typing MODE AUTO at the command line. TheMODE settings that you configure are saved in a file called MODE.CFG. You should not delete this file, and note that this file cannot be edited directly but only by using the MODE command.

# The MORE Command

## Purpose :

The more command can be used to display one screen of output at a tlme. The MORE command reads input from a plpe or redirected filie and displays one screen of informatlon at a time.

## Type :

Internal to COMMAND.COM

## Syntax 1:

MORE < [d: ] [path] filename

## Syntax 1:

Commanld-name | MORE

## Where :

**d: path** – Is the drive and path where you want to create a new sub-directory.

**<** – Is the redirection character.

**[d: ]** – Is the drive on which the file is situated.

**[path]** – Is the directory in which the file is situated.

**filename** – Is the name of the file that it wished to display.

**command-name** – Is the name of command to be issued.

**|** – Is the pipe character.

## Remarks :

A filename must be specified as the source if you use the redlrectlon character (<). If you use the pipe ( | ), you can use commands such as DIR , TYPE , SORT , etc. Note that you should set the TEMP environment variable

in your AUTOEXTEC.BAT file before using a pipe for redirection

## Examples :

If you have a very long file called LONGFILE.TXT which you wish to view on your monitor one screen at a time, you may use either of the following commands to redirect the file through the MORE command to display the file one screen at a time :

```
MORE     LONGFILE.TXT
```

or

```
TYPE     LONGFILE.TXT    |    MORE
```

The MORE command will display the first screen of text and prompt you with the following message :

```
Press any key to continue
```

When you have finished viewing the contents ot each screen, press any key to view the next screen.

# The NEWVER Command

## Purpose :

This command changes the DOS version that X-DOS should emulate. As default X-DOS emulates a DOS version of 3.3. Changing version number is only necessary if you should need to run a program which cannot run under DOS 3.3.

## Type :

Internal to COMMAND.COM

## Syntax :

NEWVER y.x

## Where :

y – Is the major version number.
x – Is the minor version number.

## Remarks :

The current version number of X-DOS is 5.0, but X-DOS emulates a version number of 3.3. This means that programs running under X-DOS will believe that X-DOS has a version number of 3.3 instead of 5.0. The reason for this is the fact that certain programs expect to find a specific version number and will not run if they do not find the expected operating system version number.

## Examples :

If you want to change the internal version number of X-DOS to 3.2m, type :

```
NEWVER 3.2
```

This will cause the X-DOS VER command to dlsplay :

```
X-DOS Disk Operating System 5.0, emulating version number 3.20
```

# The PATH Command

## Purpose :

This command lets you define a list of directories in which X-DOS will look for executable files if it cannot find the file that you are trying execute in the default directory.

## Type :

Internal to COMMAND.COM

## Syntax :

PATH [d: ] [path] [directory] [( … )]

## Where :

**d: path** – Is the drive and path to the directory to include in the search
**directory** – Is the name of the directory to indude in the search path.
**; ( ... )** – Shows that you can define multiple search paths by separating the different search paths with a semicolon.

## Remarks :

The PATH command allows you to tell X-DOS to search through a list ofsub-directories when you are trying to run an executable file which is not located in the default directory. The list of directories that you specify should include both drive and path, so that you can reach the directories from any drive. When you have defined a search path with the PATH command and run an executable file or batch file, X-DOS will first search for it in the default directory. If it cannot be found there, X-DOS looks for the executable file or batch file in each directory listed in the path search.

If you run the PATH commandvwithout any parameters, PATH dlsplays the currently defined search path. To ensure that you do not need to enter a search path every tlme you boot your computer, you should include the PATH statement in your AUTOEXEC.BAT file. You should always put the search paths to the directories of your most used programs and batch files in the front

of the PATH statement since this will reduce the seek time on your drive(s) for executable files and batch files. X-DOS looks through the PATH list from beginning to end until it encounters a matching filename with an extension of **.**EXE , **.**COM, or **.**BAT.

Also remember to leave at least a path to the \DOS directory for X-DOS to find utilities.

## Examples :

If you want X-DOS to search for executable programs and batch files in the \DOS and \DOS\UTIL sub-directories on your **C :** drlve, you can set up the proper search path by typing :

PATH C**:** \DOS**;** C**:**\DOS\UTIL

# The POPD Command

## Purpose :

This command lets you quickly change to directory that you have previously been in. X-DOS continuously keeps a list of the directories that you change to with the CD and CDD commands and the POPD command can directly access any of them.

## Type :

Internal to COMMAND.COM

## Syntax :

POPD [nn] [ * ]

## Where :

**nn** – Is the currenl number of the previous directory that you want to change to. If you run POPD without any parameters, it will change to the previous directory.

***** – Makes POPD display a list of every directories that you have previous bee in. Each directory has an assigned number which you can use to change to a particular directory.

## Remarks :

X-DOS keeps a list of every directory, including drive and path, you change to with the CD and CDD commands. You can use this list of previous directories to change directly to almost any previous directory immediately with the POPD command. X-DOS has allocated 196 bytes of memory to store previous directories in, and this amount of memory is enough to hold 10 to 15 previous directories.

You can always display a list of the directories that you can change to with POPD by typing :

POPD *

If you execute the above command on your computer, your directory list is going to reflect the directories that you was previously in. The first directory in you list, which has the number (01) allocated to it, is the directory you was in just before changing to the default directory. You can change to the previous directory that you was in one of two ways. You can type :

```
POPD 1
```

Alternatively, you can just type :

```
POPD
```

# The PRINT Command

## Purpose :

This command prints ASCII text files to any standard output devlce. The PRINT command is memory resident and prints in the background while you can continue working on something else.

## Type :

External Command.

## Syntax :

PRINT [d: ] [path] [filespec] [output] [switch]

## Where :

**nn** – Is the drive and path to the file or range of files that you want to print.

**filespec** – Is the file or range of files to print. You can use the **" ? "** and **" * "** wildcards in the file speclfiation.

**output** – Is the standard output device the file(s) are sent to. It can be one of the following : PRN , LPT1 , LPT2 , LPT3 , COM1 , COM2 , COM3 , COM4 or AUX.

## Available Switches :

**/A** – Makes PRINT abort the current print job. If there are other files in the prlnt queue, the next one will be processed. If you want to abort the current print job and also clear all files in the prlnt queue, you have to clear the queue with the /E switch betore aborting the current print job.
**/D** – Displays a list of the files in the print queue.
**/E** – Removes any files from the print queue.

**/I** – Toggles the extended character set ON or OFF. Default setting is printable ASCII characters are translated into printable ASCII characters while all other the remaining extended characters are discarded.

**/T** – Puts a header followed by two blank lines on every printed page. Furthermore, a formfeed is issued at the end of every print job.

## Remarks :

PRINT is a memory resident program that facilitates prlnting from the X-DOS environment. To print out a range of files, use wildcard characters when specifying the filespec for PRINT. A prlnt queue is automatlcally set up, contalning all the files currently being prlnted. As many as 25 files can reside in the prlnt queue at any time.

PRINT can send the output to any of the standard output devices PRN , LPT1 , LPT2 , LPT3 , COM1 , COM2 , COM3 , COM4 or AUX by specifying the output devlce after the filespec. If no output device is specified, PRINT uses the default setting of PRN.

## Examples :

If you want to print all files in the BUSINESS directory with the first four letters " MAIL " and you want to put a header on the top of each page and make each file print on the top of a new page, you should type :

```
PRINT \BUSINESS \MAIL *.* /T
```

# The PROMPT Command

## Purpose :

This command allows you to customize the X-DOS prompt.

## Type :

Internal to COMMAND.COM

## Syntax :

PROMPT [string]

## Where :

**string** – Can be any valid prompt string consisting ot normal characters or metacharacters are defined below.

## Metacharacters :

| | | |
|---|---|---|
| $ 1 | – | specifies white as the prompt color. |
| $ 2 | – | specifies black as the prompt color. |
| $ 3 | – | Specifies light blue as the prompt color. |
| $ 4 | – | specifies cyan as the prompt color. |
| $ 5 | – | specifies green as the prompt color. |
| $ 6 | – | specifies llght magenta as the prompt color. |
| $ 7 | – | specifies llght red as the prompt color. |
| $ 8 | – | specifies light cyan as the prompt color. |
| $ 9 | – | specifies light green as the prompt color. |
| $ $ | – | displays a dollar sign ( $ ) as part of the prompt. |
| $ _ | – | makes a Carriage-return/Linefeed as part of the prompt. |
| $ B | – | displays a vertical bar ( \| ) as part of the prompt. |
| $ D | – | displays current system date as a part of the prompt. |
| $ E | – | makes the Escape character (ASCll 27) part of the prompt. |
| $ G | – | displays a greater-than sign (>) as part of the prompt. |
| $ H | – | makes a destructive backspace as part of the prompt. |
| $ L | – | displays a less-than sign (<) as Part of the prompt. |
| $ N | – | displays the default drive as part of the prompt. |
| $ P | – | displays the default path as part of the prompt. |
| $ Q | – | displays an equal sign ( = ) as part of the prompt. |
| $ T | – | displays the current system time as part of the prompt. |
| $ V | – | displays the version of X-DOS as part of the prompt. |

## Remarks :

X-DOS allows you to change the command line prompt, which is always displayed when X-DOS is ready to accept a command from the command line.

By default, this prompt conslsts of the of the current drive and path followed by a vertical bar and a line feed, like this :

C: \DOS| _

If you execute the PROMPT command without any parameters, PROMPT creates a prompt which is similar to the default prompt of other disk operating systems for personal computers. This prompt only consists of a drive letter followed bya greater-than (>) sign.

The PROMPT command lets you change the default prompt in a variety of ways. Above in the preceding page, you have a list of available metacharacters which have a special function with the prompt command. A metacharacter must always be preceded by a dollar ($) sign or PROMPT to interpret it as a normal character. You can mix metacharacters and normal characters in any way, creating a wide variety of interesting prompts. PROMP does not distinguish between upper and lower-case metacharacters.

If you have a color monitor, you can use the metacharacters $1 to $9 to customize the colors of your prompt. You can include several colors in the prompt. The default X-DOS prompt is $7$P$B$_$8, and you can change this according toyour taste.

## Examples :

If you want a more traditional PROMPT style, type the command –

PROMPT $P$G

# The RD (RMDIR) Command

## Purpose :

This command allows you to remove directories from a hard disk or diskette. You must ensure that a directory that you want to remove is emply before you can remove it. You cannot remove the root directory.

## Type :

Internal to COMMAND.COM

## Syntax :

RD [d: ] [path] directory

## Where :

**d: path** – Is the drive and path to the directory that you want to remove.
**directory** – Is the name of the directory that you want to remove.

## Remarks :

Tne directory that you want to remove must be empty before it can be removed. The " **.** " and " **..** " entries which you will normally see in any directory with the DIR and SDIR commands are not file or directory entries. You cannot delete them and they do not prevent the RD command from deleting a directory.

You cannot remove directories that have hidden files or directories in them, so if you have removing a directory, you should execute the DIR command with the /S switch in the directory, you want to see and to remove if any hidden files or directories exit. If you specify a path to the sub-directory that you want to remove, the sub-directory at the end of the specified path will be the sub-directory that will be removed.

## Examples :

If you are currently in the root directory of the C: drive and you want to remove the C:\ OLDDIR directory, you should type :

```
RD OLDDIR
```

# The REN (RENAME) Command

## Purpose :

This command lets you change the name of a file or range of files..

## Type :

Internal to COMMAND.COM

## Syntax :

REN [d: ] [path] filespec1 filespec2

## Where :

**d: path** – Is the drive and path that holds the file(s) to be renamed.

**filespec1** – Is the file or range of files that you want to rename. You can use the " ? " and " * " wildcards in the file specification.

**filespec1** – Is the destination filespec of the file(s) that you are renaming.

## Remarks :

You cannot rename a file to a filename that already exists as a file or direction in the directory where you are renaming a file or group of files.

## Examples :

If you have a range of files in the default directory with the extension .TXT which you want to give the extension .DOC, you should type :

REN *. TXT *.DOC

# The RENDIR Command

## Purpose :

This command lets you change the name of directory.

## Type :

Internal to COMMAND.COM

## Syntax :

RENDIR [d: ] [path] oldname newname

## Where :

**d: path** – Is the drive and path to the directory that you want to rename.

**oldname** – Is the current name of the directory that you want to rename.

**newname** – Is the new name that you want to give the directory.

## Remarks :

The directory that you want to rename does not have to be emplty but you cannot rename the directory that you are currently in. You cannot give the directory a new name which already exits as a filename or sub-directory in the directory which contains the directory that you want to rename.

## Examples :

If you want to rename the BUDGET90 directory, which is a sub-directory of the C: \BUSINESS directory and give it the name BUDGET91, you should type :

RENDIR C: \BUSINESS \BUDGET90 BUDGET91

# The RESTORE Command

## Purpose :

Restores files which was previously backed up onto diskettes from a hard disk with the BACKUP (XBACK) command. RESTORE is an alias that runs on the XBACK command in automatic restoring mode.

## Remarks :

See Chapter10. for full details on the BACKUP (XBACK) command.

# The RSETCAPS Command

## Purpose :

This command toggles the CapsLock light on your keyboard and gets it back in synchronization with the keyboard, should they for some reason get out of synchronization.

## Type :

Internal to COMMAND.COM

## Syntax :

RSETCAPS

# The RSETNUM Command

## Purpose :

This command toggles the NumLock light on your keyboard and gets it back in synchronization with keyboard, should they for some reason get of synchronization.

## Type :

Internal to COMMAND.COM

## Syntax :

RSETNUM

# The SDIR Command

## Purpose :

This command displays the contents of a directory. The SDIR command is compatible with the DIR command from other disk of operating systems and has only been implemented for compatibility reasons.

## Type :

Internal to COMMAND.COM

## Syntax :

SDIR [d: ] [path] [filespec] [/P] [/W]

## Where :

**d: path** – Is the drive and path to the file or range of files that you want to display.

**filespec** – Is the file or range of files that you want to display. You can use the " ? " and " * " wildcards in the file specification.

**/P** – Pauses the file display after each screen and requires you to press a key to continue scrolling.

**/W** – Displays the file list in a 5-column display with only the filename shown.

## Remarks :

SDIR is the TTY counterpart to the much more powerful X-DOS command DIR. SDIR is always resident in the memory just like the DIR command, but SDIR does not peform any kind of sorting of the files and directories, and it does not use colors.

To pause the output to the screen, you can press the [Ctrl] –S keys or the [Pause] key if your keyboard has one. Continue the scrolling by pressing any key. Alternatively, you can specify the /P switch to automatically stop the scrolling after each screen of filenames.

Since the features of SDIR are limited, we suggest that you only use it in cases where you need absolute compatibility with the DIR command from MS-DOS. The SDIR command can be renamed as DIR either by an alias or by having the emulate flap set to ON by typing EMULATE ON at the command line.

## Examples :

If you want to display the contents of the default directory, you should type :

```
SDIR
```

# The SET Command

## Purpose :

Displays or writes information to X-DOS environment. Any information in the environment is made available to all programs. Some of the X-DOS commands take advantage of the environment by reading the user's preferred switch settings.

## Type :

Internal to COMMAND.COM

## Syntax :

SET [name = [parameter]]

## Where :

**name** – Is the name of a variable that you want to set up or clear from the environment.
**parameter** – Is the list of any parameters assigned to the name = variable.

## Remarks :

If you execute the SET command without any parameters, SET displays the current environment settings. You will see a range of variables of the form :

Variable = value

and SET will also display the number of bytes used by the environment and the amount of free environment space.

Many software application packages use environment instead of a disk file to hold configuration information. Batch files may also use the environment area to store temporary information.

SET also displays the number of bytes of your environment and how much is left. Any aliases used are also stored in the environment but can only be displayed by typing the ALIAS command.

## Examples :

If you want to insert a variable, “TEMP = Testing” in the environment, you can do so by typing :

```
SET TEMP =Testing
```

If you later want to release the space used by this declaration, type :

```
SET TEMP =
```

and the variable TEMP will be removed from the environment.

# The SETUP Command

## Purpose :

This command can be used to set the CMOS configuration on 80286, 80386, and 80486 based computers. If your computer has its own setup program, you should use it instead of the X-DOS SETUP command.

## Type :

External Command

## Syntax :

SETUP

## Remarks :

SETUP is totally menu driven and is therefore very easy to use. You should only use SETUP when reconfiguring your harware or when you want to correct the internal clock (the Internal clock keeps track of the current time and date). Your computer will always tell you if the contents of your computer's CMOS RAM is different from the actual computer configuration (except for time and date). During start-up, you might be prompted with the following type of error message :

CMOS configuration error.

Press " F1 " to RESUME.

When you encounter an error message like this, press the " F1" key to boot your computer. Since SETUP is an external command that you must make sure that X-DOS can find it.

A SETUP program has been included in X-DOS in case X-DOS is stored in the ROM, in which case the BIOS SETUP program Is normally removed because of the limitations on the memory space.

# The SHARE Command

## Purpose :

Installs file sharlng and locking in a network environment.

## Type :

Internal to COMMAND.COM

## Syntax :

[d: ] [path] SHARE [/F:space] [/L:locks]

## Where :

**d: path** – Specifies the drive and path containing the SHARE command file if it is Is not in the current directory of the default drive.

**/F:** – Space allocates the file space (in bytes) for the area X-DOS uses to record file sharing informatlon. Each file opened the required enough space for the full filename (including extension) plus 11 bytes. The total space required is the sum of the space used by all open files. The default value is 2,048 bytes.

/L – Locks and allocates the number of locks that you want to allow. The default value is 20 locks.

## Remarks :

The SHARE command is only used when operating in a network environment and has no application on stand alone systems. In a network, the SHARE command governs the sharing of files by several users. In X-DOS, the sharing mechanism is embedded in the kernel and the SHARE.EXE file simply allocates the necessary memory for the SHARE file table and the locks buffer.

## Example :

SHARE

Loads file sharing with the default values for the **/ F** and **/ L** switches.

# The SORT Command

## Purpose :

This SORT command reads data from a file, sorts the records, and writes the data to another file.

## Type :

Internal to MAX.COM

## Syntax :

RENDIR [d: ] [path] oldname newname

SORT [/nn] [/C] [/R] < [d: ] [path]filename1> [d: ][path]filename2

## Where :

**d: path** – Is the drive and path to the file that you want to sort the contents of Filename1 which does not have to reside in the same directory as the directory of the sorted file.
**filename1** – Is the name of the file that you want to sort the contents of.
**filename2** – Is the name of the file which will contain the sorted output of filename1.
**/nn** – Specifies the colunm at which the sorting is performed.
**/C** – Is used to turn case-sensitive sort ON.
**/R** – Forces SORT to sort the data of filename1 in reverse order.

## Remarks :

The sort order is in ascending ASCII character sequence. You may supply the /R parameter to reverse the sort order.

The／C option may be added to cause SORT to treat the sort field as case sensitive data. That is, lower-case letters are treated as different from their upper-case counterparts.

You can sort the contents of a file at any column by specifying the /nn parameter for the column position. If /nn is omitted, the column sort begins from the first colunm and for a length of 12 characters.

# The STYPE Command

## Purpose :

This command displays the contents of a text file as TTY output to the screen. The STYPE command is compatible with the TYPE command from other disk operating systems and has only been implemented for compatibility reasons.

## Type :

Internal to COMMAND.COM

## Syntax :

STYPE [d: ] [path]filename

## Where :

**d: path** – Is the drive and path to the file that you want to display the contents of.

**filename** – Is the name of the file that you want to display the contents of.

## Remarks :

The STYPE command is the TTY counterpart to the much more powerful X-DOS TYPE command. STYPE displays the contents of any tet file on your screen as a continuous, scrolling display. You can temporarily pause the screen output by pressing the [Ctrl]-S hot key or the [Pause] key, if your keyboard has one. Continue scrolling the contents of the text me by pressing any key on your keyboard.

If you attempt to display the contents of a program file or any other binary file, you will see several unusual characters on your screen and you will most likely hear beep sounds from your computer's speaker.

If you wish to dlsplay the contents of such a file, you should use the X-DOS TYPE command. If X-DOS encounters a TYPE command in a batch file, it automatically uses the STYPE command instead of the TYPE command for

compatibility with MS-DOS. Ifyou wish to extend the compatibility to other cases rather than batch files, you can use the EMULATE command to temporarily rename the STYPE command to TYPE. Since the features of STYPE are limited, we suggest you only use in cases where you need absolute compatibility with the TYPE command from MS-DOS.

## Examples :

You have a text file, LETTER.DAT in the default directory. To display the contents of this file as TTY output to the screen, you should type :

```
STYPE  LETTER.DAT
```

If you want to display the contents of the NEWS.TXT text file in the \DOCUMENT directory of the B: drive, you should type :

```
STYPE B: \DOCUMENT \NEWS.TXT
```

# The SUBST Command

## Purpose :

Assigns a drive letter to another drive and/or directory name for easy reference.

## Type :

Internal to COMMAND.COM

## Syntax :

SUBST [d1**:** d2**:** \path \directory]

## Where :

**d1** – Is the drive letter that you want to substitute with a path.

**d2** – Is the drive of the path that you want to substitute with a drive letter.

**path** – Is the path to the directory on drive d2: which you want to substitute with a drive letter.

**directory** – Is the directory on drive d2: which you want to substitute with a drive letter.

**/D** – Is a switch that disables the substituted drive.

## Remarks :

The SUBST command lets you set up drive letters to reference sub-directories on other drives for each reference. If you execute the SUBST command without any parameters, you will get a list of the directories that are currently substituted with their associated drive letters.

d2 must be a drive name that is not currently allocated. However, space for it must have been reserved by setting the last drive value in the CONFIG.SYS file to a drive name higher or equal to d2.

## Examples :

If you have a directory, C**:** \BUSINESS \LETTERS, which you would like to be able to reference as drive D**:** , type :

SUBST D**:** C**:** \BUSINESS \LETTERS

You can now use the D: drive letter instead of the full directory name to access files in it.

# The SYS Command

## Purpose :

This command transters the X-DOS system files to any formatted diskette or hard disk and makes it bootable. The SYS command can transfer X-DOS onto any formatted disk(ette) even if it already contains data or another disk operating system.

## Type :

External COMMAND

## Syntax :

SYS [d1: ] d2:]

## Where :

**d1:** – Is the source drlve from which SYS should read the system files which are copied onto the destlnation drive.

**d2:** – Is the destination drive which will be made bootable with the X-DOS System files.

## Remarks :

The SYS command copies the X-DOS system files onto a hard disk or diskette, so that X-DOS may be booted from that disk(ette). SYS installs the boot record and copies the X-DOS.SYS , COMMAND.COM , and MAX.COM files onto the destination disk(ette).

Since theX-DOS system file X-DOS.SYS can reside anywhere on a bootaole disk(ette). X-DOS can be installed on a hard disk or diskette that already contains data and/or the system files from another disk operating system.

The SYS command is so flexible that it prompts you – if you want to retain the old system files on a disk(ette), if SYS finds the disk(ette) already contains another disk operating system. If you choose to keep the old system files, you

can always re-install the previous operating system again by using the SYS command from the operating system that you were using. In case you were using MS-DOS, you will have to copy manually the COMMAND.COM file. Please be aware that SYS will not install X-DOS on a computer, it only makes a hard disk or diskette bootable. If you want to install X-DOS onto a hard disk or diskette, use the INSTALL program.

# The TIME Command

## Purpose :

Displays or changes the system time ot your computer. If you change the system time, it is automatically recorded in your computer's CMOS configuration, if available.

## Type :

Internal to COMMAND.COM

## Syntax :

TIME [HH:MM:SS]

## Where :

**HH** – Is the hour in 24 hour format (leadinlg zeros required).
**MM** – Are the minutes (leading zeros required).
**SS** – Are the seconds (leading zeros required).

## Remarks :

The TIME command has two uses. If you execute the TIME command without any parameters, it displays the current time accordingly to the system time. To reset the time, you must, as a minimum, specify the hour as a parameter, but you will normally specify the hour and the minutes. Seconds may be entered as parameters too. For computers, based on the 80286, 80386, or i486 CPUs, the TIME command can be used to reset the time stored in the CMOS configuratlon area.

## Examples :

You can specify the current time by typing : TIME
The time is displayed similar to this :

```
Current time is 10:31:26.50
```

If you want to reset the time to 8 :34 a.m., just type :

```
TIME 8:34
```

# The TREE Command

## Purpose :

Displays a tree-structured outline of the directories on a diskette or hard partition.

## Type :

Internal to COMMAND.COM

## Syntax :

TREE [d**:** ]

## Where :

**d:** – Is the drive on which you want to display the directory structure.

## Remarks :

TheTREE command displays agood representation of the relationship between different directories on you disk(ette). If the list of directories cannot be displayed on one full screen, you can use the [Ctrl]-S hot key or the [pause] keyyou're your keyboard has one, to temporarily stop the scrolling of directories. To continue the scrolling, press any key such as the [Enter] key.

## Examples :

If you wish to display the directories on your C**:** drive, you should type :

TREE C**:**

# The TYPE Command

## Purpose :

This command can display the contents any text file or binary file and it lets you scroll in the displayed file.

## Type :

Internal to COMMAND.COM

## Syntax :

TYPE [d: ] [path] filename [/W]

## Where :

**d: path** – Is the drive and path to the file that you want to display the contents of.

**filename** – Is the name of the file that you want to display the contents of.

**/W** – Allows you to display files in " Wordstar format ".

## Remarks :

Unlike the STYPE command, TYPE allows you to move around in the displayed file. The following keys are used to move around In the displayed file :

## Key Assignments

- UP arrow moves the display up one line in the display file.
- Down arrow moves the display down one line in the displayed file.
- Right arrow moves me display seven characters to the right.
- Left arrow moves the display to the leftmost column of the displayed file. The [Left] arrow key only has a function, when you have previously moved the display to the right with the [Right]

arrow key.

- Home moves to the beginning of the displayed file and displays the first screen of file contents.
- End moves to the end of the displayed file and displays the last screen of file contents.
- PgUp displays the previous screen of the file contents.
- PgDn displays the next screen of the file contents.
- Esc exits the TYPE command.

Note that if TYPE is used with a re-dlrector to a peripheral (such as PRN), the TYPE command will perform an STYPE command instead and will write the contents to the output file.

## Examples :

If you want to dlsplay the contents of the CONFIG.SYS file on your C: drive, type the command :

```
TYPE C: \CONFIG.SYS
```

# The UNDEL Command

## Purpose :

This command recovers files that have been accidently deleted. To ensure a safe file recovery, you must undelete a file as soon as posslble after it has been deleted or we cannot guarantee recovery. You cannot recover files that have been deleted with the WIPEFILE command.

## Type :

Internal to MAX.COM

## Syntax :

UNDEL [filespec]

## Where :

**filespec** – Is file or range of files that you want to undelete. You can use the " ? " and " * " wildcards in the file specification.

## Remarks :

If you delete file or range of files, you can use the UNDEL command to undelete the files again. You will have to be in the same directory as the deleted files was previously in, since UNDEL only looks in the default directory for files to undelete. If you used the WIPEFILE command to delete the file(s) with, you will be able to undelete the files but the file contents is totally destroyed.

It is important that you undelete the file(s) before you write data to the disk. Otherwise your deleted file(s) might be overwritten by the new data.

The UNDEL command works in two ways :

1. You can undelete a specific file or range of files by specifying a filespec as a parameter with the UNDEL command. In this case, UNDEL looks in the default directory and tries to see if it can match any deleted files with

the specified filespec.

2. You can run UNDELwithout any parameters in which case UNDELwill letyou undelete all files in the default directory that can be undeleted. UNDEL will dlsplay each file that can be recovered one after another. You will have to confirm that you want to undelete each file, and you must also type in the first character of the filename for each file that you want to undelete. The character that you specify does not have to be the same as the flrst letter of the filename before the file was deleted.

## Examples :

We assume that you just deleted a range of files and suddenly realized that one of the deleted files, IMPORTNT.DOC, contained important information that you certainly did not intend to delete. You should immediately use the UNDEL command to recover the file before writing any data to the disk(ette). To undelete the IMPORTNT.DOC file change to the directory in which it was located and type :

```
UNDEL*.DOC
```

UNDEL will display the information relative to a file ?MPORTNT.DOC. You will need to specify the first letter I to UNDEL, then confirm the undelete of that file before leaving UNDEL command.

# The UNLOCK Command

## Purpose :

This command lets you access a partition that has been Password Protection. Password protection can be programmed uslng the FDISK utility. You will need to use UNLOCK if you booted your computer without specifying the password for the partition that you want to access or if you locked the partition with the LOCK command.

## Type :

Internal to MAX.COM

## Syntax :

UNLOCK d**:** [password]

## Where :

**d:** – Is the drive letter for the hard disk partition that you want to unlock so you can access it agaln.

**password** – Is the password required to gain access to the locked partition. Lf you do not specify the password, you will be prompted for it and the password will not be echoed.

## Examples :

If you wish to unlock the D**:** drive and wish that the password not be displayed, type :

UNLOCK D**:**

# The VER Command

## Purpose :

This command displays the X-DOS version number an dthe version number that X-DOS currently emulates.

## Type :

Internal to COMMAND.COM

## Syntax :

VER

## Remarks :

X-DOS refers to the single digit to the left of the period as the major version number and the pair of digits to the right of the period as the minor version number. Some programs check for the version number before executing and will not execute with certain version numbers. You can change the version number that X-DOS thinks it is by using the NEWVER command.

The current version number of X-DOS is version 5.0 and X-DOS emulates a version number 3.3 as default.

# The VERIFY Command

## Purpose :

This command turns verification of disk writes ON or OFF. When VERIFY is ON, X-DOS checks to see if data written to the disk can be read again without errors.

## Type :

Internal to COMMAND.COM

## Syntax :

VERIFY [ON] [OFF]

## Where :

**ON** – Turns verification of disk writes ON.

**OFF** – Turns verification of disk writes OFF.

## Remarks :

When VERIFY is set to on, it ensures that data is written to a disk(ette) without errors. If data is not successfully written to the disk, an error message is displayed. As a default, VERIFY is turned off.

# The VIRUSCHK Command

## Purpose :

This command allows you to protect your files against a hostile virus program. A computer virus often attaches itself to existing, executable files on your hard disk and diskettes and may at some point destroy the integrity of your data.

## Type :

External Command

## Syntax :

VIRUSCHK [/switch] [d: ] [path] [filename]

## Where :

**filespec** – Is the drive and path to the file that you want to include in, or delete from, the list of files that are checked for a possible virus.

## Available Switches :

**/A** – Adds a file to the virus checking list.
**/D** – Deletes a file from the virus checking list.
**/L** – Displays a list of the files that are currently monitored by VIRUSCHK for a possible virus.

## Remarks :

A computer related virus is a program which is written specifically for the purpose of destroying in integrity of files on a disk. Viruses often attach themselves to an exisiting file so that the user is not likely to discover the infection of the computer system until it is too late.

The VIRUSCHK command checks the time and date stamp, the file size performs a CRC check on the files that are monitored. You can include any files that you wish to protect against an infection in the monitored file list. Keep in mind, however, that the virus checker in X-DOS only warns you if it discovers changes in the monitored files.

It cannot eliminate a virus from a disk, it only detects the presence of a possible virus in the monitored files.

If VIRUSCHK encounters changes in any of the files that is monitoring when you run it, you will get a warning message similar to this :

Possible virus on file :

d: \path \filename.ext

followed by one of the following error specifications :

### File not found

VIRUSCHK cannot find the file on the disk in the directory that you specified when you added the file to the checking list. If you have deleted or removed the file on purpose, you should also delete it from the virus checklist.

Otherwise you will get the same error message every time you run VIRUSCHK.

### Date & time of file has changed

The date and time stamp on the file, which indicates the last date the file has been modified, has changed ·

### Length of file has changed

VIRUSCHK has detected that the length of the file has changed. Do not run programs which you know have changed in size.

### CRC calculation of file different

VIRUSCHK performs a CRC checksum test on each modified file. If this checksum changes, you will get this error message.

Note that you cannot have the VIRUSCHK command check its own binary file.

You can add up to 256 files to be monitored by VIRUSCHK that should be enough for most users. You will probably only want to include the files that are very common to the personai computers like the external X-DOS commands.

## Examples :

If you want the FDISK.EXE file, which we assume Is located in the C: \DOS directory, to be monitored for a possible virus by VIRUSCHK, you should type the following command at the command line :

```
VIRUSCHK /A C: \DOS\FDISK.EXE
```

# The VOL Command

## Purpose :

This command displays the volume label of a diskette or hard disk partition.

## Type :

Internal to COMMAND.COM

## Syntax :

VOL [d: ]

## Where :

**d:** – Is the drive that you want to display for the volume label of.

## Remarks :

The FORMAT /V or LABEL programs can be used to install a volume label on a diskette or partition of a hard disk. This volume label can then be used to distinguish different hard disk partitions and diskettes. You can always display the volume label of a hard disk or diskette with the VOL command. The DIR and XSHELL commands also displays the volume label.

## Examples :

We assume that your default drive is the C**:** drive and you want to display the volume label of the diskette in the A**:** drive. You can do this by typing :

VOL A**:**

# The WHEREIS Command

## Purpose :

This command searches though all directories on a drive for a file or range of files.

## Type :

Internal to MAX.COM

## Syntax :

WHEREIS [d**:** ][filespec]

## Where :

**d:** – Is the drive on which you want to search for files.

**filespec** – Is the file or range of files that you want to search for. You can include the **" ? "** and **" * "** wildcards in the file specification.

## Remarks :

The WHEREIS command is very useful in situations where you are looking for one or more specific files and you cannot remember where they are located.

As long as you can remember, the filename or part of the filename for the file(s) that you want to locate, the WHEREIS command can find the file(s) for you in no time at all. When you execute WHEREIS, it will display the drive and directory of each file it finds that matches the filespec.

It displays the size, the time and the date stamps along with each matching filename.

## Examples :

If you want to display all files which matches the filespec ***.**DOC on your default drive, you should type :

WHEREIS ***.**DOC

# The WIPEFILE Command

## Purpose :

This command deletes a file or range of files so they cannot be recovered again. You should only use this command to ddete files that you are certain, you will not have any further use of and which you want to ensure and cannot be recovered by anybody else.

## Type :

Internal to COMMAND.COM

## Syntax :

WIPEFILE [d: ] [path] [filespec]

## Where :

**filespec** – Is file or range of files that you want to undelete. You can use the **" ? "** and **" * "** wildcards in the file specification.

**d: path** – Is the drive and path which holds the file or range of files that you want to delete and make it/them unrecoverable.

**filespec** – Is the file or range of files that you want to delete. You can use the **" ? "** and **" * "** wildcards in the file specification.

## Remarks :

WIPEFILE overwrites the area on the disk which is allocated to the file(s) that you are deleting, so that these file(s) will not be recoverable again.

This provides you with a way of ensuring that nobody will be able to recover your " sensitive " data when you delete it.Files deleted with the DEL command can easily be recovered which provides you with a safety net in case you accidentally delete files. Therefore, you should only use the WIPEFILE command to delete files which are NOT intended to be recovered again.

## Examples :

If you want to delete all files in the default directory and make sure that nobody will be able to undelete them again, you can do so by typing :

WIPEFILE ***.***

# The XCOPY Command

## Purpose :

This command will copy or move any files and directories, including sub-directories, to another drive and/or directory. Several switches give you a variety of options concerning which files/directories should be copied and the way they are copied.

## Type :

External Command

## Syntax :

XCOPY [d1: ][path1][filespec1] [d2: ][path2][filespec2] [/switches]

or

XCOPY [d1: ][path1]filespec1 device[/switches]

## Where :

**d1:path1** – Is the drive and path to the source files that your are copying.
**filespec1** – Is the file or range of files that you are copying. You can use **" ? "** and **" * "** wildcards in the file specification.
**d2:path2** –Is the drive and path to the destination of the copied files.
**filespec2** –Is the name that you want to give to the copied files. You can use **" ? "** and **" * "** wildcards in the file specification.
**device** – Is the name of the standard output device to copy files to. You can specify PRN , LPT1 , LTP2, LTP3, COM1 , COM2 , COM3, COM4 or AUX.

## Available Switches :

**/A** – Copies only files with the Archive attribute set..
**/C** – Lets you pick files to copy from a list of displayed files.
**/D** – Date-copies files modified on or after the specified date. The date must be entered in the same format as when you change the date with the DATE command.

**/E** – Includes all sub-directorles to the directory that contains the source files that are being copied. Empty sub-directories are also copied.

**/I** – Includes any hidden files matching filespec1.

**/M** – Copies files with the Archive attribute set and resets it after the files are copied. Used for backing up files.

**/N** – Copies only the files that are new to the destination directory.

**/P** – Prompts for each file before copying it.

**/Q** – Asks for confirmatlon before copying if a file already exists in the destination directory.

**/R** – Deletes the contents of the destination directory before copying the files.

**/S** – Includes all sub-directories to the directory which contalns the source files that are being copied. Empty sub-directories are not copied.

**/T** – Moves files from the source directory to the destination directory. The files are deleted from the source directory after they are copied.

**/V** – Turns ON verification of disk writes when copying files. This ensures that the copied files can be read from the disk again.

**/W** – Prompts you to press a key before starting to copy.

**/Z** – Copies files from several diskettes. XCOPYwlll prompt you to insert a new diskette when all files have been copied from the current diskette.

## Remarks :

The source filespec (including drive and path) is listed before the destination filespec (including drive and path). The filespec can consist of any legal filename, including the wildcards **“ ? ”** and **“ * ”**. XCOPY will assume you want to keep the original filename(s) if no filespec is specified for the destination of the copied files.

## Switches

XCOPY gives you a range of possibilities concerning which files to copy and the way these files are copied. There are (15) fifteen

different switches to choose from. Since the individual often has a standard way of copying files, XCOPY can use the SET command of X-DOS to recognize one or more switches which are to be used every time XCOPY is invoked. The format of SET is as follows :

SET XCOPY= /switch1/switch2/(···)

Following is an in-depth description on all of the available XCOPY switches :

**A** – Biy specifying this switch, you tell XCOPY to copy only the files, satisfying the source filespec, which have the Archve bit attribute set. If you are using the XCOPY command for backing up files, you can use this switch to ensure that you are only copyng the files that have changed since the last time that you made a backup. To use XCOPY properly for backup purposes, you will have to use the **/M** switch.

**C** – The **/C** switch makes XCOPY display a list of all files that match the source filespec and lets you select which files to copy. Use the [Up] and [Down] arrow keys to scroll back and forth in the list. Highlight a file and press [ENTER] to select that file. If the contents of the displayed directory can not fit in the window, you can use the [Down] arrow key to access the rest of the files. If you make a wrong file selection that you can use the [ENTER] key to delete the file from the list. When you have selected all the files that you want to copy, you can press the [F5] function key to begin copying the selected files to the destination directory.

**D –** This switch tells XCOPY to delete any existing files in the destination directory before copying the files from the source directtory to the destination directory. Youl will be prompted for a confirmation before XCOPY goes ahead and delete the files. XCOPY will not delete any files in the destination directory which have the Read-Only, System, and/or Hidden attributes set.

**H** – If you run the XCOPY command with the **/H** switch, XCOPY displays a help screen, describing the command line syntax and explaining the available switches. This help screen will also be displayed ifyou use XCOPY with wrong parameters.

**I** – Use the **/I** switch to include hidden files which match source filespec in the selection of files being copied.

**M** – With the **/M** switch, you have an easy way of backing up files. This switch makes XCOPY copy only files with the Archive attribute set and after the files have been copied, the Archive attribute of the file is reset. This way, XCOPY can keep track of which file has been previously backed up, so that it only copies files that have been modified.

**N** – With this option enabled, XCOPY will only copy the files that are new to the destination directory. A file is new if it does not exist in the destination directory or if the time and date stamp on an existing, matching filename is prior to that of the source file.

**P** – This switch makes XCOPY display a message on the screen for each file, and you will have to acknowledge the copying of the file.

**S** – With the **/S** switch enabled, XCOPY will copy all the files and sub-directories from the source directory to the destination directory. If the source sub-directories do not exist in the destination directory, XCOPY will automatically create them.

**T** – With the **/T** switch, you have an easy way to move files from one directory to another directory. With this switch set, XCOPY first copies the files, matching the source filespec, to the destination directory. Then it deletes the source files, matching the source filespec, in the source directory. Hence, the files will seem to have been moved from one location to another location in one step even though XCOPY performs the moving in two steps.

**V** – Use the **/V** switch to copy files from several diskettes to another destination, such as directory on a hard disk. XCOPY will automatically prompt you to change diskettes when it has copied all the files, matching the source filespec, from the current diskette to the destination. When you have copied files form the last diskette and XCOPY prompts you to insert a new diskette, you can press the [Esc] key to terminate the XCOPY command.

## Copying to a device

You can copy to devices as well as to files, so XCOPY filespec COM1 [Enter] sends the contents of the specified file(s) to the COM1 port.

XCOPYfilespec PRN will print it on the parallel printer attached to the LPT1 printer port. XCOPY can copy to the following devices : PRN , LPT1, LPT2 , LTP3 , COM1 , COM2 , COM3 , COM4 and AUX.

## Examples :

You can copy all files matching the *.TXT filespec from the default directory to the C: \BUSINESS \LETTERS directory by typing :

XCOPY *.TXT C: \BUSINESS \LETTERS

# Chapter 7

# The X-DOS Batch Language

## Introduction

In addition to the internal and external commands as detailed in Chapter 6., X-DOS offers a complete batch language. The batch language commands can be entered in batch files to allow you to write simple programs to carry out repetitive tasks. You can create a batch file containing batch commands in ED, the editor included with X-DOS and then run this batch file from the command line.

Files created in this way called batch files because they contain a batch of commands, and all such files must have an extension of .BAT. Each line of a batch file is treated as a separate command, just as if, it had been typed in at the command line. The AUTOEXE.BAT file is an example ofa batch file, though this is a special file in that X-DOS will always look for this file each time you boot up your system.

The commands detailed in this chapter are only for use in batch files and cannot be run directly from the command line. Please note, however, that the internal and external commands can also be entered in batch files.

With a little practice, you will soon be writing batch files to prompt for user input, display information on the screen, make conditional decisions, call other batch files and much more.

# The @ Batch Command

## Purpose :

This batch command suppresses echoing to the screen of any command it precedes. The output from a command preceded by the @ sign is still displayed on the screen.

## Type :

Internal to COMMAND.COM

## Syntax :

@ [command] [Parameters]

## Where :

**command** – Is the name of the command that you do not want to display on the screen.
**parameters** – Are any parameters needed by the command that you do not want to display on the screen.

## Remarks :

Since the ECHO OFF command turns off the display of all succeeding commandso in a batch file, the most important use of the use @ sign is to ensure that the ECHO OFF command itself does not show on the screen. The @ sign is also useful in situations where you want to display the commands that are executed in the batch file except for maybe one ort wo commands.

## Examples :

If you want to ensure that all commands in your batch file are not displayed on the screen, you normally want to place the ECHO OFF command as the first line of your batch file. To make sure that the ECHO OFF command itself is not displayed on the screen, you can precede it with the @ sign, like this :

```
@ECHO OFF
```

ECHO OFF is not displayed on the screen when you run the batch file.

# The ANSWER Batch Command

## Purpose :

This batch command prompts you for keyboard input. Your input is stored in an environment variable named ANSWER which can later be used by a named substitution variable from within a batch file or from any program.

## Type :

Internal to COMMAND.COM

## Syntax :

ANSWER [prompt]

## Where :

**prompt** – Is an optional text string which ANSWER will display on the screen while waiting for input from the user.

## Remarks :

The input that you type when ANSWJER prompts you is changed to upper-case before it is assigned to the ANSWER variable in the environment. You can therefore not make case dependent tests on ANSWER input.

If the optlona prompt is not specified, ANSWER will not display anything on the screen that will inform the user that an input is expected. Use the ECHO or REVECHO commands prior to the ANSWER command or usethe optional prompt with ANSWER to make the user aware that keyboard input is expected.

ANSWER returns an error code which can be examined by the ERRORLEVEL option of the IF command. The errorlevel will be set to 0, if the ANSWER variable is successfully stored in the environment. If there is insufficient room in the environment to store the ANSWER variable or if the environment area is corrupted, ANSWER returns an error code of 1.

You shoulld not use the > , < or | characters in the ANSWER prompt since they would be interpreted as re-directlon symbols.

## Examples :

In the following example, we assume that you have created a batch file in which you want to prompt the user for a password before continuing execution of the batch file. To do this, you should include the following line in your batch file :

```
ANSWER Enter Your password :
```

If the user types " SECRET " as his password, the ANSWER variable is set equal to SECRET in the environment. To verify this, try to make a batch file which only contains the above line and execute it.

Then type the password SECRET. When the batch file is finished executing, you can execute the SET command, like this :

```
SET
```

You will see a listing of all current environment variables. Among them you should see one saying :

```
ANSWER = SECRET
```

You can then later use a named environment variable to use or check the setting of the ANSWER environment variable. A real batch file in which ANSWER is used could look sirmilar to this :

```
ANSWER  Please enter your name :

IF %ANSWER% &==& G0T0 TOP

ECHO Hello %ANSWER%, how are you today ?
```

You maybe wondering about the purpose of the fourth line of the batch file, IF %ANSWER%&==& GOTO TOP. It simply checks to see that you have entered any text. If the ANSWER environment variable is empty, which is the case if you only press [Enter], the line will be interpreted by X-DOS like this :

```
IF&==& GOTO TOP
```

The & character is only used to ensure that both sides of the == signs contain information. You do not have to use the & character. You can actually use any character just as long as it it the same character on both sides of the = = signs. If the above IF test is TRUE (&= =&), then you know that the ANSWER environment variable is empty and you can take a proper action. In the above example, we simply go back and prompt the user to enter his or her name again.

# The BEEP Batch Command

## Purpose :

This batch command produces a beep on the computer's speaker which can be used to get the user's attention during batch file execution.

## Type :

Internal to COMMAND.COM

## Syntax :

BEEP

## Remarks :

This batch command is useful in situations where you want to make the user aware that the input is needed or an error has occurred.

# The CALL Batch Command

## Purpose :

This batch command allows one batch file to call another batch file, execute this batch file, and then return to the calling batch file and resume execution right after the CALL command.

## Type :

Internal to COMMAND.COM

## Syntax :

CALL [d: ] [path] filename

## Where :

**d:path** – Is the drive and path to the batch file that you want to call.
**filename** – Is the name of the batch me that you want to call.

## Remarks :

The CALL command gives you great flexibility in setting up modular batch files. This is especially useful if you are making batch files which will be executed by different users.

If you do not specify a command from which X-DOS should continue executing after it returns to the calling batch file, X-DOS automatically starts execution from the command following the CALL command. You can have up to 10 nested CALL commands. This, in other words, means that you can have one batch me call another batch file, which calls another batch file, and calls another batch file, up to 10 nested calls. You can also make recurslve calls which means that a batch file calls itself. Just remember to ensurel that you do not set the batch file up, to run in an endless loop, which can easily happen if you do not insert some kind of termination condition.

## Examples :

We assume that you insert the command :

CALL C : \BATCH \JOHN.BAT

in a batch fiie. When you execute the batch file, and X-DOS reaches the CALL command, it will abort the execution of the current batch file and hand over control to the JOHN.BAT batch file in the C: \BATCH directory. When this batch file terminates, X-DOS will return to the calling batch file and continue execution right after the CALL C:\BATCH \JOHN.BAT command.

# The CHECK Batch Command

## Purpose :

This batch command enhances the bath language by reporting a variety of parameters that can range from the disk information to the time and date functions. Any results that the CHECK command returns can be evaluated with the ERRORLEVEL batch sub-command.

## Type :

Internal to COMMAND.COM

## Syntax :

CHECK keyword [parameters]

## Where :

**keyword** – Is one of the keywords which are recognized by the CHECK command. Each of these keywords are described below.
**parameters** – Are any parameters which maybe required by the specified keyword.

## Remarks :

CHECK should come in very handy in automating many of the mundane tasks that you perform. As an example, maybe you go through and delete all of your ***.**BAK files beginning of every month. You can identify the months changing by including the CHECK day command in your batch file. If the day is equal to one (1), it is good indication that the month has changed. You can then branch to your sub-routine for deleting the ***.**BAK files.

---

## Disk Related Keywords

**DISKSPACE** returns the amount of free disk space on the specified drive, or on the default drive in terms of the whole 16K byte blocks. If there is 120K of free disk space, DISKSPACE returns the value of 8, which can be used with ERRORLEVEL to indicate 8 blocks are free.

**FILESIZE** reports the length of a give file in kilobytes. A value of 255 means that the file length is 255K or greater in size. FILEFOUND takes the Place of other

DOSes IF EXIST conditional testing and returns a 0, if a file exists and a 1 if it does not exist.

**FILETEXT** searches for a text string inside a file. See the example below :

CHECK filetext C : \DOS \NOTES.MSG 'Things to do:'

In the above example, NOTES.MSG is checked for on Drive CL in the sub-directory \DOS and if present,the string Thing to do: is searched for. If the string is found, a 0 is returned; if not, or if an error is encountered, such as the file is not on the specified path, a 1 is returned. You must enclose the string to be searched for in a single quotes **( '' )**.

## Hardware Related Keywords

**MEMORY –** number of 16K memory blocks.

**VIDEOTYPE** – Monochrome Display Adapter (MGA or Hercules). Color Graphics Adapter (CGA). Enhanced Graphics Adapter (EGA or VGA).

**MATHCO** – Math co-processor Installed. Math co-processor not installed.

These options check the hardware configuration.You may have a program that you keep in two different versions, (i.e. 43 line format for EGA, and 25 line format for monochrome) and you wish to know what video card is installed, so that you can call the appropriate configuration. Or, you may have a program installed for both, with co-processor and without co-processor.

CHECK will identify these things for you and report to your batch file what it has found.

## Miscellaneous Keywords

**TIME** – returns the current time.

**DAY** – returns the current day.

**MONTH** – returns the current month.

**KEYPRESS** – returns the ASCII code of a ny key pressed.

Using those keys that produce an extended code like the function keys and the arrows keys will set the ERRORLEVEL. These keys in conjunction wilth X-DOS's KEYIN command, listed elsewhere in this section, enhance the ability of the batch language to interact with the user.

## Examples :

Here are some examples of these options of CHECK, in everyday use :

The following batch file will delete all **.**BAK files if free disk space is less than 64K.

```
CHECK DISKSPACE A:
IF NOT ERRORLEVEL 4 DEL A: *.BAK
```

This batch file will delete a file if it exceeds 16K in size.

```
CHECK FILESIZE %1
IF ERRORLEVEL 17 DEL %1
```

This batch file decides whether to delete a file on a default drive, based on whether it is present on another specified drive.

```
CHECK FILEFOUND B: EXAMPLE.FLE
IF ERRORLEVEL 1 DEL C: EXAMPLE.FLE
```

The following batch file choose which configuration of an installed program to use, based on the video card that is installed.

```
CHECK VIDEOTYPE
IF ERRORLEVEL 1 GOTO COLORVIDEO
WS1
GOTO END
:COLORVIDEO
WS2
:END
```

# The DELAY Batch Command

## Purpose :

This batch command lets you delay batch file processing for a specified amount of time.

## Type :

Internal to COMMAND.COM

## Syntax :

DELAY xx

## Where :

**xx** – Are the number of seconds to delay batch file processing.

## Remarks :

The DELAY command is handy when you want to display important messages that the user should read before the batch file automatically continues execution.

## Examples :

If you want to display the message :

Remember to turn off your computer **!**

and then delay batch file execution for 3 seconds to allow the user enough time to read the message, include the following two lines in a batch file :

```
ECHO Remember to turn off your computer !
DELAY 3
```

# The ECHO Batch Command

## Purpose :

This batch command is used to display a message on the screen or to suppress output to the screen.

## Type :

Internal to COMMAND.COM

## Syntax :

ECHO [ON] [OFF]

Or ECHO [message]

## Where :

**prompt** – Is an optional text string which ANSWER will display on the screen while waiting for input from the user.
**ON** – Turrns ON the display of the commands in a batch file so that they are displayed on the screen as they are being executed. ECHO ON is the default setting.
**OFF** – Turns OFF the display of the commands in a batch file. This way only the output from the commands that X-DOS executes in the batch file is displayed.
**Message** – displays a message on the screen. This message can be up to 127 characters long.

## Remarks :

The default setting of ECHO ON is very practical when you are developing a batch file and want to be able to see which commands are being executed from the batch file for debugging purposes. Once a batch file is running flawlessly, there is no longer any reason to display the commands that are being executed from the batch file. To suppress the display of the commands, turn the ECHO mode OFF at the beginning of the batch file.

When the ECHO mode is turned OFF, you can use the ECHO command to display a message on the screen. The REVECHO command also displays a message on the screen in a similar manner, but in reverse video. If you expect

the user to type in an answer to your message that you should use the ANSWER command to display the message

If you execute ECHO without a parameters, it will display the current setting of the ECHO mode, which is either ON or OFF. If you have turned the ECHO mode ON, you can disable the echoing of individual commands by putting the " @ " symbol in front of the a command.

## Examples :

If you want to suppress the display of the commands that are executed in a batch file, you need to turn the ECHO mode OFF. To do that, you will need the following ECHO command at the top of the batch file :

```
ECHO OFF
```

You can view the status of the current ECHO mode by typing :

```
ECHO
```

# The FOR Batch Command

## Purpose :

This batch command is used in combination with the IN and DO batch Sub-commands to repeat execution of a X-DOS command or another program.

## Type :

Internal to COMMAND.COM

## Syntax :

FOR %%V IN (params) DO command %%V

## Where :

**V** – Is a one-character substitution variable which can be other characters than the character " V " used here. This variable cannot be a (0 to 9) in order to avoid confusion with the other substitution variables that can be used in the params section of the FOR command.

**params** – Is a list of parameters which in turn are passed to the %%V substitution variable. These parameters can be any mixture of text strings, substitution variables, and named substitution variables.

**command** – Is the name of the command that you want to execute including any necessary parameters that the command needs.

## Remarks :

When the FOR command executes, it will take each filespec in params and set it in place of the %%V substitution variable. If a filespec includes any wildcards, each filename matching the filespec replaces the %%V variable one by one.

You will notice that the substitution variable %%V has two percentage signs (%%) in front of it instead only one percentage sign (%). The reason for this is that you want X-DOS to assign values to the substitution variables of filespecs the first time around and then assign the values of the substitution variables of

filespecs to the %%V substitution variable the second time around. Each time X-DOS assigns values to substitution variables, it removes one percentage sign.

## Examples :

If you want to create a batch file that can delete multiple filespecs by issuing only one command, you can include a FOR command like this :

```
FOR %%M IN (%1 %2 %3 %4) DO DEL %%M
```

# The GOTO Batch Command

## Purpose :

This batch command continues to execute the batch file a different place as specified by a label name.

## Type :

Internal to COMMAND.COM

## Syntax :

GOTO [ **:** ] labelname

## Where :

**labelname** – Is a reference to a label some place in the batch file. You must specify a colon ( **:** ) in front of label name in a batch file.

## Remarks :

The TOGO command instructs X-DOS to jump to specific place in batch file which has the specified label name assigned to it. A label is any combination of up of eight alphanumeric characters and must always be preceded by a colon ( **:** ). References to labels do not need to be preceded by a colon ( **:** ).

The GOTO command is normally used in combination with the ERRORLEVEL command to branch to another place in the batch file if a condition is true or not true.

## Examples :

The following example batch file shows how you can use the GOTO command :

```
:START
IF ERRORLEVEL 5 GOTO EXIT
ECHO HELLO
EXIT:
```

# The IF Batch Command

## Purpose :

This batch command is used with the EXIST, ERRORLEVEL, and NOT sub-commands to execute or skip execution of a commland based on a conditional decision.

## Type :

Internal to COMMAND.COM

## Syntax :

IF [NOT] condition command

## Where :

**NOT** – Means that the command willl be executed if the condition is FALSE.

**condition** – Is one of three possible expressions :

**ERRORLEVEL number** – Makes the condition TRUE if the program previously executed by COMMAND.COM returned an exit code equal to, or greater than, a number.

**string1==string2** – Makes the condition TRUE if string1 equals to string2 after a substitution of substitution variables have occurred. For this condition to make any sense, one or both of the text strings have to be a substitution variables.

**EXIST [d:] [path] filespec** – Makes the condition TRUE if a file or range of files exist. You can specify an optional drive and path to where you want IF to check for the file(s).

**command** – Is any X-DOS command or other program which will be executed if the condition is TRUE, or, if the NOT parameter is specified, is FALSE.

## Remarks :

Any the three conditions may be preceded by the NOT command to indicate that the following command should be executed only if the condition is not true.

Special care must be taken when comparing two strings of the form string1==string2 of which one or both of the strings are named substitution variables. You must ensure that variables, referenced by string1 and/or string2, have been setup In the environment. Otherwise, substitution variables without a reference in the envlronment are literally going to be substituted with nothing. Look at the following exmple :

```
IF NOT %TEST%==BAD ECHO Test completed
Successfully.
```

If an environment variable named TEST is set to any value, the batch file is going to perform as expected. The ECHO statement is going to be executed in all instances except when TEST is set " BAD ". But, If no variable named TEST is found in the environment, X-DOS interprets the above command in this way :

```
IF NOT %TEST%==BAD ECHO Test completed
Successfully.
```

Since on TEST variable was found in the envlronment, X-DOS substituted %TEST% with absolutely nothing. When the test is performed, string1 is missing and you will receive a syntax error. You can avoid this situation by testing for the existence of the TEST variable Inthe environment. A way of doing this is to make a test similar to this :

```
IF %TEST%&==&GOTO NO_VAR
```

By including the " & " character on both sides of the " = = " signs, you ensure that the left side at least will consist of the " & " character. If this test is true (&==&), then you know that the environment variable TEST is missing, and you should make the batch file jump to a place where you glve the proper error message.

## Examples :

If you want to create a batch file which you want to use in place of the DEL command to ensure that you do not accidentally delete files wlth an extension of

.DOC by using the *.DOC filespec. This file, which we call NDEL.BAT, could look like this :

```
IF %1== *.DOC GOTO WARNING
DEL %1
GOTO EXIT
:WARNING
ECHO You cannot delete files with the *.DOC
filespec !!!
:EXIT
```

# The KEYIN Batch Command

## Purpose :

This batch command enables you to create interactive batch files which accept only a predefined set of keys. This command Is especially useful when making batch file menu systems.

## Type :

Internal to COMMAND.COM

## Syntax :

KEYIN A [B C 1 ( … )]

## Where :

**V** – Is a one-character substitution variable which can be other characters than the character " V " used here. This variable

**A** – Is any one ASCII character that KEYIN will use accept before continuing execution of the batch file.

**B C 1** – Are additional ASCII characters that KEYIN will accept before continuing execution of the batch file.

**( … )** – Shows that KEYIN accepts several more ASCII characlers as parameters. You can specify as many parameters as will fit on the command line, and you do not have to separate the parameters with spaces.

## Remarks :

The ASCII characters that you use as parameters for the KEYIN command do not have to be separated by spaces and each KEYIN parameter can only consist of one character. KEYIN is not case sensitive and therefore treats upper- and lower-case letters the same.

The KEYIN command uses IF ERRORLEVEL testing to check the input from the user and screen out illegal entries, meaning any ASCII characters which are not specified as KEYIN parameters. Any illegal entries are automatically assigned the exit code 0 and can therefore be dealt with equally by the author of the batch file. The first KEYIN parameter Is assigned the exit code 1, the second KEYIN parameter is assigned the exit code 2, and so forth.

Therefore, when you use IF ERRORLEVEL testing to check the user's input, you must always put the IF ERRORLEVEL testing with the highest exit code on top of the IF ERRORLEVEL testing list, since the ERRORLEVEL command always checkfor exit codes equal to or higher than the specified ERRORLEVEL number.

## Examples :

Suppose the following BATCH file :

```
:START
ECHO 1.  Word Processing
ECHO 2.  Sfreadsheet
ECHO 3.  Database
ECHO 4.  Exit
ECHO INPUT YOUR CHOICE
KEYIN 1234
IF ERRORLEVEL 4 GOTO EXIT
IF ERRORLEVEL 3 GOTO DATAB
IF ERRORLEVEL 2 GOTO SPREAD
IF ERRORLEVEL 1 GOTO WP
:WP
. . . .
:SPREAD
. . . .
:DATAB
. . . .
:EXIT
```

# The LOCATE Batch Command

## Purpose :

This batch command places the cursor at a specified location on your screen to allow you to display text anywhere on the screen.

## Type :

Internal to COMMAND.COM

## Syntax :

LOCATE [R][,C]

## Where :

**R** – Is the screen row in decimal numbers. The upper-left corner of the screen is row 0 and the screen has 25 or 43 rows.

**C** – Is the screen column in decimal numbers. The upper-left corner of the screen is column 0 and the screen has 80 columns.

## Remarks :

You can use LOCATE with only the Row (R)parameter in which case, the column defaults to column 0. It Is also possible to use the LOCATE command with only the Column © parameter. Just precede the column parameter with a comma.

# The LOOP Batch Command

## Purpose :

This batch command can be used to loop part of a batch file a number of times.

## Type :

Internal to COMMAND.COM

## Syntax :

LOOP /I
Labelname
LOOP
.
.
IF [NOT] ERRORLEVEL number GOTO labelname

## Where :

**I** – Is sets the loop counter to 0. You should always initialize the LOOP command before beginning the actual looping to ensure that it starts counting from 0.

## Remarks :

The initial LOOP statementwith the /I parameter resets the counter for LOOP. You should always initialize the LOOP command before the beginning of the actual looping. The second LOOP statement actually performs the loop until the condition is met according to the ERRORLEVEL checking.

Every time the LOOP command is executed without any parameters, it increases the exit codes by one. In your IF ERRORLEVEL testing, you just specify a value which reflects the number of times that you want the loop to be executed.

Please be aware that IF ERRORLEVEL testing does not support exit codes above 255, which then is the maximum number of loops that you can perform with one LOOP command.

# The PAUSE Batch Command

## Purpose :

This batch command stops batch file execution until the user presses a key. You can optionally specify a message which will be displayed on the screen when the PAUSE comman is executed.

## Type :

Internal to COMMAND.COM

## Syntax :

PAUSE [message]

## Where :

**message** – Is the message to be dlsplayed whlle the PAUSE command waits for the input from the user.

## Remarks :

If no message is entered after PAUSE, the PAUSE command will display the default message " Press any key to continue ". The user must then press any key at this point to continue the execution of the batch file. If you need the user to enter input which is gcing to be used later in the batch file, you should use the ANSWER command instead of the PAUSE command.

## Examples :

If you want to display the message " You have now completed the installation " on the screen fromn a batch file, you can do so by including the following PAUSE statement :

PAUSE You have now completed the installatlon

# The REM Batch and Configuration Command

## Purpose :

Inserts comments or remarks in a batch file.

## Type :

Internal to COMMAND.COM

## Syntax :

REM [text]

## Where :

**text** – Is any string of character up to 127 bytes long.

## Remarks :

When X-DOS encounters a REM command in a batch file, it automatically skips the command and jumps to the next line in the batch file. You can also use the colon ( **:** ) to insert remarks in your batch file. The colon is used in batch files to distinguish labels which are just treated as normal text by X-DOS. Just ensure that the first word of the remark is not the name of a valid label that you are already using elsewhere in the batch file.

## Examples :

You want to create a batch file which copies multiple filespecs onto the diskette in file A**:** drive and you want to inlcude a remark at the top of the batch file which explains the purpose of the batch file. Such a remark could look like this :

```
REM This batch file copies several filespecs onto a diskette in the A:drive

REM You must specify the filespecs as parameters to this batch file.
```

# The REVECHO Batch Command

## Purpose :

This command is used to display text on the screen in reverse text.

## Type :

Internal to COMMAND.COM

## Syntax :

REVECHO [text]

## Where :

**text** – Is a string of character up to 127 bytes long.

## Remarks :

The X-DOS ECHO command provides a simple way to display messages from within batch files. REVECHO works the same way, except that is displays the message in reverse video.

By using REVECHO in combination with the LOCATE command and the LOOP command, you can make a message flash on the screen. Since REVECHO looks at the existing color and reverses it, each subsequent time when you execute it, the color will appear to flash if executed many times in succession.

## Examples :

A batch file which would flash the message " Warning ! " in the middle of the screen could look similar to this :

```
CLS
LOOP /I
:FLASHMES
LOOP
LOCATE 12,35
REVECHO   Warning!
IF NOT ERRORLEVEL 100 GOTO FLASHMES
```

# The SHIFT Batch Command

## Purpose :

The shift command makes it possible for you to use more than the standard ten substitution variables, %0 to %9.

## Type :

Internal to COMMAND.COM

## Syntax :

SHIFT

## Remarks :

SHIFT will let you move the value of a substitution variable down one step at a time (e.g. from %4 to %3 to %2, etc.). When you do this, you will lose the value of the lowest substitution variable, %0. If you need to retain a lower value, you can use the SET command to store the value of the %0 substitution variable in an environment variable before executing the SHIFT command.

The SHIFT command can also be used even if you use less than the maximum ten substitution variables.

## Examples :

To see how the SHIFT command works, we have made a simple batch file:

```
REM Test of the SHIFT command
ECHO %0 %1 %2
SHIFT
ECHO %0 %1 %2
SHIFT
ECHO %0 %1 %2
```

You will need to run this batch file with parameters from the command line in

order to see how it works. We call this batch file TEST.BAT and execute it with three parameters, number1, number2, and number3, like this :

```
TEST number1 number2 number3
```

The output to your screen will look like this :

```
TEST number1 number 2
number1 number2 number3
number2 number3 :
```

# Chapter 8

# The X-DOS Shell Program

## Introduction

X-DOS provides a shell utility called XSHELL. The XSHELL program is a special extension of the X-DOS operating system that provides an easy to use menu driven interface. With XSHELL you can carry out all your tile management tasks using simple pull down menus rather than having to remember lots of complicated commands. The shell program is completely mouse driven too, so you can move around the screen by clickinng the mouse where you want to go and run commands by clicking on them in file menus.

For added convenience, the DOS command line is still visible in the shell and you can type in and run commands from the command line just as normal. In addition, XSHELL provides a split screen display allowing you to display two different directories on the screen simultaneously and the files in those directories.

XSHELL also includes a special file application functlon which allows you to set up menus from which you can run your favorite programs simply by clicking on the program name with the mouse.

Once you get used to using XSHELL, you may decide that you wish it become the default screen display every time you load X-DOS. In that case, you can enter a command in your AUTOEXEC.BAT file to automatically load XSHELL when you turn your computer on or set the automatic XSHELL boot in the INSTALL program.

## Setting The XSHELL Path

If, for some reason, you have moved the SHELL overlay files to another directory other than the DOS directory on the boot drive, you must tell X-DOS where they are located. If for example, you decide to store the XSHELL overlay files in the **\DOSSHELL** directory, you must type the following

command at the DOS prompt :

SET XSHELL=C:\DOSSHELL

This tells X-DOS to look in the DOSSHELL directory on the C:drive for XSHELL. The statement that you actually type may differ from this example depending on which drive and in which directory you have installed X-DOS.

You should enter this statement in your AUTOEXEC.BAT file so you do not have to type it every time that you wish to use XSHELL.

# Loading XSHELL

To load XSHELL simply boot up your computers with X-DOS, set the shell path as described above, If you have moved the SHELL files the default directory (if you have entered this statement in your AUTOEXEC.BAT file, you will not have to do this) and type HS or XSHELL at the command line.

---

## Loading XSHELL Switches

Two switches are available with XSHELL to allow you to go directly to the File functions mode or Applications mode. The file functions mode is the default XSHELL mode in which you can carry out your file management. The Applicatlons mode allows you to create a menu list of your programs and run these programs with the click of a mouse.

To load XSHELL in the default mode, at the DOS prompt type : HS/F or just HS. You can also use the XSHELLname.

To load XSHELL in the Applications mode, type : HS/A

# The XSHELL File Management Screen Display

When in the file management mode, the XSHELL display consists of a number of different areas, with each area containing important infomatlon. Along the top of the screen is a list of the menus and the function keys that access them, as listed below :

| | |
|---|---|
| **F1** | **Help** |
| **F2** | **File** |
| **F3** | **Disk** |
| **F5** | **Applications** |
| **F6** | **Split** |
| **F7** | **Zoom** |

In th main portion of the screen are four windows. The two windows on the left show identical directory trees for the drive from which you loaded XSHELL. The volume label of the drive will also be shown. If no volume label was assigned to the drive " None " will be displayed. The two windows on the right display identical lists of the files contained in the directory from which XSHELL was run. Each window also shows the number of files in the current directory and the number of bytes of the unused space on the disk.

In the bottom area of the screen, on the left is a list of the drives installed on your system, with the current drive highlighted. In the center is written 0 Files marked, on the right 0 Bytes. In the bottom left corner of the display is the DOS prompt with a blinking cursor.

# Using XSHELL With A Mouse

If you have a mouse installed on your system, you wil find it extremely convenient to move around XSHELL and run commands.

## Calling Up Menus

To call up a menu, simply move the mouse cursor over the menu name and click the left mouse button.

## Running Menu Commands

To run a menu command, simply move the mouse cursor over the command that you wish to execute and click the left mouse button. Many of the menu commands require that you first select a file or group of files to run this command on. If you click on a menu item that requires file to have been selected, the message No File(s) are Selected will appear.

### Selecting the Active Window

To move between the windows in the main screen area, simply move the mouse cursor to the window that you wish to select and click the left button. The selected window will become the active window which is always surrounded by a double lined box.

### Selecting and De-selecting Files

To select a file for a certain action such as copying or deleting, simply click on the file with your mouse. A marker will appear next to this file indicating that it is currently selected. You may select as many files as youl want in this way to perform actions on multiple files. To deselect a selected file simply click on that file a second time.

### The Command Line

If you wish to enter a DOS command at the command line, simply type the command on your keyboard in the normal way and the command will appear at the command line in the bottom left comer of your screen. Whenever you type anythlng on the keyboard, assuming you have not called up any menu functions, this will automatically appear at the command line. To run any command typed in at the command line, simply press [Enter] just as you do when not running XSHELL. You can recall the previous command by pressing the F10 key.

## Using XSHELL With The Keyboard

If you do not have a mouse, you can still access all the XSHELL functions from the keyboard.

### Calling Up Menus

TO call up a menu, simply press the relevant function key as listed against the menu names at the top of your screen. For example, to call up the Help menu, press F1; to call up the Flle menu press F3.

### Running Menu Commands

To run a menu command, simply move the highlight bar over the command that you wish to execute with the cursorup/down keys and press [Enter]. Many

of the menu commands require that you first select a file or group of files to run this command on. If you run a menu item that requires file to have been selected the message No File(s) are Selected will appear.

### Selecting the Active Window

To move between the windows in the main screen area, press the [Tab] key. This will move you between the windows on your screen clockwise. The active window which is always surrounded by a double lined box.

### Selecting and De-selecting Flies

To select a file, use the cursor up/down keys to move the highlight bar over the relevant file and press [Enter]. You may select as many files as you want at the same time to perform functions on multiple files. To deselect a previously selected file, highlight that file and press [Enter] a second time.

### The Command Line

If you wish to enter a DOS command at the command line, simply type the command on your keyboard in the normal way, press [Enter] and the command will be executed.

## Guide to General Usage

From within the shell you can carry out all your file management functions, such as copying and deleting files, … etc., creating directories, sorting files within directories and generally mampulating all the data stored on your disks and diskettes. In addition, the utilities menu includes many special functions including a number of security features and a file transfer utility which allows you to transmit data from your computer to another computer via the serial interface.

When you flrst enter XSHELL on your screen is divided into two pairs of identical windows. Whenever you want to perform an action on a file, first click on the window containing that file information, and then click on the file to mark it. You may then click on the File menu and select the item of your choice, such as Copy or Delete.

To select multiple files, simply click on several files. Each selected file will be marked. Note that at the bottom of your screen, the number of files currently marked will be shown and the total number of bytes comprising those files.

To display the directory tree of two different disks on your screen, simply go to the Disk menu, click on Change Drive, click on the drive letter to which you wish to change or type the drive letter on the keyboard, and the active window will change to displaying the directory tree of the new drive. The other directory window will still show the directory tree of the original drive and you have a clearly visual image of the directories and files on two different drives.

Use the Split and Zoom functions to change the screen display to show just one directory and file window and to zoom in on one window, allowing a full screen display of that window. Both the Split and Zoom functions are instantaneous – click on them once to change the screen display and click on them, a second time to go back to the original display.

For a full reference of all the commands in XSHELL, please refer to the XSHELL Command Reference below.

# SHELL Command Reference

XSHELL consists of an application management section and a file management section. Each section has a menu bar from which most of the XSHELL functlons can be accessed. To call up a menu, press the function key allocated to that menu or click the left mouse button with the mouse cursor on the menu name. Get further information on any of the menu bar items below by selecting them and pressing F1 to call up help. This reference section is divided into two parts. The first part deals with the File Management function of XSHELL; the second part explains how to use the A pplication function.

The Menu Bar in the File Management Section of XSHELL :

| | | |
|---|---|---|
| **F1** | **–Help** ……. | Displays content sensitive help everywhere in XSHELL. |
| **F2** | **–File** ……. | Activates a pulldown menu with file related functions. |
| **F3** | **–Disk** ……. | Activates a pulldown menu with disk related functions. |
| **F4** | **–Utilities** …… | Activates a pulldown menu with several utilities |
| **F5** | **–Applications**. | Loads the application section of XSHELL. |
| **F6** | **–Split** ……. | Toggles between double and single directory display. |
| **F7** | **–Zoom** ……. | Zooms in on the active window. |

## The F2-File Pulldown Menu

You can display the F2-File pulldown menu from the menu bar in one of two ways :

The pulldown menu contains the following functions :

| | |
|---|---|
| **Run File** …….. | **Alt R** |
| **Copy File(s)** …….. | **Alt C** |
| **Move File(s)** …… | **Alt M** |
| **Delete File (s)** …….. | **Alt D** |
| **Locate File (s)** ……. | **Alt L** |
| **Rename File (s)** …….. | **Alt N** |
| **Edit File** …….. | **Alt E** |
| **View File(s)** …….. | **Alt V** |
| **Compare File (s)** ……. | **Alt O** |
| **Print File(s)** …….. | **Alt P** |
| **Change Attributes (s)** … | **Alt A** |
| **About XSHELL** …… | **Alt I** |
| **Select Group** …….. | **Alt S** |
| **Unselect Group** …… | **Alt U** |
| **Gateway to DOS** …… | **Alt G** |
| **Exit XSHELL** …….. | **Alt X** |

## The F3-Disk Pulldown Menu

The F3 pulldown menu contains the following functions :

**Add Directory**
**Delete Directory**
**Rename Directory**
**Change Drive**
**Format Diskette**
**Make Bootable Disk**
**Copy Diskette**
**Check Disk**
**Search Disk for Text**
**Name/Rename Volume**
**Backup/Restore**

## The F4-Utilities Pulldown Menu

The F4 pulldown menu contains the following functions :

**Memory Status**
**Re-read Tree**
**Security Features**
**Setup Peripherals**
**System Time/Date**
**25/43 Line Display**
**Window Switch**
**File Display Format**
**Display Filter**
**Recall DOS Line**
**Directory Sort**
**Undelete File(s)**
**Format Recovery**
**Communications Program**
**File Transfer Link**
**Extension Associations**
**Save Configuration**

### The F5-Applications Menu Item

This menu activates the application section of the shell.

### The F6-Split Menu Item

This function toggles the one/two drive format of the XSHELL windows.

### The F7-Zoom Menu Item

This function will zoom the drive window to show one drive only, but will leave the two directory windows on the right.

## File Application Function Command Reference

This section contains a reference of all the menu commands in the file application section of XSHELL. The file application section is the default display when you enter XSHELL.

### FIleMenu Functions（F2）

## Run File

The Run File menu item executes a selected file. You must first select a file before you can choose to execute a program. Place the selector in the right portion of the screen over the file that you wish to execute. This function can only execute files with an extension of .EXE, .COM or .BAT. Upon execution, or with an automatic file extension association. XSHELL will release all of the memory occupied by itself, so that you have plenty of room to run even large application programs. When you exit the application program, XSHELL reloads itself and returns you to the file management main screen. You may enter parameters in the provided window before type application is activated.

*Hot Key : Alt R*

You can double click on a file with a mouse to run it.

## Copy File(s)

The Copy File(s) menu item makes it easy for you to copy one or more files between different directories, even across different drives.

You select files in the highlighted directory window, then copy the files to a destination of your choice. By default, XSHELL prompts you with the directory of the second window.

*Hot Key : Alt C*

## Move File(s)

The Move File(s) menu item makes it easy for you to move one or more files between different directories, even across different drives. The selection principle is similar to the copy files function.

*Hot Key :Alt M*

## Delete File(s)

The Delete File(s) menu item lets you delete one or more selected files from the active file window. If you accidentally delete files which you did not intend to delete, you can use the Undelete File(s) menu item in the F4-Utilities pulldown menu to recover the deleted file(s).

*Hot Key : Alt D*

## Locate File(s)

The Lotcate File(s) menu item lets you find the location of afile or range of files anywhere in a drive. XSHELL offers the option to view the files found. This function only works for the drive selected by the left highlighted window.

*Hot Key : Alt L*

## Rename File(s)

The Rename File(s) menu item allows you to rename one or more files. You must specify a name which does not already exist on the current directory.

*Hot Key :Alt N*

## Edit File(s)

The Edit File(s) menu item lets you edit the contents of a file or range of files. The files that you want to edit must be ASCII text files. This function calls the X-DOS editor ED.

*Hot Key : Alt E*

## View File(s)

The View File(s) menu item lets you display the contents of a file or range of files. You can scroll in the file and toggle between ASCII or Hexadecimal mode display.mode display. At the bottom of the display screen, you have a list of functions available to move around in the file.

*Hot Key : Alt V*

## Compare Files

The Compare Files menu item lets you compare the contents of a file or group of iles with the contents of another file or group of files. This function activates the COMP utility. If you need assistance on how this utility works, please refer to the COMP command in Chapter 6. of this manual.

*Hot Key : Alt O*

## Print File(s)

The Print File(s) menu item sends the contents of one or more ASCII text files to a printer connected to the printer port referenced by the PRN device (normally the LPT1 printer port).

*Hot Key : Alt P*

## Change Attributes

The Change Attributes menu item lets you change the file attributes, the time and the date stamps on a file or range of files. XSHELL will display a screen with the files that have been selected. The cursor will let you change the date and the time of the file as well as the attributes – system, hidden, archive, read-only. To toggle each attribute on or off, simply press the space bar. When you have finished, hit [Esc] and XSHELL will then ask you to confirm the changes or not.

*Hot Key : Alt A*

## About X-SHELL

Select this item to get informatlon on the X-SHELLverslon number and the copyright message.

*Hot Key : Alt I*

## Select Group

The Select Group menu item lets you select a group of files for further manipulation such as copying, moving, or viewing. You can specify a group of files like ***.**COM for instance.

*Hot Key : Alt S*

## UnSelect Group

The Unselect Group menu item lets you unselect a group of files from files which have previously been selected. The files that were tagged previously and that correspond to the unselect filters will be untagged.

*Hot Key : Alt U*

## Gateway to DOS

The Gateway to DOS menu item lets you exit XSHELL and access the DOS command line while still keeping XSHELL in memory. Type EXIT at the DOS prompt to return to XSHELL.

*Hot Key : Alt G*

## EXIT XSHELL

Purpose : The Exlt XSHELLmenu item lets you exit XSHELL and return to the DOS command line. XSHELL will keep in its configuration file, the setup of XSHELL display for next time.

*Hot Key : Alt X*

---

### The Disk Menu Commands (F3)

## Add Directory

This function is equivalent to the MD or MKDIR function of X-DOS. You must specify a name that does not currently exist in the directory where you are.

## Delete Directory

This functlon is equivalent to the RD or RMDIR function of X-DOS. Only empty directories can be deleted from the tree. Make sure that when your

selection is on the tree that you want to delete, no files are available in the file window.

## Rename Directory

This function is equivalent to the RENDIR function of X-DOS. The new name must not exist in the current directory.

## Change Drive

This function allows you to change the drive for the active drive window. You can either click with the mouse on the drive list at the bottom of the SHELL list or by using the left and right arrows to move to the desired drive and and press [ENTER].

## Format Diskette

This function lets you format a diskette from XSHELL. It simply calls the format function with the appropriate floppy drive number.

## Make bootable diskette

This function will transfer the X-DOS system file and Command Processor (as well as its overlay) to a diskette or disk. This function is similar to the SYS function.

## Copy Diskette

This function will activate the DISKCOPY command and copy the source diskette to the destination media.

## Check Disk

This function will call the CHKDSK command of X-DOS which will perform a verification of the integrity of each file and directory on the current drive.

## Search Disk for text

This command is equivalent to the X-DOS find command and will search in the selected drive for a string. It will prompt you for case sensitivity, process sub-directories, view files …

## Name/Rename Volume

This function is equivalent to the LABEL function in X-DOS.

## Backup/Restore

This command will call the XBACK utility.

---

### The Utilities Menu Commands (F4)

## Memory Status

This command gives the memory map of X-DOS. It calls the MAPMEM internal command. The memory shown does not Include the SHELLmemory which is discarded when a command is run.

## Re-read tree

This command reprocesses the tree in case one application created a directory that XSHELL could not detect. If you have created or destroyed a lot of directories, either manually at the command line or through other applications, it is a good idea to sometimes re-read the tree to update the SHELL's image of your disk.

## Security Features

The XSHELL security features are divided into two categories :

### *Encryption*

XSHELL lets you encrypt files by modifying their content using a password that you must specify. XSHELL will encrypt the files that have been selected with the same password. It will prompt you for an extension (by default **.**PWD0 that will replace the extension of the files that you wish to encrypt. Remember that the process of encrypting a file does not alter the contents of the original files.

You will be requested to type a password up to 20 characters long. Then, one by one, XSHELL will encrypt the selected files and give them their original name plus the extension **.**PWD or a new extension as specified by the user.

If you wish to decrypt files that have been encrypted with the XSHELL utility or the X-DOS ENCODE command, select the file and type in the destination extension (**.**DCD by default). Type in the original password and after

decryption, check that the file(s) are OK by viewing the contents. Please note that if you try to decrypt a file that was not encrypted, the destination file will be scrambled garbage.

### *Disk Locking*

XSHELL also lets you protect your hard disk partitions by locking them so that no unauthorized individuals can pry into their contents when you are not around. You can only lock or unlock partitions if they have been programmed to support lcoking mode using the FDISK utility. Refer to the explanation of the FDISK utility for more infomatlon on this feature.

## Setup Peripheral

XSHELL will call the MODE program and let you change some parameters of your PC.

## System Time/Date

This command helps you to change the date and the time of the system.

## 25/43 Line Video

If you have an EGA or VGA video card that supports 43 line mode, you can use this command to use the shell in 43 line mode or go back to the normal 25 line mode.

## Window Switch

Like the TAB key, you can change the active window by clicking on this function. The switch is circular.

*Hot Key : TAB*

## File display format

This function toggles the file display format in the directory window from the extended display of files (with file size, date …) to simple display (only file name). In simple display, more file names can be contained in the windows.

*Hot Key : F8*

## Display filter

The display filter enables you to select what files will be displayed in the directory window. By default all files are displayed, but you can tune this filter to restrict the number of files displayed.

## Recall Dos Line

By pressing F10, you can also recall the command previously typed in the command line.

*Hot Key : F10*

## Directory sort

This command will let you sort the directory display according to different filters : name, extension date and size.

## Undelete file(s)

If you have accidentally erased a file or files, you can use the UNDELETE feature to recover these files if they have not been over wrltten by another file. You must specifya filespec on entry and XSHELL will call the X-DOS UNDEL command.

## Format recovery

X-DOS offers the possibility to unfomat a disk that was previously formatted with the safe switch. This feature calls the format command with the recover switch turned on.

## File transfer link

XSHELL lets you transfer files from one PC to another if both are running XSHELL and connected through the serial port by a Null Modem cable.

### *Configuration*

Each machine must be running at the same of speed in order to communicate. The speed can be adjusted by the **change Configuration** command and you may select **High** or **Low** speed. In case you experience problems using the file link utility at high speed, try using the low speed. The important thing is that both machines are running

at the same speed. The communication link can be set to COM1 or COM2 using the standard serial ports.

### *Transmission Procedure*

The machine that contains the files to send is called the master and the machine to receive the data, the slave. When operating the file function, you should put the slave in the receiving mode by activating the **Receive File** command. A screen indicating that it is waiting for the master to send files will be displayed. If for some reason, you wish to abort the procedure, simply hit [Esc].

In order to send files to the slave, you must first select file or files just as you do when using the COPY function. Having selected the files that you wish to transmit, select the function **Send Selected Files** in the file link menu. The master will first establish the connection with the slave in order to test the speed to be used in the transmission. The file transfer will then be started and a window monitoring which file(s) are being transferred will be displayed.

If, having activated the **Send Selected Files**, the screen display on the master shows the window **Attempting Connection with Receiver** for longer than 15 seconds, there must be some communication problem.

In this case, the following problems may be the cause :

1. The null modem is incorrectly installed.
2. The serial interface is faulty.
3. The communications ports are incorrectly defined.
4. The speed setting is not the same on both the master and the slave.
5. The high speed setting is selected on both machines, so try the low speed setting.
6. The slave computer is not in waiting mode.

## Communication Program

This item calls X-COM, the built-in full function data communications program. If you have a modem installed in your PC, you will be able to use this program to send and receive files over the telephone Line. For full details of how to use

the X-COM communications program, please refer to Chapter 12.

## Extension association.

XSHELLwill only activate files with the extensions **.**EXE, **.**COM, and **.**BAT, thus it will issue an error message if files have different extension. However, XSHELL has an extended feature that allows you to associate files with certain extensions with a command.

When you decide to activate a file that is not recognized as a directly executable file (for instance a file with the extension **.**DOC), XSHELL will check whether this file's extension is associated with a command. If this is the case, XSHELLwill activate the command with the selected me as a parameter.

Extension associations are user programmable and are saved in a file called XASSOC.EXT. When you activate the extension association command, XSHELL will load the editor internally and let you interactively modify the extension and the command associated with them. If you need assistance on how to use ED， please refer to Chapter 9. in this manual. You can specify one extension association per line, with each line consisting of the following format :

[D: ] [PATH] COMMAND .EXT

For example, if you want all the **.**TXT files to be associated with the X-DOS editor, you would type :

ED**.**TXT

or

C**:** \DOS \ED**.**TXT

having made your selection of extension associations, you must save the extension file. In ED, simply press [Alt] W or use the **Write File** function in the main menu to save the file. Then exit the editor and return to XSHELL.

Now try running a file with an associated extension by clicking twice on the filename or by typing [Alt] R when the filename is highlighted. You should see XSHELL loading the application that you put in the extension application file and updating the program activation parameler with the filename selected.

## Save configuration.

Once you are satisfied with the setting of XSHELL such as the window split, directory display … etc.; you can save that configuration for later.

# The Applications Function

The Application section of XSHELL can be used to collect often accessed programs in groups of similar programs and can record informatlon about each program's, location on the disk, default associated parameters etc.. Those programs, once organized in a small program database can be activated very easily just by clicking on them. You will not even have to remember the name given to the binary file corresponding to the program. You could, for example, reference **ED.EXE** as the **X-DOS Editor** and then just click on that name to actlvate it.

When you activate the Application section of the SHELL, you will see the menu bar at the top of the screen and two main menus. The left hand menu is called the application menu. It will normally contain the program group names, that you have decided to create. For Instance, you could have entries such as Editors, Database, Compilers, DOS, Utilities, etc.

The menu on the right contains the sub-menu referring to each entry in the main application menu. For example, if the first entry, you type in the main application menu Is Editors, the sub-menu will contain a list of the editors that you frequently use, such as wordstar, Xywrlte, Brief, etc.

When the left hand application window is the currently selected window, by moving down the list of application group names you can see the list of programs associated with that group name in the right hand window.

The sub-menu directory will always carry the name of the main menu.

Use the [Tab] key to toggle between two windows or simply position the mouse pointer in the desired window and click the left button. By clicking on one of the entries or hitting {Enter}, you can activate the utility described by its title without having to remember the actual name of the executable file which you would normally have to type at the command line.

The functions of the Applications mode are detailed below. The Menu Bar in the Application Section of XSHELL

| | | |
|---|---|---|
| **F1** | **-Help** ..... | Display context sensitive help everywhere in XSHELL. |
| **F2** | **-Applications** ..... | Activates a pulldown menu with application functions. |
| **F3** | **-Memory Status** .... | Displays a detailed map of memory usage. |
| **F4** | **-File Management** ... | Loads the file management section of XSHELL |

## The F2-Applications Pulldown Menu

The pulldown menu contains the following functions:

| | | |
|---|---|---|
| **Add/Edit Menu Item** | ..... | **INS** |
| **Delete Menu Item** | ..... | **DEL** |
| **Reorder Menu Item** | ..... | **Alt-R** |
| **Gateway to DOS** | ..... | **Alt-G** |
| **Exit Shell** | ..... | **Alt-X** |

# Add/Edit Menu Item

The Add/Edit Menu Item menu item lets you set up and modify applications in the application menus.

Setting Up New Applications :

1. Place the highlight bar on an empty entry in the Application Main Menu.

2. Choose the Add/Edit Menu Item menu item from the F2-Applications pulldown menu., A menu is displayed in which you must specify if you want to create a sub-menu or an application menu item.

   Note: A sub-menu allows you to set up multiple menu items under a main heading, grouping related programs under a main heading. An application menu item atlows you to directly execute an application program.

3. If you choose to create a sub-menu that you are prompted to enter the name for the heading in the Applications Main Menu and you can also specify a password for the user to enter before he/she can access file related sub-menu. When you have done this press the <Enter> key. You are then returned to the applications main screen and a Applications Main Menu (menu item) is created with the name that you specified.

If you choose to setup an application program that you are prompted with an entry box in which you must specify information, and in which it will execute an application program directly. Following is a description of each of the entries in the entrybox :

### Application Title

Enter the title of the application that you are setting up the way you want it to appear in the menu.

### Application Directory

Enter the directory, including the drive, in which the executable file for the application program is located.

### Application to Run

Enter the name of the executable file which will start your application. It Is normally a good idea to include the filename extension of the file which starts your program, but it is seldom a necessity.

### Application Parameters

Enter a parameters, such as start-up switches, which you may want to pass onto the program every time it executes.

### Required Password

If you wishe to limit access to the application or the application sub-menu, you

can assign a password in this entry. The user will then have to enter the password every time the application is executed.

## Pause After Execution

If you want to make a pause before returning to XSHELL after terminating your application, you should type " Y " for Yes in this entry. This is useful if your application displays important information on the screen and does not automatlcally pause itself.

## Prompt for Parameters

If you want the application to prompt for parameters before executing, type "Y" for Yes in this enty. This Is often usefUl with applications such as word processors, which often accept different parameters every time they execute such a filename.

4. After you have entered the necessary infomation in the entry box place the highlight bar on top of the last entry. Prompt for Parameters, and press the <Enter> key. The application menu item is set up and you are returned to the Applications main screen.

To modify an existing application, follow the procedure below :

1. Place the highlight bar on top of the menu item that you want to change.

2. Choose the Add/Edlt Menu item (menu item) from the F2-Applications pulldown menu. Lf the highlighted menu item is a sub-menu heading, an entry box is displayed in which you can change the name of the sub-menu and the optional password.
   If the highlighted menu item is an application, an entry box is dlsplaved in which you can change a range of informatlon as described in step 3 under setting Up New Applications.

3. When you have made the necessary modifications in the displayed entry box, press the [Enter] key. Your changes are saved and you are returned to the applications main screen.

## Delete Menu Item

The Delete Menu Item (menu item) lets you delete menu items from the Applications Main Menu and from the applications sub-menus.

1. Place the highlight bar on top of the menu item that you want to delete.

2. Choose the Delete Menu Item (menu item) from the F2-Applications pulldown menu.

3. You will be prompted to confirm that you want to delete the highlighted menu item. Select " Yes " to delete the menu item. You are returned to the applications main screen and the menu item is gone.

## Reorder Menu Item

You may sometimes want to change the order in which the applications and sub-menus are arranged in the Application Main Menu or in any on the sub-menus. You can use this menu item to perform this task.

1. Place the the highlight bar on top of the menu item that you want to move to another location.

2. Choose the Reorder Menu Item (menu item) from the F2-Applications pulldown menu. An entrybox is displayed in which you must specify the new location for the highlighted menu item.

3. You have to type the quick key letter of the entry to which you want to move the highlighted menu item (a letter from A to O). If the location to which you want to move the highlighted menu item already contains another application or sub-menu entry, the two menu items will change places.

   Note : You cannot move the menu item to another menu other than the one the menu item is currently residing in.

4. When you have typed the quick key letter, press the <Enter> key. The highlighted menu item is moved to the location of your specified quick key letter and you are returned to the application main screen.

## Gateway to DOS

Select this item to temporarily quit XSHELL and return to DOS without removing XSHELL from memory. To go back to XSHELL, type EXIT at the DOS prompt.

## Exit Shell

Select this item to quit the XSHELL program and return to DOS.

---

## The F3-Memory Status Menu Item

This function shows the remalmng memory available to your application not including the Shell which is unloaded when you activate a program.

---

## The F5-File Managment Menu Item

Please F5 to return or go to the File Management section of the shell.

# Chapter 9

# The X-DOS Full Screen Editor

## Introduction

Included with X-DOS is ED, a full screen text editor. This is ideal for creating and editing AUTOEXEC.BAT and CONFIG.SYS files and other batch files used by X-DOS. Because of its advanced features, however, it can be used for much more complicated tasks usually requiring the use of a separate word processor. With features such as automatic line wrap, the ability to set left and write margins, justification of text and manipulation of blocks of text, ED is perfect for writing and editing all kinds of text files. Also, because it creates pure ASCII files, files created in ED can easily be downloaded into any other word processor or text editor.

ED was briefly introduced in Chapter 6., the X-DOS Command Reference, and in this chapter, we explain all the features of ED in more detail.

# Running ED

To start ED, simply type ED at the DOS prompt. The full syntax of the ED command is :

ED [d: ] [path] [filename] [/W]

### Where :

**d:path** is the drive and path to a file that you want to load into ED.

**filename** is the name of a file to load into ED.

**/W** enables ED to edit files in " Wordstar format ".

# The Structure of ED

ED is based on a menu interface which makes it very easy to use. ED is a full-screen editor that always displays a large amount of text on the screen and has the ability to manipulate this text in blocks. These are strong features that will save time and make it much less demanding to use than a line editor.

When running ED, you are placed in the editing-mode where text is entered or altered by input from the keyboard. The combination of the menu interface and the hot keys add powerful editing facilities. If you are a flrst-time user, the menu interface can be utilized right away. When you have acquired a better understanding of the features in ED, all the menu commands can be accessed faster by using the hot keys. In addition to saving time, the hot keys also incorporate block editing facilities and other powerful features, not accessible from the menu interface.

# Options for Starting ED

There are several commands available to ED from the DOS prompt. By invoking ED with the optional /W switch, files in Wordstar format can be edited in ED. This is done by stripping all control characters from the file before it is displayed on the screen. If you have a Wordstar format file called TEXT.WS which you want to edit in ED, you should type the following command at the DOS command line :

```
ED TEXT.WS /W
```

The SETED = command gives you a range of possibilities to customized ED for your particular needs. ED recognizes five switches with SET ED = command. These W (Wordwarp), T (Tab), I (Indent), L (Left Margin), and R (Right Margin).

The SET command could look something like this :

```
SET ED=W, T5, I5, L5, R75
```

This SET command would put ED into wordwrap mode, set the space between the tabs to 5, indent every paragraph 5 spaces, set the left margin to 5, and set the right margin to75. Normally, you will have a preferred setting for ED. If you use the SETED = command in your AUTOEXEC.BAT, your settings will always be selected when booting your computer. It is not necessary to use all the switches in the SET command. Do not use spaces beween any of the parameters with the SET ED = command. You can also use the X-DOS installation program to install these settings in your AUTOEXEC.BAT file.

## The Status Line

The bottom line on the screen always functlons as a status line. The status line displays basic information that is very useful when editing text; especially larger text files.

The name of the file currently being edited or created, is displayed with the complete path. If a name is not specified at the startup, ED will display " new file " until the file is saved under another name.

**[I/C/N/W]**

This set of square brackets contains important information on the current status of the keyboard. The following information is displayed :

| | | |
|---|---|---|
| **I** | . . . | Insert mode is active |
| **C** | . . . | CapsLock is active |
| **N** | . . . | NumLock is active |
| **W** | . . . | Wordwrap at the end of the line |

**[ I / / / ]**

When the I switch is ON, the insert mode is in effect. In insert mode, all text after the cursor is pushed to the right when new text Is entered. If the I switch is OFF, ED is in Overwrite mode and overwrites text to the right of the cursor. To toggle this switch ON or OFF, press the <Ins> key on your keyboard.

**[ / C / / ]**

When the C switch is ON, the <CapsLock> key is in effect. Thus, all letters will be entered in upper-case, unless the <Shift> key is pressed, in which case, they will be in lower-case.

**[ / / N / ]**

When the N switch is ON, the <NumLock> key is in effect, which means that the keyrpad can be used to enter digits.

**[ / / / W ]**

When the W switch is ON, ED is in wordwrap mode. When the cursor reaches the right margin (default right margin is column 78), ED automatically wraps the text to the next line. Toggle the wordwrap mode ON or OFF with the <Ctrl> W hot key.

### F10 = Menu

A reminder that the main menu is activated by pressing the <F10> function key.

### Line: n

Shows the line number where the cursor is at, counting from the start of the file.

### Col.: m

Shows the number of the columnl where the cursor is at.

## The Menu Interface

To ease the use of ED, the command has a menu interface. Most items in the menu are used for manipulation of text files. To access the main menu from the editing screen, press the <F10> function key.

Use the <Up> and <Down> arrow keys to move between the different menu items or a mouse if you have one installed. To select an item, highlight your choice and press <Enter>. You can also use the highlighted quick keys to select a menu item. Most of the main menu items prompts you with a sub-menu, so you can define the action to take place. If, for instance, you choose the Load File menu, you will be prompted with a sub-menu, asking you to enter the name of the file. To leave the main menu without choosing any options, press the <Esc> key. Everywhere in the menu system, choices are made by pressing the <Enter> key. The <Esc> key always brings you one level back in the menus. Following is a description on each of the main menu options. You can get help on any of the main menu items by pressing the <F1> function key when a menu item is highlighted.

## Load File

If you choose the Load File from the main menu (see below), you are prompted for the name of the file to load into ED.

Type the name of an already existing file to edit this file or write the name of a non-existing file to create a new file with that particular name. If you want to edit a file that does not reside in the default directory, you have to specify the complete path tor that file, like this :

C: \DIFFDIR \MYTEXT.DOC

If you try to load a file that does not reside default directory without specifying a pathname, ED assumes that you want to create a new file with the specified name. If you are not sure that the file that youwant to edit is in the default directory, you can use the Directory menu item form the main menu to find the file.

## Write File

The function of this menu is to saye your text file onto a diskette or hard disk. It is always recommended that you save your file often during text editing to prevent loss of data due to system crash or power failure. If you are editing a file that you previously loaded into ED with the Load File item or from the command line, ED will display the name of the file and you only need to press <Enter> to

save it to the disk(ette). If you are creating a new file, ED prompts you for a filename like this :

## New File

By choosing this menu item from the main menu, you clear all text currently residing in ED. Use this command very carefully, since it will erase any data that you already have in ED. ED has a built-in safe guard which will prompt you to save any unsaved data when you choose this menu item. If you have not saved the text in ED before issuing this command, you must acknowledge that you want to start a new text file, without first saving the old file.

## Search Pattern

In larger text files, it is quite easy to forget where a particular part of text is located. The Search Pattern menu item prompts you with an entry box in which you can specify a string of text up to 20 characters long as a search pattern. You must enter a word or part of a word which you how is included in the text that you are looking for. The search pattern that you specify can be any part of a word , but it cannot include any spaces. Therefore, it is not possible to specify a search pattern consisting of more than one word.

The search pattern is case-sensitive, so you will have to enter the search pattern exactly as it appears in the text. You also have to tell ED which way to search. This is done in the second entry of the Search Pattern entry box. Type “ D ” to search down (read forward) in the text file from your current cursor position or type “ U ” to search up (read backwards). You can tell ED exactly how many occurrences of the specified search pattern to skip before stopping on a matching text pattern. This Is done in the Occurrence entry of the Search Pattern entry box. You can use the <Ctrl> S hot key to continue the search each time ED has found a matching string.

## Change Pattern

The function of this menu item is quite similar to that of the Search Pattern menu item. In addition to finding a particular string, the Change Pattern menu item also lets you specify a replacement string.

This enables you to change a word all the way through a text file without missing any occurrences if you specify a " * " in the – How many ( * ) entry. The search is case-sensitive.

## Go to Line

This menu item lets you specify a line number where you want to position the cursor. This is a fast and efficient way to get around in large text files.If you specify a line number larger than the existing number of lines, ED gives the error message " **Wrong line number** " and lets you specify a new line number.

## Insert File

This menu item lets you combine multiple text files into one file. You will be prompted to type the name of the file that you want to insert. ED places the inserted file at the current cursor position, automatically moving all text after the current cursor position to the end of the inserted file. This allows you to insert other text files anywhere in your text file just by moving the cursor to the position where you want the new text to be inserted and select the Insert File menu item.

## Directory

If you choose this menu item from the main menu, ED will display a list of all the files in the default directory. If the default directory holds more files than is displayed in the directory list, you can use the arrow keys and the <PgUp> and <PgDn> keys to scroll back and forth in the list.

## Print

This command lets you print all or part or the text flle that you are currently editing. When you select me the Print menu item, you are prompted with an entry box.

By default, ED assumes that you want to prlnt the entire document and has therefore already filled out the first two entries of the Print File entry box with the first and the last line of your document. By specifying different values in the **From line** and **To line** entries, you can make ED print only part of a text file. The entry **Page Break** (Y/N) breaks the text file into pages of 60 lines if you input a

“ Y ” here. The last entry, with header (Y/N) gives you the option to have a header printed on the top of each printed page of your text file (the default is without a header). The header looks similar to the following :

FILENAME: myfile.doc DATE: 02/23/90 TIME: 17:01:11 PAGE:1

### Exit

This is the option to choose if you want to leave ED. If unsaved text still resides in ED, you will be prompted with a menu from which you can choose to go back to ED, exit without saving, or write the file (save it) before editing ED.

### Gateway to DOS

This menu item lets you leave ED temporarily to run a X-DOS command or to run another program while still keeping ED in memory. Whatever text you had in ED before using the Gateway to DOS menu item will still be there when you return to ED. You can return to ED by typing “ EXIT ” at the command line followed by pressing the <Enter> key.

### Help on Editor

This menu item displays all of the editing facilities available in ED together with the associated hot keys. The windows of commands can be paged through one by one using the <PgUp> and <PgDn> keys on your keyboard.

## Block Commands

ED has five commands for manipulating blocks of text. These commands are invoked by the use of hot keys.

### Mark Block

Place the cursor at the beginning or at the end of the block of text that you want to mark and press <Alt> M to define the beginning of the marked text. Use the <Up> and <Down> arrow keys and the <PgUp> and <PgDn> keys to expand and the block of marked text. The marked text will become highlighted. Once

you have highlighted the text that you want to manipulate, use one of the three block commands, <Alt>B , <Alt> Q , <Alt> R , or <Alt> J . If you decide not to perform any actions on the block of text that you have marked, press the <Alt> M hot key again to unmark the text.

### Copy Block to Paste Board (<Al> B)

This command copies the marked block of text and stores it in an area of memory called the Paste Board. This commands is ideal for making copies of the same text for use in different places ofyour document.

### Delete Block to Paste Board (<Alt> Q)

This command deletes the marked block of text and stores it in the paste board. This command is an easy way to move text around in a text file.

### Insert Paste Board Contents (<Alt> R)

This command places the contents of the paste board at the current cursor position in your text file. You can perform this operation as many times as you want. It is important to note that only one block of text is kept in the paste board at any time.

### Justify Block (<Alt> J)

This command right-justifies a paragraph of marked text by inserting spaces between words in each line. This gives your text a nice, even look. It is suggested that you justify only one paragraph at a time, to avoid unintentional justificatlon.

## Margins and Wordwarp

Besides right justification, ED also gives you the capability to set the right and left margins from within the text file. The default margin settings are displayed by two triangle marks at the bottom of the screen, pointing up just above the status line. These margins can be set with the SET ED = command at the command line. If you type in text without changing the default margin or wordwrap settings, the text will start in Column 0 and will continue across the page until you press

<Enter>. To make the text wrap around to the next line, you must enable the wordwrap function. To do this from within ED, press the <Ctrl> W hot key.

The default right margin for the wordwrap function Is column 78, if no margin settings are deflned. You can set the margins with the SET command or from within ED by using the <Ctrl> L hot key to set the left margin and the <Ctrl>R hot key to set the right margin. To set the margins from within ED, place the cursor in the column that you want to set as the left margin and press <Ctrl> L and then place the cursor in the column that you want to set as the right margin and press <Ctrl> R.

The <Alt> J command (Justify Block) will rightfully justify a marked paragraph of text withln the specified margins.

# Delete/Undelete Functions

## Delete until End of Line (<Alt> E)

By issuing this command, you delete all text from the current cursor position until the end of the line.

## Delete Current Line (<Ait> D)

This command deletes the entire line in which the cursor is located.

## Undelete Line (<Ait> U)

If you accidentally delete a line with the Delete Current Line (<Alt> D) command, you can use Undelete Line command to undo the deletion. ED remembers the most recent deleted line. This command, together with the Delete Current Line command, can be used to move lines in your text file.

# Quick Command Reference

All editing commands can be accessed directly by a single keystroke or by the use of the <Alt> or <Ctrl> key in combination with another key. To use the <Alt> / <Ctrl> key commands, the <Alt> or <Ctrl> key must be held down while the other key is pressed. See the table below for a list of all the hot key combinations.

**<Home>** ..... Places the cursor at the beginning of the line.

**<End>** ..... Places the cursor at the end of the line.

**<Ctrl> <Home>** ... Places the cursor at the beginning of the text file.

**<Ctrl> <End>** .... Places the cursor at the end of the text file.

**<Ins>** ..... Switches between Insert and Overwrite modes.

**<Del>** ..... Deletes the character at the current cursor position.

**<PgDn>** ..... Shows the next screen of text.

**<PgUp>** ..... Shows the previous screen of text.

**<Down> Arrow** ... Moves the cursor down one line.

**<Up> Arrow** ... Moves the cursor up one line.

**<Left> Arrow** ... Moves the cursor one character left..

**<Right> Arrow** ... Moves the cursor one character right.

**<Backspace>** .... Deletes the character to the left of the cursor

**<Enter>** ..... Adds a new line after the current line.

**<Alt> B** ..... Copies a marked block of text to the paste board.

**<Alt> C** ..... Changes a string of text with another string of text.

**<Alt> D** ..... Deletes current line.

**<Alt> E** ..... Deletes characters from current postion to the end of the line.

**<Alt> G** ..... Gateway to X-DOS. Exists you to the command line.

**<Alt> H** ..... Help on ED. Displays summary of available hot keys.

**<Alt> I** ..... Insert another text file at the current cursor position.

**<Alt> J** ..... Right justifies a marked block of text.

**<Alt> L** ..... Loads a new file into ED.

**<Ctrl> L** ..... Sets the left margin at the current cursor position.

**<Alt> M** ..... Marks a block of text. Use cursor key.

**<Alt> N** ..... Starts new file. Will prompt if current file is not saved.

**<Alt> O** ..... Placaes the cursor at the specified line number.

**<Alt> Q** ..... Deletes a marked block of text to the past board.

**<Alt> R** ..... Inserts text in paste board at the current cursor position.

**<Ctrl> R** ..... Sets the right margin at the current cursor position.

**<Alt> S** ..... Searches the text file for a specified string of text.

**<Ctrl> S** ..... Searches for the next occurrence of a text string.

**<Alt> U** ..... Undelete text deleted with the <Alt> D hot key.

**<Alt> V** ..... Displays the contents of the default directory. You can select a file to load or to insert into an existing text file by pressing <Enter> on any one of the displayed files and then press <Alt> L or <Alt> I.

**<Alt> W** ..... Writes the current text file to the disk.

**<Ctrl> W** ..... Toggles wordwrap mode ON or OFF.

**<Alt> X** ..... Exists ED.

# Chapter 10

# The X-DOS Backup/Restore Program

## Introduction

X-DOS includes a powerful menu driven Backup and Restore utility. If you have had the unfortunate experience of hard disk crashes or accidentally destroying files, you will appreciate this easy to use yet fast and reliable BACKUP & RESTORE utility. This program can be used to save all your hard disk data on floppy disks allowing you to later restore this data if the original data on the hard disk becomes corrupted or is deleted.

## Backup main features

- Fully menu driven and helop available at all levels.
- Supports MS-DOS command line compatible switches.
- Compress data in a very efficient way.
- Supports backup to any kind of removable floppies.
- Diskette backup preview to efficiently calculate the number of diskette(s) needed for backing up.
- Directory tree and selection by including or excluding files.

## When to Use Backup

When you should use backup depends mainly on how valuable your data is. You can never be too careful about data integrity and it is always a good idea to backup data as soon as it has been updated or created on you disk.

It is a good idea to keep different backups according to data that is frequently changed and data that is important to your computing activities but which never changes. For instance, you might decide to backup your utility directory of your disk and put the diskette(s) in a safe place. Then every day or every few days, make a backup of the files that have only been changed to a great

extent. Remember also to use at least two sets ot diskettes (minimum) when you are backing up. Never backup on to the latest diskettes.

# Methods of Backing Up Data

Different backup methods are possible when using XBACK. They are described here :

## Full Backup

In this case, select all the files from the tree selection regardless of whether the files were changed or not. If you set the option to reset archive bit afterwards, all the files will be marked as backed up.

## Incremental Backup

In this method, you are supposed to have made a first set of the full backup once that is kept safe. The incremental backups will backp only the files that you have been changed or new files. In this method, you must set the archive bit to Yes. The next incremental backup will only backup the new files or modified files since the last backup.

## Differential Backup

This method also supposes that a full backup has been made previously. However, it will make backup of files that have been changed since the first full backup. As a result, you must set the Reset Archive Bit option to No.

# Starting XBACK

The X-DOS backup command is called XBACK. You can activate the X-DOS BACKUP program by typing XBACK at the command line with no parameters. In order to maintain compatibility with MS-DOS XBACK has a predefined alias of BACKUP which means you can also run XBACK by typing BACKUP at the DOS prompt. This is for the benefit of users who are used to the BACKUP command and whether you type BACKUP or XBACK as the command makes no difference to how the program works.

XBACK will prompt you with the main menu and you can choose from one of its main features, mainly BACKUP or RESTORE. XBACK can also be activated with parameters defined as follow :

# Command Syntax

BACKUP [d1**:** ] [path] [filespec] [d2**:** ] [/ or**-**params]

### Parameters :

**[d1:] [path** – Is the drive and path to the files that you want to backup.

**[filespec]** – Is the range of files that you want to backup.

**[d2:]** – Is the floppy drive that you want to backup to.

**[params]** – Are any of the switches described as follow :

### Available XBACK Switches :

*/*, **- B** – Starts backing up the specified range of files (default ***.*** ).

*/*, **- D** – Prompts you for a date and backup files modified on or after your specified date.

*/*, **- E** – Enables an audible prompt for diskette changes and messages.

*/*, **- I** – Resets the archive attribute on files that are backed up.

*/*, **- M** – Only backs up filies that have changed since last backup.

*/*, **- O** – Gives overwrite warning if diskette already contains data.

*/*, **- P** – Enables packing of data, greatly reducing the necessary number of backup diskettes.

*/*, **- R** – Starts restoring mode. Insert last backup diskette from set.

*/*, **- S** – Includes any sub-directories to the specified filespec.

*/*, **- V** – Verifies that data can be read from the backup diskett(s).

*/*, **- Y** – Includes system and hidden files in the backup.

# Setting and Resetting Default BACKUP Switches:

The BACKUP command lets you set your preferred default switches with the SET BACKUP= /switches sommand. To make the default switch settings permanent, include the above statement in your AUTOEXEC.BAT file.

Here is an example which will make BACKUP, give an audible prompt (/) and pack your data onto fewer diskettes (/P) as default :

```
SET BACKUP = /B /P
```

BACKUP provides a delimiter (-) which gives you an easy way to turn off a BACKUP option which is either turned on as default or turned on with the SET BACKUP = /switches command. To change the Overwrite Prompt option from its default Yes to No, just execute BACKUP with the -O switch.

# Using the BACKUP feature of XBACK

Most of the use of XBACK concerns the BACKUP function. We surely hope that you will not need to use the RESTORE feature too often!

You can either access the BACKUP function from the inside XBACK at the top menu or by calling BACKUP at the command line.

## Choose the devices

The first thing before you actually start backing up is to select which drive you wish to backup and where it will be backed up. You can change the devices definition by actlvating the “ Devices “ command.

The first item lets you change the hard disk drive. Type in the hard disk that you wish to backup. The default window will probably display “ From C**:** to A**:** “. If you type D, it will change to “ From D**:** to A**:** and so on.

The “ Change Floppy Medium “ will toggle the type of floppy that you are using to which ever possibility exists. You could for instance decide to put 360K diskettes in a 1.2MB drive.

## File Selection

Once the devices are chosen, it is necessary to choose what files will be selected for backup. By default, XBACK performs a full backup, so all the files are selected. Several methods are available to select or unselect files.

## Directory Choice

This method will display a tree structure of your drive with the directory names on the left window and the files available in that directory in the right window. You can scroll in each window by using cursor keys or a mouse, and change the window by either using the TAB key or by clicking in the opposite window with the mouse.

If you are in the directory window, you can select or deselect the entire contents of the current directory as well as all the subdirectories by typing the [ENTER] key or by clicking on its name with the mouse. Alternatively, if the directory was deselected, clicking on it or typing [EMTER] will select it agaln.

If you are currently in the File window, you can select or deselect files individually by clicking on them or typing [ENTER].When you either select or deselect a file or a directory, you will see in the upper part of the window, the number of files and number of kilo bytes changing accordingly.

## System files

This option will simply take into account, the files that have the system and/or hidden attribute set, and will make them available for selection.

## Date selection

This option let you select files that have a date equal or superior to the one that you specify in the Selection Date Window. Ifyou specify a date and then return to the directory selection, you will find that some files that were previously selected have been unselected by the date filter.

## Archive Bit Set

This option is necessary If you intend to perform an incrementeal or differential backup. The Archive Bit is set, if a file is modified or created. As a result, selecting files with the Bit Archive Set will only select files that have not been backed up since the first full backup.

You must decide between differential or incremental backup by setting the Reset Archive Bit to No or Yes accordingly.

## Options

Several options are offered to you to tune your Backup procedure.

**Reset Archive Bit** was previously discussed and concerned the difference between differential and incremental backup.

The **Overwrite Feature** is a security feature that will warn you if the destination diskette already contains data and prompt you to continue or change diskette.

The **Data Compression** is important for the speed and diskette consumption ratio. When data compression is used, the space consumption on the output diskette is greatly reduced. It is hard to predict how much it will be gained since it depends of the nature of your data, but you should at least gain 30% in disk space. Data compression, however, needs substantially, more time to backup, it glven the algorithm used to compress. You may choose between the two methods according to either the number of free diskettes that you have or how much time that you are willing to spend in front of your PC when backing up.

The **Verify Option** simply checks if the data can be read again after writing. It is a security feature but it is also costly in time.

The **Beep Option** will turn on or off the sound when the user is prompted by XBACK.

## See Total

If you do not wish to modify the file selection, but still want to view how many Kilo Bytes of data will be backed up and/or how many files have been selected, you can activate the " See Total Command " to force XBACK to load the file structure and update its data.

## Backup Preview

The backup preview will simulate a real backup taking into account the files selected and compression, but will not write any data to the actual diskette. This option is available for those of you that wish to know exactly how many diskettes are needed, since estimating the number of diskettes required when data compression is " on " can be totally meaningless.

### Start Backup

When your file selection has been made and all your preferences and switches are set accordingly, you can start the backup with this function.

XBACK will display a screen that monitors the numbe of files and kilo bytes backed up with their names in the bottom part of the screen, directories on the left and files on the right. On the upper right part of the screen, it will show the current diskette number as well as its rate of filling.

When the current diskette is full, XB ACK will prompt you to enter a new diskette in the drive.

## Using the Restore Feature of XBACK

The same principle applies to the BACKUP and the RESTORE in terms of device configuration and file selection. They will therefore not be repeated here.

In order to restore a previous backup, XBACK is expecting you to put the last diskette in the diskette drive in order to rebuild the directory tree. If you have lost this diskette or if it happens that it is completely destroyed, you don't have to worry. XBACK has a feature where it can reconstruct files even if the last one is not available.

When the last diskette is available and in order, XBACK will used the saved tree structure to reconstruct the file names and paths. You will then be able to select files and directory as you did with BACKUP beforeyou decide to restore files.

If the last diskette is not available, things are a little bit more complicated. When the last diskette is missing, XBACK does not know how many files are present in the backup diskettes. It will prompt you to insert the first diskette until the last one available with you. At the last one, press " D " to tell XBACK that it was the last diskette. From then, XBACK will reconstruct the tree structure and you will be able to make selections as before.

## Directory Option

XBACK has a feature to display the directory of backed up diskettes without activating the Restore function. You will be prompted to input the last diskette of your backed up diskettes (or the first one if the last is not available). Each directory will be dlsplayed one at a time and you will be prompted to continue visualizing the tree.

## Compare Option

The compare option may be needed to check which files have changed since the previous backup. XBACK will prompt you to insert the last diskette of the previous backup to reconstruct the tree. Then input the diskettes one at a time starting with the first one.

XBACK will compare the file from the backup and the one available in your hard disk at the same location as defined in the path of the backup file. The file may be the same, it may contains differences or its length may be different. In any case, XBACK will detect any changes between the files and report them to you in the left window of the screen.

# Chapter 11

# The X-DOS DEBUG Program

## Introduction

The DEBUG command is a highly technical tool and a basic knowledge of the assembly language would be advisable to gain the most from the features provided by this program. This section will cover all the features of DEBUG including several examples, but will not be a guide in hexadecimal arthimetic or the programming of the 8088 microprocessor family, so if you are not already familiar with assembly language and computer programming, you will certainly need a third party literature covering these subjects.

### Purpose :

This utility provides the user with a flexible environment for testing, modifying, viewing and creating executable programs (**.**COM and **.**EXE files) and binary files as well as a simple tool to view and modify disk data.

### Format :

DEBUG [d**:** ] [path] [filename [parameters]]

### Where

**[d: ]** – Is the drive from which to load a file into DEBUG.
**[path]** – Is the path to the file to load into DEBUG.
**[filename]** – Is the name of the file to load into DEBUG. If there is no existing file with the specified filename, DEBUG will display an error message.
**[parameters]** – Are any parameters needed by the file being loaded into DEBUG.

### Starting DEBUG

You can start DEBUG into two ways. One way is to run DEBUG without specifying a filename. In this case, you either have to work with the current contents of the memory, input your own data from keyboard or load data from the disk with the Load command,

Either from the command line or from the menu. The other way is to specify a filenalne including any necessary parameters along with the DEBUG command. You can then Immediately start to execute, modify and display the contents of this file. Here is a short description of the two ways to start DEBUG :

## Starting DEBUG with No Command Line Parameters

To start DEBUG with no command line parameters, you should type :

```
DEBUG
```

This will load DEBUG and display the DEBUG screen which is a full-screen split into four window areas. The lower window shows the command prompt which looks like this :

```
Command : _
```

This is where you enter your commands to DEBUG. You did not specify a fllename when you loaded DEBUG, so you can not immediately run a program from within the DEBUG. There are several things that you can do at this stage though. You can display and/or modify the contents of the memory or disks; you can type an assembly program directly into DEBUG, run it and/or save it to disk; you can load a file into DEBUG with the L command to give just a few examples.

## Starting Debug with Command Line Parameters

To start DEBUG with command line parameters, you should use the following format :

```
DEBUG filename [parameters]
```

This will load both DEBUG and the specified file into the memory. The DEBUG will look similar to the display of DEBUG when loaded without any parameters except that the information shown in the windows now reflects informatlon about the loaded file.

An example of loading a file including parametes into DEBUG from the command line would be :

DEBUG FORMAT.EXE A: /360

It is important to note that then filename of the file that you want to load into DEBUG must be specified including the extension. If the file does not reside in the current directory, you will have to specify a drive specification and path name to the file.

When you load a file into DEBUG, the registers and flags are set to the following values :

The Instruction Pointer (IP) is set to HEX 0100 for COM files and to the starting CS:IP for EXE files.

The Stack Pointer (SP) is set to the bottom of the transient portion of the program loader or the end of the segment, depending on which one has the lowest value for COM files, or to the value available in the EXE header for EXE files.

The segment registers CS , DS , ES and SS are set to the segment right after the DEBUG program for COM files. For EXE files, DS and ES are set to the PSP segment.

The other registers AX , BX , CX , DX , BP , SI and DI are all set to HEX 0000.

The flags are always set to the values; Nv , Up , Ei , PI , Nz , Na , Po and Nc.

## The DEBUG Screen

The X-DOS DEBUG command is a full-screen program with distinct windows for different functlons. The display will enable you to monitor the debugging process with very little effort and contains all functions available with DEBUG. By typing the function key corresponding to the menu name, or by clicking on the menu name with a mouse, you will get a pull down menu with functions related to each of the menu listed in the menu bar.

The upper-left window is the Assemble/Unassemble window. This is the area where unassembled code is displayed.

The upper-right window is the Registers/Flags window. This area always shows the current status of the Registers and Flags. The registers can be changed manually.

The middle window is the Dump area which displays the contents of a portion of memory. The Dump area is split in two sections; the left section shows the memory contents in hexadecimal and the right section shows the memory contents as ASCII characters. Alternatively, when using the Assemble command, this window is the area where you can input assembler codes directly.

The lower window is the Command window where the user types in commands to DEBUG. Each command must be followed by the [Enter] key in order to be executed. All commands typed in the command line are remembered by DEBUG in a circular buffer similar to the DOS prompt and can be recalled by using the up and down arrow. If you wish to cancel a command typed in, just press the [ESC] key.

# Quick Reference Guide of Debug Commands

### A [start-address] Assemble

The Assemble command places the user in the middle DEBUG window and allows the user to assemble mnemonlcs directly into memory.

### BC [n] – Break-point Clear

The BC command letsyou clear a break point and thus free one of the 10 places reserved for breakpolnts.

### BP [Start-address] – Break-point

The BP command lets you specify up to 10 breakpoints in the memory.

### BE {n} – Break-point Enable

The BE command lets you enable a breakpoint that was previously disabled with the BD command.

### BD [n] – Break-point Disable

The BD command lets you disable a break point temporarily in case you wish to keep it in memory but not activated. It can be later reactivated with the BE command.

### C start-address end-address destination – Compare

The Compare command compares two portions of memory.

### D [start-address] – Dump

The Dump command displays 128 bytes from the optional starting address.

### E [start-address] – Edit Memory

The Edit Memory command places the user in the Dump window. Here the user can change the byte values of memory either in hexadeclmal or in ASCII.

### F start-address end-address values – Fill

The Fill command will fill a specified part of memory with a hexadeclmal value.

### G [= start-address] – Go

The Go command will execute a program in memory and stop execution at up to 10 different break polnts.

### H hexnumber1 hexnumber2 – Hex Calc

The Hex Calc command will return the sum and difference between two hexadecimal numbers.

### I port – Input

The Input command fetches one word/byte from the specified port.

### L address filename – Load

The Load command loads a file into the memory.

### M start-address end-address destination – Move

The Move command moves a block of memory to a different address in the memory.

### O port value – Output

The Output command sends a one word/byte value to the specified port.

### P [=address] [value] – Process

The Process command enables the user to execute a repeat string instruction, a loop instruction, a subroutine, or an interrupt before stoppinlg program execution.

### Q – Quit

TheQuit command terminates the DEBUG session and returns the user to the X-DOS prompt.

### R register – Register

The Register command let you change the value of each register. The default value is given in the register window.

### RS – Segment

The Segment command let you change the value of each segment. The default value is given in the segment window.

### RF – Flags

The Flags command let you change the value of each individual flag by choosing " S " for flag SET and " R " for flag RESET.

### S start-address end-address values string – Search

The Search command will search a range of memory for one or more hexadecimal values.

### T –Trace

The Trace command executes a program one instruction at a time and return to the debug screen at each program step.

### U [start-address] – Unassemble

The Unassemble command disassembles the information in memory into the corresponding mnemomcs.

### W address length [filename] – Write

The Write command writes a file or range of memory to a disk.

## Command Parameters

Following is a description of the different parameters.

---

### Address

Refers to a specific location in the memory. An address is a combination of a segment part and an offset part. The segment part of an address can be omitted in which case the default Data Segment (DS) is assumed, except for the Break Point (BP), Load (L), Unassemble (U) and Write (W) commands. Both the segment and offset part are made up of four hexadecimal digits but the segment

part can be referenced with the Segment Register letters (i.e. CS). When specifying both a segment and an offset part of an address, the two parts must always be separated by a colon (**:**). Leading zeros can be omitted in the address specification. The following two addresses are therelore equivalent:

0054**:**0100 and 54**:**100

The specified address must always be a valid address or otherwise unpredictable results may occur.

Note also, that the X-DOS debugger lets you replace an hexadecimal address by a segment and/or a register name.

## Break-point

Is a specified address where program execution will stop.

## Destination

The address to which the Move (M) command moves a range of data, or the beginning address at which the Compare (C) command compares a specified range of memory.

## Drive

Is a one digit value describing a logical drive letter. 0=A**:**, 1=B**:**, 2=C**:** and so on.

## Filename

Is any valid filename including extension. Include a drive specification and path in front of the filename if necessary.

## Hexnumber

Is a valid hexadeclmal number consisting of up to 4 digits.

## Port

Specifies an 8 or 16-bit port address and can consist of, from one to four hexadecimal digits.

### Register

Is any valide register specification. The register specifications are: AX, BX, CX, DX, BP, SP, SI, DI, IP, CS, DS, ES and SS.

### String

Is a range of ASCII characters enclosed in double quotes or HEXA characters with no quotes. For instances, the strings " HELLO " and 48454C4C4F are similar and valid.

### Value

Is a single byte value in hexadecimal notation.

## Special Function Keys

The X-DOS debugger has defined the function key as follow :

| | |
|---|---|
| **F1** | Will display a global help on the DEBUG commands |
| **F2** | Will display the File functions menu |
| **F3** | Will display the Disk functions menu |
| **F4** | Will display the Memory/Flag/Segment/IO functions menu |
| **F5** | Will display the Break Point functions menu |
| **F6** | Is similar to the G command |
| **F7** | Is similar to the T command |
| **F8** | Is similar to the P command |
| **F9** | Output DEBUG screen to alternate screen if connected |
| **F10** | Will swap the user/debug screen |

## Advanced Menu Commands

Some of the commands in the DEBUG utility can only be activated by the Menu bar and not at the command line. These functions concern disk access and are summarized as follows :

### Change Drive

The user can change the default drive that will be needed when loading Sectors, Clusters … from the disk. Simply type in the drive number. No network drives can be typed in.

## Load Sector

Users can load a sector of the current drive in the memory by specifying the start and end sectors as well as the loading address. Here the sectors are the logical partitions sectors, starting at the sector 0.

## Write Sectors

Users can write a portion of memory to logical sectors on the disk. Remember that the writing will always take place as full sectors. It is not possible to write half of a sector only.

## Load Boot

The boot is the first sector of the disk. This function is equivalent to loading the sector 0 from the disk by using Load Sector function. It is provided as a separate command tor convenience.

## Write Boot

It is also possible to write the boot record from a memory location. If you wish to change the boot ID, just load the boot at address 100 for instance, edit the memory with new values and rewrite the boot again.

## Load the File Allocation Table（FAT）

The FAT is the area where file cluster chains are kept. It follows the boot record in the disk format. This commands loads the entire FAT in memory. You do not have to specify a length.

## Write the FAT

For some reason, you wish to edit manually the FAT, load it first with the load FAT command, make the necessary modifications, and rewrite it. There is no need to specify sector number or length.

## Load Root Dir

This function is similar to the Load FAT but reads the Root Directory.

## Write Root Dir

This function is similar to the Write FAT but writes the Root Directory.

### Load Cluster

A cluster is the smallest allocation unit for a file. It call contain one or more sectors. The cluster number always starts at 2. When loading a cluster, just specify the first and the end cluster as well as the location where they should be loaded.

### Write Cluster

This function helps you write clusters to disk after being modified.

### Search Sector for Text

This function will search the specified region of disk for matching string of characters, either in Hexadecimal or in ASCII. Characters entered in hexadecimal should not be separated by space as this would represent the end of the string. For instance, if you wish to find the characters 123 In the disk, you would input 313233 as a string to search. If you wish to input text in ASCII form, you will put it as " 123 ".

## Command Reference

A detailed reference to all the DEBUG commands which can be directly entered in DEBUG, is given on the following pages.

# A – Assemble Command

The Assemble Command assembles 8086/8088 mnemonics into memory without needing to recompile a program before running it.

The format of the Assemble Command is :

A [start-address]

You will be placed in the Data/Dump window which will now look similar to this :

2 DD1 : 010 0

DEBUG displays the starting address with both segment and offset part. Now you can enter your assembler mnemonics and press <Enter>, after every instruction and DEBUG will show the next address. If you type a mistake, DEBUG displays the error message Syntax Error and returns to the same address. When you have entered all desired mnemonics, just press <Enter> on an empty line and DEBUG will return you to the Command window.

When you have entered enough lines of mnemonics to fill the window, DEBUG scrolls the Assemble display up one line at a time when you add new lines.

There are several things to note when entering mnemonics directly in DEBUG, since some situations differ from using an assembler.

- In DEBUG you must enter all numeric values in hexadecimal.
- Word memory locations and byte memory locations can not be distinguished by DEBUG, so you must clearly state the data type with a prefix which can be either WORD PTR or BYTE PTR.
- In DEBUG, you must specify the address for jumps and calls.
- You must use square brackets ‘’[ ]” to refer to memory locations since DEBUG can not distinguish memory locations from immediate operands.

## Example :

The following sample program will blank the screen when you run it and restore the screen again, when you press a key. Try to type it in and run it to get a feel of the use of the Assemble command. Note however, that if you have a monochrome system, you will need to change the first line of the sample program to MOV AX, B000. First type :

```
A 100
```

to go into assemble mode and access the Assemble/Unassemble window. Then type in the following program :

```
MOV AX, B800
MOV DS, AX
MOV CX, 07D0
MOV BX, 1
MOV BYTE PTR [BX], 0
ADD BX, 2
LOOP 010B
MOV AH, 1
INT 16
JZ 0113
MOV CX, 07D0
MOV BX, 1
MOV BYTE PTR [BX], 7
ADD BX, 2
LOOP 011F
RET
```

After typing in these 16 lines, Press <Enter> on an empty line to return to the Command window. Now you should give the program a name and save it to the disk.

To give the program the name BLANK.COM, type :

```
W 100 28    BLANK.COM
```

Leave DEBUG with the Quit (Q) command and test the BLANK.COM command by entering :

```
BLANK
```

Your screen should blank.

# B – Break Point Command

The Break Point command lets you specify one of the 10 break polnts that can be set simultaneously by DEBUG, enable, disable or reset a break polnt, 3 commands are available to manage break points : BC, BP, BE, BD.

The format of the Break Point command is :

BP [address]

when you press the G command to activate your program and the processor reaches the address where the break point is set, it will break and return to the DEBUG screen. Note that the break point is still valid if set with the BP command.

The format of the BE, BC, BD commands are :

Bx [break point number]

Where x is either E, C or D and the breakpoint number is from 1 to 10.

# C – Compare Command

The Compare command compares one memory section with another equal size memory section.

The format of the Compar command is :

COMPARE start-address end-address destination

If the contents of the two memory sections are identical, DEBUG will just return the cursor to the normal command position and wait for another command. If, however, there are differences in the two memory sections, DEBUG will display information on the first occurrence of differences in a window.

If you do not enter a segment when specifying the start-address and destination, DEBUG will assume the segment value as the current value of the DS register.

# D – Dump Command

The dump command can display the contents of the memory in steps of 128 bytes.

The format of the Dump command is :

D [start-address]

The Dump window is located just below the Assemble/-Unassemble window and is separated into two areas; a hexadecimal display area and an ASCII display area. The ASCII display area will not show non-printable Characters. Non-printable characters will be substituted with a period ( **.** ).

If you do not specify a start-address for Dump display, DEBUG will assume the start-address DS:0100. Subsequently, issuing the D command will advance the Dump display in steps of 128 bytes.

# E – Edit Memory Command

The Edit Memory command lets the user enter values into memory in either hexadecimal or ASCII format.

The format of the Edit Memory command is :

E start-address

When you issue the Edit command, you will be placed in the Dump window in the hexadecimal area at your specified staring address. To change any of the memory locations, just highlight them and type in the new values. Any changes in the hexadecimal Dump area will immediately be reflected in the ASCII area and vice versa. You can use the following keys to move around the area.

**Cursor Up** – Move 16 bytes above the current location
**Cursor Down** – Move 16 bytes below the current location
**Cursor Right** – Move 1 byte to the right
**Cursor Left** – Move 1 byte to the left
**PgUp** – Move 128 bytes above current location
**PgDn** – Move 128 bytes below current location

If you want to access the corresponding ASCII display area just press the <Tab> key, which can be used to switch between the hexadecimal and ASCII areas. When you have made your changes, just press the <Enter> key to return to the command window.

# F – Fill Command

The Fill command will fill specified range of memory with one hexadeclmal.

The format of the Fill command is :

F start-address end-address value

This command can be used to reset an area of memory to 0 for instance. The value parameter can only be a byte in hexadecimal.

# G – Go Command

The Go command executes the current program in memory. The format of the Go command is :

G [=start-address] [break-point]

When program of execution is finished, DEBUG displays the message, Program terminated normally. When you encounter this message, you will have to reload the program before running it again.

Issuing the Go command without any parameters will run the program currently in the memory from the address generated with the CS and IP registers (CS **:** IP) without any interruptions as if, it had been run from the DOS prompt. To issue the Go command in this manner, just type :

G

You can also force DEBUG to execute a program from another starting point than the CS**:**IP address by specifying the = start-address parameter which is the offset part of the address. The segment part of the address will still be the contents of the CS register. An example of this type of program execution is :

G = 200

which will force DEBUG to start program execution at the CS**:**0200 address in the memory.

It is also possible to use break-points to stop program execution when DEBUG reaches a specific address in a program. The Go command accepts a break-point as a parameter. This breakpoint is different from the Break points with the BP command in that it is discarded once this Break point is reached, while the traditional break points remain enabled. DEBUG will stop program execution when it reaches either the specified break-point or the ones enabled.

An example of starting a program with a specified break poInt address is :

```
G 0133
```

DEBUG would stop program execution if it encountered any of the three break-point addresses. If none of the specified break-addresses are encountered, the program execution would continue until the program terminates.

# H – Hex Calc Command

The hex cafe command returns the sum and difference between two hexadeclmal numbers.

The format of the Hex Cafe command is :

H hexnumber1 hexnumber2

This command takes two hexadecimal parameters each of up to four digits. Then it adds the parameters and substracts the second parameter from the first parameter and displays the sum and differences in a windows.

**Example :**

If you type –

H 100 AB

DEBUG will display the result :

Sum is 01AB

Difference is 0055

Where the result 01AB is the sum of the two parameters and the result 0055 is the difference between two parameters.

# I – Input Command

The Input command retrieves one or two byte from a specified port and displays it in the Command window.

The format of the Input command is :

I port

**Example :**

If you type –

I OB

you will read the contents of te port 0B HEX. If we suppose that the contents of port 0B HEX is 43 HEX, then DEBUG would read this byte and display the following in a window :

[ 43 ]

# L – Load Command

The Load command loads a file into the memory for further manipulation.

The format of the Load command is :

L filename [address]

When a file is loaded into memory in this manner, it is always loaded beginning from the address defined by CS:0100 if it is a COM file or at the starting CS:IP for an EXE file. If you want to load a file that is not a .COM or .EXE file, you have to specify the address.

Suppose you want to load the COMMAND.COM file at address 100, you would type the command :

L 100 COMMAND.COM

# M – Move Command

The Move command moves a specified block of memory to a different location in memory.

The format of the Move command is :

M start-address end-address destination

The Move can command move data across segment to another area.

If no segment part of an address is specified, the DS segment is automatically assumed. If the end and destination segment address are not specified, they will have the value of the start address.

## Examples :

The following example moves data from address 4000:300 through address 8000：600 to the memory locatlon beginning from address CS:AAAA:

M 4000:300 8000:600 CS:AAAA

To see the moved data, just type :

D CS:AAAA

# O – Output port Command

The Output to port command sends a byte or a word to the defined IO port.

The format of the Output port command is :

O port value

**Example :**

If you type –

O A03 3F

you will send the hexadecimal byte 3F to port A03 HEX. ·

# P – Process Command

The Process command enables the user to execute a repeat string instruction, a loop instruction, a subroutine, or an interrupt before stopping program execution.

The format of the Process command is :

P

The Process command works similar to the Trace (T) command. It single steps through instructions until it encounters a subroutine, a loop instruction, a repeat string instruction or an interrupt in which case, it finishes the execution of one of these before handling overcontrol to the user.

The program execution will start at the current CS:IP.

# Q – Quit Command

The Quit command exits DEBUG and returns to the X-DOS command line.

The format of the Quit command is :

```
Q
```

The Quit command does not save the file that you are currently working with when you exist DEBUG, so that you will have to remember to save any valid data before using the Quit command.

# R – Register/flag/segment Command

The Register/flag/segment command lets the user modify the contents of any of the registers, flags and segments.

The format of the Register/flag/segment command is :

| | |
|---|---|
| **R** | For modifying reglsters |
| **RF** | for modifying flags |
| **RS** | for modifying segments |

The Register/flag/segment commands places the user in the appropriate Register/flag/segment window. Here the user can type in a new value for the specified register. The registers and segments are classified as follows :

- AX, BX, CX, DX are the normal data registers.
- SP is the Stack Pointer.
- BP is the Base Pointer.
- IP is the Instruction Pointer.
- SI is the Source Index.
- DI is the Destinstion Index.
- CS is the Code Segment.
- DS is the Data Segment.
- SS is the Stack Segment.
- ES is the Extra Segment.

The flags are classified as shown in the table on the next page.

| FLAG DESCRIPTION | SET | CLEAR |
|---|---|---|
| The Overflow flag | OV | NV |
| The Direction flag | DN | UP |
| The Interrupt flag | EI | DI |
| The Sign flag | NG | PL |
| The Zero flag | ZR | NZ |
| The Auxiliary carry flag | AC | NA |
| The Parity flag | PE | PO |
| The Carry flag | CY | NC |

In order to change a flag to either Set or Reset, specify the value S or R which ever level you wish for each individual flag.

# S – Search Command

The Search command will search a range of memory for one or more hexadecimal values or ASCII characters.

The format of the Search command is :

S start-address end-address string

The Search command searches through memory for both hexadecimal values and character strings or any combination of both. Character strings must be included in double quotes.

If you do not enter a segment part of the start-address, DEBUG assumes the Data Segment（DS）·

## Examples :

If you want to search through the area CS:100 to 500 for the three hexadeclmal numbers 3A 06 7E, you should type :

S CS:100 500 3A067E

If you want to search for the ASCII characters XYZ in the memory range DS:100 to DS:FFFF, you should type :

S 100 FFFF “XYZ”

# T – Trace Command

The Trace command executes a program one instruction at a time.

The format of the Trace command is :

T

The Trace command starts program execution from the address contained in CS:IP. It will break every time a 8086 instruction is executed and return to the DEBUG screen afterwards. While the instruction is being executed, the screen will swap to the user's screen.

# U – Unassemble Command

The Unassemble command disassembles the information in the memory into the corresponding mnemonics.

The format of the Unassemble command is

U [start-address]

When you issue the Unassembly command, the unassembled code is shown in the Assembly/Unassembly window in the upper-left corner of your screen.

Issuing the Unassembly command repeatedly will continue to display new windows of unassembled code.

If you do not specify a start-address for the unassembling, DEBUG will assume the current CS:IP.

**Example :**

If you want to Unassemble code starting from the default address CS:IP, you only need to type :

U

If you want to unasselnble code starting from address CS:200, you should type :

U 200

# W – Write Command

The Write command writes a file to a disk.

The format of the Write command is :

W filename [address length]

The write command wil lwrite the content of the memory to a flle by the name given in the command line. This file will be overwritten.

The user must specify the size and the address of the file to be written.

Note that .EXE files cannot be written.

# Chapter 12

# The X-COM Communications Programs

## Introduction

X-COM is a general data communications software package which allows one computer to communicate witn anothner via modem. With data communications becoming a popular field among personal computer (PC) users, X-COM was designed to offer powerful functions, yet retain its simplicity, allowing it to operate on all PC computers and modems. X-DOS is the only operating system to offer a built-in, full function communications program, and you will not need to use any additional software to carry out all your data communications operations.

X-COM supports the full Hayes AT Command Set, and can be used with any Hayes compatible modem, which includes most modems on the market for PC users today.

X-COM contains a complete range of features, including terminal emulation to emulate popular terminals, automatic dialing, file transfer capabilities (send and receive), and the ability to setup your modem, using the software. X-COM includes a comprehensive, context sensitive on-line HELP function. The design principle of X-COM was to make it capable of doing everything that you need it to do, in the simplest possible way. So, even if you are a beginner to computerized telecommumcations, just use this program, and it will allow you to become very proficient. If you are not a beginner, you will probably be surprised by the range of features it offered.

## Activating X-COM

X-COM can be activated either from the command line at the X-DOS prompt by entenng the command :

X-COM

Or from the X-DOS SHELL from the utility menu of the file section by selecting the COMMUNICATION PROGRAM item. Once X-COM is activated, it will initialize the necessary communication ports which may take a few seconds and enter the Terminal mode.

# Basic Setup

In order for everything to function correctly with X-COM, it is crucial that the settings for your modem and X-COM are correct. To make these settings, first load X-COM.

Call up the X-COM Menu with the F10 key or click with the mouse and use the <Down> arrow key, or use a mouse if you have one, to move the highlight bar down to the fourth item from the bottom, **Basic setup**, and press <ENTER>. Alternatively, rather than moving the highlight bar, you could type the Quick keyfor Basic setup which is a " B ".

You will notice that there is a menu with a highlight bar on the left of the screen entitled Basic Setup, and a window on the right entitled Setup. You will use the lefthand Setup window to make your choices and these choices will then be displayed on the Setup window. The settings shown in the Basic setup menu when you first enter this option are the settings presently being used.

You may have to change some of them, and you may leave others as they are. The default settings are as detailed below.

## COM Port

Take a look at the first item which says COM Port. A COM port is like a channel selector on your T.V.set. It is used by a device which uses a serial interface. Modems and mice are common devices using a serial interface. Without getting into too much detail, the COM port defines where in the computer, a given device or add-on card that uses a serial interface, is to be found. Suppose you have a mouse and a modem installed in your computer, both of which use a serial interface. When you want X-COM to communicate with your modem, X-COM may accidentally communicate with your mouse, since this also uses a serial interface and, X-COM cannot recognize different

kinds of devices.

To avoid this problem, different devices have to be assigned to different ports. For example, you have to tell your software that your mouse is using COM1 and your modem is using COM2. That way, the software will know where to look for a particular device. This is further complicated by the fact that most modems have a hardware switch to define the modem as COM1 or COM2. To configure the COM port, you must know which ports are used by which devices in your computer.

If you have a mouse, you must check whether it is using COM1 or COM2. You can check this in the software that you use with your mouse; since to use the mouse with any software, you must have defined the COM port. If you have assigned the mouse to the COM1 port, and you then wish to install a modem, you must configure it to use the COM2 port.

This may involve setting a dip switch on the modem. If you have configured your modem to use the COM2 port, you must then tell X-COM to look for the modem on the COM2 port. To do this, first make sure that the highlight bar is over the first item in the Basic Setup menu, COM Port, and press <Enter>.

In the **Enter COM Port** menu, you can then use the <Up> and <Down> arrow keys, or your mouse to move the highlight bar over your desired selection. This way, you can select any one of four COM ports. Thus, to select COM2, position the highlight bar over COM2 and hit <Enter>. As soon as you do this, the **Enter COM port** menu will appear next to the **COM Port setting** in the Setup window.

---

## Connection Mode

The next item in the Basic Setup menu is the **COnnection Mode**. You can see in the Setup window that the default is shown as Modem. To see what other choices are available, highlight the **COnnection Mode**. Item in the Basic Setup menu and press <Enter>.

## Modem Connection

You can see that you have two choices, Modem connection and Direct connection. If you are going to use your modem to communicate with other modems, then default setting of " Modem Connection " should be retained. This will probably be the choice in most cases.

## Direct Connection

The Direct connection mode allows you to connect your computer directly with another computer, using a null-modem cable and no modem. In most cases, this kind of connection will be to a mainframe computer or another another PC. This kind of connection will allow you to send and receive data directly between two computers.

To quit the Connectlon Mode menu without making any changes, press <Esc> and you will returned to the Basic Setup menu. In this case, the default setting of Modem in the Setup window will not be altered. If you do wish to select Direct Connection, highlight this entry and press <Enter>. Direct connection will appear in the Setup window next to the connection Mode item.

---

## Dial Mode

The next item in the Basic Setup menu is the Dial Mode. Highlight this entry and press <Enter> to see your choices.

You have two choices, **Touch Tone dialing** (i.e. digital) and **Pulse dialing**. The option that you select will depend on the kind of telephone system installed in your area.

## Touch Tone or Pulse Dialing?

To use TouchTone Dial, the telephone network in your area must use a newer digital system. If the older pulse system is still employed, you will have to choose the Pulse Dial option. Generally speaking, areas that support touch tone dialing also support pulse dialing, but areas that support pulse dialing do not necessarily support touch tone dialing. Also note that, even though you may have a push button telephone, this does not necessarily mean that your area supports touch tone dialing.

To check, dial a number on your push button telephone. If a connection is made immediately afer you have finished keying in the phone number, your telephone network must be digital. If after keying in a number, there is a delay and a faint sound of mechanical clicking over the telephone, then your network must still be of the pulse dialing variety.

If you are not sure which system that you should use, try dialing a number with both modes and see which way works best. Within X-COM, it is very easy to change any of the settings and any changes made, can be modified later. If you want to retain the default as Touch Tonel Dial, press <Esc> to return to the Basic Setup menu. If you wish to select Pulse Dial, highlight this entry and hit <Enter>. The change will be registered in the Setup window.

## Modem Init

**Modem init** is short for Modem Initialization. Highlight this item and hit <Enter>.

You are asked to enter a modem initialization string, though you may have no idea what that is. You may remember that when you loaded X-COM, a message saying " INITIALIZING MODEM " appeared on your screen.

That message is related to what you type in this Entry Box. To initialize means to prepare, or to configure. You may enter some commands in this window, so whenever you load X-COM, these commands will be automatically sent to your modem to configu re it. That way, you can be sure that, as soon as you have loaded X-COM, your modem is setup the way that you want it, and you do not have to enter the same commands every tlme you start using X-COM.

As we mentioned at the begining of this chapter, to send command to a modem, you have to use the Hayes Command Set. The kind of commands that you might wish to enter in theinitialization string could be a command to define how many times that you want your modem to ring before it " answers " an incoming call; and/or how many seconds that you want your modem to try ringing a number before it hangs up;

And/or how long your modem should wait for a dial tone on the telephone line before attempting to dial a number, etc.

These settings may not mean much to you now, but they will probably come in very useful when you are more familiar with telecommunications and wish to expand your capabilities. Note that whatever setting you enter here can be altered at any time.

Ifyou are familiar with the Hayes Command Set, you can enter a string of several commands, in this Entry BOX. For instance, if you wish to configure your modem to automatically answer an incoming call after two rings, just type in the command ATS0=2 and press <Enter>. This command will be entered in the Setup window. It is perfectly alright to leave this entry blank, if you are not sure what commands to enter. To return to the Basic Setup menu, press <Esc>.

---

## Default Set

Highlight this item and press <Enter>. Unless you have been galloping ahead of us and entering data by yourself in the dialing directory, a message will appear saying there are no default set. The default set draws data from the Phonebook, but since you have not yet entered anything in the Phonebook, there is no default set. In X-COM, a Set consists of a name, a telephone number, and all the relevant communications settings for that telephone number. If you specify a default Set, this means that whatever settings that you have made in that particular Set, including bps rate, stop bit, echo, emulation, etc., will automatically be loaded each time that you load X-COM. Thus, you can create a Set with the parameters that you use most of the time and then these settings will be automatically be loaded, when X-COM is loaded.

This way, you will avoid having to reset the parameters of X-COM each time you use it. This will become much clearer when you have made some entries in the telephone directory, so further of information about this particular entry is contained in the section dealing with the configuration of the dialing directory. For the moment, you can just press <Esc> to leave this entry blank and return to the Basic Setup menu.

## Greetings String

Highlight the Greetings String item in the menu and press <Enter>. The **Greetings String** is the greeting message that will appear on the screen of any remote computer which connects to your computer. For instance, suppose you enter ”WELCOME TO X-COM” in the **Greetings String** Entry Box. Then, if your friend down the street connects to your computer by modem, as soon as a connection is made, the message ”WELCOME TO X-COM” will appear on his screen. Any message up to 28 characters long can be entered here. Once you have typed in your desired message, press <Enter> and your message will appear in the Setup window. If you do not wish to enter any greetings string, press <Esc> to return to the Basic Setup menu.

## Host Password

Highlight this entry in the Basic Setup menu and press <Enter>. The **Host Password** is the password that is required to be entered by another user connecting to your computer when your computer is a the Host mode. Thus, suppose you enter the password COMPUTER. If someone calls up your computer over a modem, wishing to copy a file from your computer to his computer, he will first have to enter the password COMPUTER before he will be granted access to any data.

Iif you do not enter a password, then it will not be necessary for another user, calling up your computer, to enter a password before having access to your files. If you do not wish to enter a password, hit <ESC> to return to the Basic Setup menu. If you wish to enter a password, type any combination of up to 10 characters and hit <Enter>. The password that you have selected will appear in the Setup window. We suggest that you enter a password now, even if you are not sure what the Host mode is. When you have read the section detailing the Host mode, you will understand the purpose of this password.

## Saving Settings

The new settings that you have made in the Basic Setup menu are automatically recorded by X-COM when you press <Esc> exit the Basic Setup menu. The Basic Setup menu and the Setup window will disappear and you will be returned to the X-COM Menu. Please note,

That having changed the settings, you may call up the Basic Setup menu at any time and alter your choices. Whatever settings that you have entered will automatically be loaded, when X-COM is loading, so you will not have to repeat the operations detailed here until you decide to make changes.

## Edit Phonebook

Having finished configuring your system and X-COM with the Basic Setup functions, you can now go on to making some entries in the X-COM Phonebook. Let's move one item up in the X-COM Menu to the item marked **Edit Phonebook**.

With the Edit Phonebook item highlighted, press <Enter> and the Edit Phonebook menu will appear on the left of your screen and on the right, a window showing the Current Phonebook Set. The Phonebook allows you to input more than just a phone number and a name. Along with each phone number, you can also specify all the important data transmisslon parameters for each individual number such as bps rate, number of data bits, emulation, etc.

This means that, in the future, when you want to call a number, you can simply select the name of the person or system that you want to call, and X-COM will dial that number. All the communication parameters related to that particular number will automatically be loaded as soon as you select the number. Once you have made your settings, you should never have to change them.

You will notice that when you first call up the Edit Phonebook function, the current Phonebook Set wilndow has a blank next to the Name of set and Telephone entries and that the other settings are **TTY, 1200bps, None, 8 data bits, 1 stop bit, Full Duplex, CR**. The Init Sequence entry is also blank. The reason we have filled in these settings is because, in the vast majority of cases, these are the settings that you can use for normal transmission. If you are going to use your modem to call into mainframe computers, and certain databases, you may need to alter some these settings. If you are in doubt as to what settings to use, the default settings displayed here are a good place to start. Now, let's look at each of the settings in more detail.

## Phonebook Directory

If you select this item, and press <Enter>, the message **No set name available** will appear. This is because you have not yet entered any numbers in your Phonebook, so your Phonebook cannot be displayed. We will come back to this later.

## Modify/Add Set

Highlight this entry and hit <Enter>. An Entry Box will appear, asking you to **Enter Set Name**.

A set consists of a name, a telephone number and all the communication parameters related to that telephone number. The list of set names that you enter will be shown in your Phonebook so the Set name should be such that, when you see it in your Phonebook, you know what it means. For instance, if you want a Set In your Phonebook to enable you to call a database called NewsBBS, you could enter NEWsBBS as the set name in the Entry Box. Then, when you see it in your Phonebook, you will know what it is for. A Set name can consist of up to eight alphanumerlc characters.

## Remove Set

Skip this item for the present since you have not yet made any entries. This item is explained at the end of this section since you cannot use it until you have created some Sets In the Phonebook.

## Telephone

Select this item and enter the telephone number corresponding to the name that you have just given in your Set. For instance, in the example above, if the number for the NewsBBS database was 123-4567, then this will be the number that you should enter.

This number maybe up to 26 digits long and can include international codes, area codes and commas; which can be used to pause dialing operations. Details of why you might want to insert commas in a telephone number are given in the section entitled **Dialing a Number with X-COM**. Note that you may also include dashes (-) and Spaces for the sake of clarity and these will be skipped over X-COM when the number is dialed. Having entered the number, press <Enter>.

## Emulation

Select this item and press <Enter>. The Emulation window containing six entries will appear.

### What is emulation and why do you need to use it?

Transmission of data with computers used to be restricted to professional engineers, who mainly operated with mainframe and minicomputers. It is only in recent years, with the advent of the PC, that field has become opened to the public. The terminals of the mainframes and minicomputers use different codes to perform certain display task, with each manufacturer having its own proprietary display codes.

A PC can therefore not be used to display data form a mainframe, unless the PC can behave like a terminal designed specifically for that mainframe. That is where emulatin programs come in. An emulation program enables a PC to "pretend" that it is a terminal of a given computer. Thus, if you select the VT100 emulation, your PC will emulate like a VT100 terminal when it is displaying data. That allows your PC to communicate with any minicomputer which supports VT100 terminals.

In summary, the emulation function does the following two things :

1. It produces the screen display that you would expect if you were using the terminal being emulated.

2. It allows you to use the keyboard commands employed by the terminal being emulated.

Each kind of emulation offered by X-COM is detailed individually below :

### T T Y

This is the most baslc emulation program and can be used in most cases to communicate with other PC's installed with a modem. If in doubt of which emulation to use, you should always try this emulation first.

## VT-52

The VT-52 is a popular terminal produced by Digital Equipment Corporation (DEC). Thus, this emulation should be used when Communicating with VT52 compatible systems.

## VT-100

This is another commonly used terminal, also produced by Digital Equipment Corporation. It may be necessary to use this emulation to log into some BBS's (Bulletin Board Systems).

## ANSI-BBS

This is a commonly used emulation program by BBS's all over the world. The X-COM ANSI implementation supports the full range of ANSI features, including support for colors. If you use X-COM to access a BBS, you should normally use this emulation type.

## Chat Mode

This emulation enables you to " talk " and exchange messages with another user on a remote computer. The data received and transmitted appears in two different windows, maxing it easier to read. The upper window is entitled REMOTE and will contain the messages being sent from the remote computer. The lower window is entitled LOCAL and will display the messages that you enter, and which are sent to the remote computer. Under this emulation, once you are connected to a remote computer, you can type in a message on your keyboard and it will appear directly on the monitor of the computer, with which you are connected. It will also appear on your monitor as you type it and the remote user may then likewise type in a message on his keyboard, which will appear directly on your monitor. This allows you to " chat " with a remote operator using your computer monitors.

## Host Mode

The HOST MODE allows a remote user to access files on your computer, and carry out file transfer operations on those files. The host mode contains special features, and is explained separately later in this chapter.

## Selecting an Emulation

The above emulation programs will allow you to communicate with virtually all computer systems. If you are not sure which emulation to use, check the specifications of the remote computer. As noted before, for most normal PC telecommunications, the TTY emulation can be used. If you wish to retain the default TTYi setting, press <Esc> to return to the Edit Phonebook menu, otherwise select a new option and press <Enter>.

## Speed

Select the Speed item to specify the bps rate to be used for data transmission. The speed that you select will depend on the specification on your modem. X-COM offers you, the settings from 110 bps to 19200 bps. If you have a 1200 bps modem, then the default setting of 1200 should be retained. If you have a 2400 bps modem, you can alter the speed to 2400.

Please note, however, that the speed you select should also depend on the capabilities of the modem with which you wish to communicate. Even though, you have 2400 bps modem, it is no use sending data at 2400 bps to a modem which supports a maximum speed of 1200 bps. If you do, there will certainly be an error in the transmission of the data. Select the highest bps rate supported by both your modem and the remote modem. If you are using a direct connection with a null-modem cable, you should use 19200 bps for maximum speed.

## Parity

This will depend on the settings of the remote computer with which you are communicating. In most cases, you can retain the default value.

## Data Bits

In most cases, either seven or eight data bits are used. Again, you are best advised to retain the default value, unless you know that another setting is required by the computer to which you will be connected.

## Stop Bits

Retain the default value of one stop bit unless you are sure that two stop bits are required. This also depends on the settings of the computer, to which you will be connected.

## Duplex Mode

The duplex mode that you choose will depend on the settings of the remote computer. Select either full or half duplex mode.

## CR Translation

This item means Carriage Return Translation. Highlight this item and hit <Enter>. You will see that you have a choice between CR/LF (Carriage Return/Line Feed) and CR (Carringe Return). This setting will also affect the way in which data is displayed on your screen. Whichever optlon that you choose should be synchronized with the computer you intend to connect to. If you select CR, then the remote computer should select CR/LF. If you selectCR/LF, then the remote computer should select CR.

The reason is, if a remote computer is is transmitting data to your screen and you both have set a CR setting, you will have no Line Feed. Thus, when data is transmitted and the end of the line is reached, the next batch of data will be displayed on top of the first line. This is because there is no Line Feed instruction to tell the computer that the data should be prlnted on the next line.

Similarly, if your computer and the remote computer are both configured with the CR/LF setting then, upon reaching the end of a line of data, the remote computer will be instructed to jump down one line. Your computer will then tell it to jump domn one line again, so the result will be double spaced text appearing on your screen. Ideally, you should check with the remote operator to ensure that you have the complementary settings, otherwise you will have to adjust this setting through trial and error.

## Init Sequence

The Initializatlon sequence in the Edit Phonebook menu is similar to the initialization string in the Basic Setup menu. The Init Sequence here is used

to set up parameters related to slngle phone book entrles. The phonepook initialization sequence can contain any Hayes commands which will be activated when the Set, in which they are written, is used to dial a number.

## Macro File

Macro Files are used to automate repetitive tasks that you need yourself doing again and again. Connecting to a BBS system is an example of a repetitive task. You have to go through the same procedure every time. Use a Macro file to simplify your logon procedures. Details of what Macro files are and how to use them are given later in this chapter.

## Notes on Making Phonebook Sets

Try entering a few numbers into your Phonebook. To do this, first enter the name, and then the telephone number using the **Edit Phonebook** menu. The name and the number that you enter will appear in the Phonebook window. For each Set that you enter, check whether you should alter the communication parameters. When you have completed a Phonebook Set, it is not necessary to save it as X-COM automatically stores your Sets as you type them in. To type in another Set, just go back to the Modify/Add Set item and type in a new name.

Once you have typed in a new Set name, all other entries in thePhonebook window will return to the default values. As soon as you enter a Set, it is saved. To check that each Set has been saved in the Phonebook, go back to the first item in the Edit Phonebook menu, **Phonebook Directory**. If you call this function up now, the Phonebook Directory will appear on the left side of the screen.

The name of each Phonebook Set that you have entered will be shown. Scroll through the set names that you have entered and you will see that the settings shown in the **Current Phonebook Set** window will change, according to the settings that you have made for each Setname. If you find that you have made an error in a Set, go to the Modify/Add Set menu and enter the name of the set that you wish to modify. Make the necessary changes, using the Edit Phonebook menu, and then check the result again using the PhonebookDirectory.

### Remove Set

If, after having made some entries in your Phonebook, you decide that you wish to delete a Set, highligh this option. Alist of Set names will appear on your screen, just as in the Phonebook Directory option.

Move the highlight bar over the Set that you wish to delete and press <Enter>, and that Set will be removed from the Phonebook. To check that it really has been deleted, go back to the Phonebook Directory function and check the contents of the Phonebook. You will see that the Set that you have just deleted is no longer there. Note that the Remove Set function can only be used to remove a whole Set, not one single parameter within a Set. To change single items within a given Set, use the Modify/Add Set menu.

## Dialing and Making a Connection with X-COM

If you have never used your computer to connect with remote computers over the telephone line before, you are probably unfamiliar with the basic dialing procedures. We give you a short guide here to the general principles involved in using modems to dial telephone numbers, and to what you can expect when yo make a connection.

In order to send and receive data successfully, you must do thngs in the right order. It does not matter whether you dial a number with the Phonebook, with the Number to Dial function, or using the Hayes  Command Set. The basic order of operations will always be the same.

### If you wish to send data, you should :

1. Use X-COM to dial the correct telephone number.
2. Wait for a connection, as shown by the result code on your screen (see later in this section for details on result codes).
3. Send (upload) the desired data.
4. Disconnect.

### If you wish to receive data, you should :

1. Use X-COM to dial the correct telephone number.
2. Wait for a connection.
3. Receive (download) the desired data.
4. Disconnect.

Please note that these instructions only give the basic steps involved. In between each of these steps, you may have to perform other operations, such as entering a flle name, selecting a file transfer protocol, etc. However,the basic order of these main operations will always apply. Exactly what happens when you connect to a remote computer will depend on the nature of that remote computer and the kind of commumcations software used by the remote computer. Remember that you must logoff (disconnect) when you have completed operations, otherwise your modem will stay online waiting for a command, which could result in a rather large phone bill.

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## Result Codes

A Result Code, as its name implies, tells you the result ot the call that you have just made. For instance, if you dial a number which is busy, X-COM will send the result code – **Line is busy**. If there is no modem, or nobody, to answer the number you called, atter a certain period of time, the modem will send the result code – **No Carrier Detected**. If you dial one of your friends' number to log onto his computer, your screen show – **Communication established** if a connection Is made.

When you use the X-COM dialing facilities, the result codes issued by X-COM may differ from those specified in your modem manua, because X-COM translates result codes into a special format, Standard result codes and the X-COM equivalents are given on the following page :

| Standard Result Codes | X—COM Equivalents |
|---|---|
| NO CARRIER | No Carrier Detected |
| CONNECT | Communication Established |
| NO DIALTONE | No Dial Tone Detected |
| BUSY | Line is Busy |
| NO ANSWER | No Answer |

If you dial wlth the Hayes commands at theTerminal Screen, and do not use the X-COM menus, the result codes that you see will be in the starndard format.

## Using the Phonebook to Dial a Number

In the X-COM menu, select me first entry, Phonebook, and press <Enter>. On the left of the screen is the Dial from the Phonebook menu which contains a list of Set names that you entered when you configured the Phonebook. Remember that each Set name refers to a particular telephone number with a matching set of communications parameters for that number. On the right is the Current Phonebook Set window.

When you select the Phonebook, the name of the first set that you entered will be highlighted. The settings shown in the Current Phonebook Set window will correspond to that of the first Set name. With the <Up> and <Down> arrow keys or with your mouse, move the highlight bar up and down in the Phonebook. You will see that, as you highlight each Set, the settings which you defined for that Set, will appear in the Current Phonebook Set window.

So how do you go about dialing a number? Simple! Highlight the name of the Set which you wish to dial and press <Enter>. That is all you have to do. As you can see from the message on your screen, the number corresponding to the Set, which you have selected is being dialed. If you have entered an Initialization String in the Set being dialed, X-COM will first prompt you with a message – **Initialiing Modem** before displaying the **Modem is Dialing** message. When a Phonebook Set is dialed, X-COM automatically configures itself according to the settings that you specified for that Set, as shown in the Current Phonebook Set wlndow. How do you know X-COM has done this?

Just take alook at the Status Line at the bottom of your screen. You will see that the name of the Set you are dialing has appeared at the far left, along with all of the other parameters, including; Emulation, bps rate, number of Data Bits, etc. The items on the Status Line now reflect those of the Set that your are dialing.

Thus, you can see that once you have entered a SET into the Phonebook menu, select the desired Set name and press <Enter>. X-COM will do everything else for you!

## Automatic Redialing

If X-COM displays the message – **Line is Busy** on your screen, you will probably want to keep trying untial you get through. X-COM features an automatic dial facility, so you do not actually need to do anything.

When X-COM encounters a busy line, it will automatically redial the number five times at 20 second intervals. If you wish to exit from this redial sequence, press <Esc>. If no connection is made after dialing five times, the call will be aborted. This feature works when you dial with the Phonebook and the Numbaer to Dial function, which is detailed later in thIs chapter.

If the **No Carrier Detected** message appears, you will automatically be returned to the **Terminal Mode**. If you want to try the number again, you will have to call up the X-COM Menu again and repeat the dialing operation.

## Aborting a Call

If you decide to abort to a call while the modem is dialing, press <Esc>. The Phonebook will immediately disappear from the screen and you will be returned to the Terminal Screen.

## Making Connection

When a connection is made with a remote computer, a result code will be displayed to show that you are connected (see the previous section on Result Codes). Then the Phonebook will dlsappear from

your screen and you will be returned to the Terminal Mode, i.e. your screen will be blank, except for the Status Line. What happens next will depend on the nature of the computer, with which you are connected.

## Disconnecting

After you have dialed a number and made a connection, the next step is often to send or receive a file. This is explained in the next section entitled Sending and Receiving Files. Before you go to that ection, however, we suggest that you first learn how to disconnect your modem, which means terminating the connection. If you want to abort a connection, press the <F10> function key to call up the X-COM Menu. Move the highlight bar down over the item **Disconnect** and press <Enter>. A window will appear in the center of your screen with the message **Please Wait**. **Disconnecting Line**. After a few seconds, you will be returned to the Terminal Screen, and the line should be disconnected. The <Alt> key command, <Alt> D can also be used to disconnect and this can be entered directly from the Terminal Screen without calling up the X-COM Menu.

## Using the Number to Dial item

Sometimes you may wish to dial a number that is not in your Phonebook. Maybe you want to first test a number or maybe it is number that you will rarely use, so you do not not wish to enter it into your Phonebook. In this case, you should select the second item in the X-COM Menu, Number to Dial.

You are asked to enter the number, so type in the number from your keyboad. You may also enter commas in the number to cause a pause. This is especially useful if you are dialing through a switchboard, which often needs one digit followed by a delay before a dial tone is given. For example, suppose you have to dial " 0 " to get an outside line, before dialing the actual telephone number.

When you dial 0, there is a delay of about two seconds before you get an outside line. So you should enter your number as :

0, [telephone nulnber]

This will result in the modem dialing a zero, and then wait for two second before dialng the telephone number. If you want a longer delay, you can enter several commas. Please note that the length of delay caused by entering a comma, will depend on the confiuration of your modem. The default Hayes setting is two seconds, but this setting can be altered with a Hayes command.

For the sake of clarity, you can also include dashes (-) in the number when you type it in. X-COM ignores the dashes when it dials the number. If you make an error when typing the number, just use the <Backspace> key to delete the unwanted digits. Or if you want to start all over again, press the <F7> function key to clear the Entry Box. You may also use the <Ins> (Insert) key to toggle between Insert and Overwrite mode, and use the <Left> and <Right> arrow keys to move the cursor within the entry to make correction in the middle of a number. Once you are satisfied that the number you have entered is correct, press <Enter>. The number that you have entered will be dialed. To find out what to do, then look at the next section on sending and receiving Files.

## Sending a File

We are now going to assume that you wish to send a file entitled LETTER1.DAT, which is a letter that you have written with your text editor. For the purpose of this example, it would be useful if you wrote a short data file with the X-DOS text editor and call it LETTER1.DAT. Refer to Chapter 9 in this manual for details on how to use ED.

Having written a file, you now wish to send this file LETTER1.DAT to your friend who also has aPC installed with a modem. After having made a connection, you can send the file.

To send a file, first press the <F10> function key to call up the X-COM Menu. It doesn't matter whether you are connected to another modem or not, you can always use the <F10> function key to call up the X-COM Menu. Calling up the menu will not cause you

to be disconnected or affect the connection in any way. Also, remember that you can use the <Alt> keys to enter commands directly, rather than calling up the X-COM Menu everytime.

## Choosing a Send File Protocol

Having called up the X-COM Menu, select the the third item, **Send File**. Then entries in the Send File Protocols menu may not be familiar to you at this stage. Basically, the Send File Protocols menu contains a list of transmission protocols, any of which you can choose. A transmisstion protocol is the way in which data is sent. Data can be sent in one long stream, it can be sent in blocks of a certain number of bytes at a time, It can be sent and echoed back to your screen so you can see the data, as it is bwing transmitted, etc…

Each of the transmission protocols listed in the Send File Protocols menu sends data in a certain way. Whichever protocol that you use, the end result will be the same – i.e. in our present example, the file LETTER1.DAT will be sent to your friend's computer. Using a different protocol simply means that the data is transmitted in a different way. So how do you know which one to select? A look at the features, advantages and disadvantages of each protocol are givenlater in this chapter. We suggest you skip that for now and accept our word for the moment that XMODEM would be a good choice.

Select the third item in the File Sending Menu, which is XMODEM. You are told to **Enter File Name to Send**. In our present example, we wish to send the file LETTER1.DAT, so type in this name. Then press <Enter>. Your firend will now have to access the Receive File menu on his computer, and select XMODEM as the receiving protocol.

The window is entitled XMODM Transfer Status. It gives you details of the transmission currently in progress, which in our example is the sending of the file LETTER1.DAT. Each itme displayed in the XMODEM Transfer Status window is detailed below, going from the top to the bottom.

## Transmission Mode

Next to this entry, **Transmit** will be displayed, since you are now transmitting a file, not receiving one. When you are receiving, **Receive** will be displayed.

## File Name

Next to this entry is the name of the file that you are presently transmitting, which in this case is LETTER1.DAT.

## Packet number

When XMODEM transmits data, it does so in “packets“ of 128 bytes. That means it divides the data to be sent into packets of data of 128 bytes, and sends each packet until all the data has been transmitted. The packet number tells you which packet is presently being transmitted. When you first activate the XMODEM transfer function, this will read ”1”, since the first packet is ready to be sent. If you are sending a long file, the number shown next to Packet Number will count through 1, 2, 3, 4, … … until all the packets have been transmitted. The number of packets sent will depend on the total length of the file being sent. For example, if you send a file 5,210 bytes long, this will consist of 40 packets (5,120 divided by 128 = number of packets). Some other communication packages and BBS systems refer to a packet as a block.

There is of course, no need for you to make any calculation, as XMODEM will do this for you.

## Number of Errors

Hopefully this item is blank. Errors refer to errors in the transmission of data. Errors may occur because of a fault in the telephone line or modem, or a fault in the file being sent. However, if an error occurs, this does not necessarily mean that your transmission has falied.

If XMODEM sends a packet and an error occurs, it will notify you that one error has occurred and it will automatically go back to the beginning of the packet and try to transmit it again. If the error was due to some temporary interference on the telephone line, chances are that the second attempt at transmission will be successful and XMODEM can than continue to the

next packet. If the error is repeated, XMODEM will keep trying. Each time an error occurs, it will add one to the number of errors recorded. If you see that the number of errors is increasing, and that the packet number being sent is not changing, then you will know that there is a fault in the system or the file, or the line is just too noisy to transmit data on at your current speed, and you should abort the transmission by pressing the <ESC> key. XMODM will automatically abort the file transfer if it encounters ten consecutive errors.

## Type of XMODEM

Either Checksum or CRC will be dilsplayed next to this item. Checksum and CRC are two methods of error correction. X-COM supports both methods and the correct method will automatically be selected according to the method used by the remote modem.

## Transmission Mode

The message **Wait Initialization** is shown next to this item at first. That means that your modem is being initialized prior to the transmission taking place. While you are sending a file, the message **Transmission running** should appear. If you were to abort the transmission of the file by pressing the <Esc> key, the message **Aborted by User** will be shown. This item tells you the present status of the transmission.

At the bottom of the window is the message – **Press any key to return to menu**. So if you suddenly realize that you are sending the wrong file, or you for some reason, want to abort the transmission, you can press the <Esc> key, and the transmission will be terminated.

We are presently sending the file LETTER1.DAT. If transmission goes ahead without any problems, when all the data has been transmitted, the message at the bottom of the screen will change to – **Press any key to return to menu**.

To disconnect the line after a successful transmission of a file, use the Disconnect function in the X-COM Menu or use the <Alt> L command.

Following is a brief introduction to the windows for each of the other transmission protocols. We suggest that you go back to the X-COM Menu, select **Send File**, and then highlight each protocol in turn, to call up the relevant window. Note that in order to view some of the transmission protocol screens, you will have to enter a file name. It does not matter what file that you enter, but it must be a real life, or the error message – **File Unknown** will appear on your screen. We suggest that, for the purpose of experiment, you use the LETTER1.DAT file, or any other text file that you have stored in your computer. Note that you do not have to be connected to another computer to view the protocol screens.

---

## ASCII

Note that when you call up the ASCII Transfer Status window, even though you are not connected to a remote computer, and even though you may not have connected your modem, the number of bytes shown will count up in units of 256. How can the file be sent when you have not even dialed a number? Well, of course the file is not being sent anywhere, but the ASCII transmission protocol still counts through the file just as if it was sending it. This will in no way harm the file or your computer.

---

## ASCII ECHO

The ASCII ECHO protocol works in exactly the same way as ASCII, except that ASCII ECHO echoes everything it transmits to your screen too. Thus, when you use ASCII ECHO, no ASCII Transfer Status window will appear on your screen. Instead the text of the file that you are transmitting will be written you're your screen · Only when the transmission is completed, will the ASCII Transfer Status Window appear. It is exactly the same as for ASCII, and will show you the total number of bytes transmitted, while the entry Transfer Status should read – **Transmission ended OK**.

## YMODEM

EXPLANATION OF YMODEM TRANSFER STATUS WINDOW

| | |
|---|---|
| **YMODE Mode** | There are different versions of the YMODEM protocol. This entry tells you which version is currently being used. |
| **Transmission Mode** | Same as XMODEM. |
| **File Name** | Same as XMODEM. |
| **File Size (Bytes)** | YMODEM counts the total number of bytes in a file before transmitting the file. This entry tells you the total number of bytes in the file that you which to transmit. |
| **File Number** | Only applicable in YMODEM Batch (see below). |
| **Packet Number** | Same as XMODEM. |
| **Number of Errors** | Same as XMODEM. |
| **Current Status** | Same as XMODEM. |

## YMODEM BATCH

The file transfer protocol window for YMODEM Batch is the same as for YMODEM, as the basic transmission specifications are exactly the same. YMODEM Batch, however, is capable of multiple file transfers. This means that, when yo enter the name of the file that you wish to transmit, you can use wildcard characters such as " ? " and " * ". If you entered *.TXT as the name of the file to transmit, YMODE Batch will send ALL files in the current directory with the extension **.TXT**. YMODEM Batch can also sen packets of either 128 bytes or 1024 bytes long.

| | |
|---|---|
| **YMODE Mode** | This will read YMODEM Batch, to tell you that you are using this mode of YMODEM |
| **Transmission Mode** | Same as XMODEM. |
| **File Name** | Same as XMODEM. |
| **File Size (Bytes)** | Same as XMODEM |
| **File Number** | YMODEM Batch is capable of multiple file transfers and this item tells you the number of the file presently being transmitted. |
| **Packet Number** | Same as XMODEM. |
| **Number of Errors** | Same as XMODEM. |
| **Current Status** | Same as XMODEM. |

## KERMIT

EXPLANATION OF KERMIT TRANSFER STATUS WINDOW

| | |
|---|---|
| **YMODE Mode** | Same as XMODEM. |
| **Transmission Mode** | Same as XMODEM. |
| **File Name** | Same as XMODEM. |
| **File Size (Bytes)** | KERMIT counts the number of bytes in a file that is to be sent. |
| **File Type** | Not yet implemented. |
| **File Number** | Not yet implemented. |
| **Compression** | Not yet implemented. |
| **Packet Number** | Same as XMODEM. |
| **Elapsed Transfer Time** | Shows the time elapsed since the start of the current file transfer. |
| **Packet Number** | Same as XMODEM. |
| **Bytes Transferred** | Shows the number of bytes that have already been sent. |
| **Current Status** | Same as XMODEM. |

## COMPUSERVE B

Compuserve is the name or a popular Bulletin Board System in a the United States. The Compuserve B file transfer protocol can only be used to call up the Compurserve BBS, so you will only use it if you subscribe to the this BBS.

### EXPLANATION OF COMPUSERVE B TRANSFER STATUS WINDOW

| | |
|---|---|
| **Transmission Mode** | Same as XMODEM. |
| **File Name** | Same as XMODEM. |
| **Packet Number** | Same as XMODEM. |
| **Number of Errors** | Same as XMODEM. |
| **Current Status** | Same as XMODEM. |

## Receiving a File

Having sent your file LETTER.DAT to your friend, you now wish your friend to send to you a file that is stored in his ocmputer. Let us suppose that there is a file called README on your friend's computer and you wish to be able to receive this file on your own computer. To receive a file on your computer, you must tell X-COM what file transfer protocol is going to be used to carry out the transmission. Also, the protocol that you select to receive on, must be me same as the protocol used by your friend to send the file. The process is almost exactly the same as for sending a file. You must first call up your friend with the X-COM Phonebook or the Number to Dial item. Or, if you want him to pay for the call, let him call you. When you are connected, as shown by the **Communication Established** result your screen, call up the X-COM Menu and select the **Receive File** item.

You will notice that the Receive File Protocols menu is almost exactly the same as the Send File Protocols menu, except that the first entry reads **ASCII Receive** instead of just **ASCII**. Let us suppose that you have agreed with your friend to use the **ASCII** protocol to carry out the file tansfer. The highlight bar is already over the **ASCII Receive** function when the Receive File Protocol menu first appears, so just press <Enter> to select this item.

You will be asked to – **Enter the file name to receive**. In our example, you want to receive the file README, so type this into the space provided. It makes no difference whether you use upper- or lower- case letters when typing in file names. The file name that you type is the name under which file will be saved on your computer and you can choose any legal file name. The file name does not necessarily have to be the same as the name of the file on the remote computer. Having typed in the file name, press <Enter> and the **ASCII Transfer Status** window will appear on your screen.

What happens then? Nothing, until your friend sends the file. **Remember, the receive file function only prepares your computer to receive a file. The actual transmission of the file mus tbe initiated by the remote user, who must use the send file procedure**. That is why, you can select a different filename. When your friend sends you the README file, and if you entered a different file name, for example, MESSAGE, then you will receive the README file, but it will be saved on your computer under the name MESSAGE. You cannot use the Receive File function to select any file on a remote computer and download it to your computer, unless the remote computer is configured in the host mode.

It is not necessary for us to explain the individual transmission protocol screens for receiving a file, since they are similar to those for sending a file. Equally, the choice of protocols for receiving a file will be based on the same factors as the choice of protocol for sending a file. If you are in doubt as to what protocol to use, a safe choice would be XMODEM, which is probably the most commonly used protocol for sending and receiving files with Personal Computers. When you have received a file from another computer, how do you know your computer has received it? Where will it be stored on your disk? To find the answer to these questions, please take a look at the next section, File Functions.

## File Functions

When you are sending and receiving files, you will probably be using files in different sub-directories. X-COM allows you to look for files in different sub-directories, and even to carry out a multi-directory file search.

Please take note, however, that the file functions provided by X-COM can only be used on the drive from which X-COM was loaded.This means that, if you load X-COM from your **C:** fixed disk drive, you may only view and change to directories on the **C:** drive. You cannot access files on the **A:** or **B:** drive.

To access the file functions, call up the X-COM Menu and highlight the File Functions item.

---

## Current Directory

**Current Directory**, the first item in the menu, will be highlighted. Press <Enter> to see what this function does. A window called **Directory** will appear. In this window, a list of all the files in the current directory is displayed. The list may not fill the window completely, or there may be too many files to be displayed in the window at one time.

You Can use the <Down> arrow key to move the highlight bar down the list (or of course, you can use your mouse). When you reach the bottom of the window, and keep pressing the <Down> arrow key. Any files not displayed will come into the window one by one. When you have reached the bottom of the list, yourcomputer will “beep”, if you continue to press the <Down> arrow key. You may then use the <Up> key to scroll back up through the list of files and, again, when you reach the top, your computer will “beep”. Thus, this function allows you to view a list of all the files contained in the present directory. To quit the Directory list and return to the Files/Dir Functions menu, press <ESC>.

## Change Directory

The next function allows you to change to another directory from which you are presentlyin. Remember that you cannot change to

another drive, but only to another directory. Highlight this function, and press <Enter>. You are asked to enter the name of the directory that you wish to change to. Suppose you loaded X-COM from a sub-directory named COMM, and you now want to view files in the subdirectory DATAFILE, which is a sub-directory of COMM. In this case, enter DATAFILE and press <Enter>. Note that it is not necessary to write the letter of the drive, since the action will automatically be carried out on the drive, from which X-COM was loaded. Thus, if you loaded X-COM from a floppy disk in the A**:** drive, then X-COM will look for the sub-directory DATAFILE on the A**:** drive; If you loaded X-COM from your fixed disk drive, C**:**, then X-COM will look for the sub-directory on the C**:** drive.

When you change directories, it is also possible to go to the sub-directory of a sub-directory. When you are asked to enter a new directory, you could enter a command such as\BUSINESS\LETTERS, which would change the default directory to the LETTERS sub-directory of the BUSINESS sub-directory.

## Find File

Sometimes you may forget in which sub-directory, a file is stored, and indeed, whether the file is stored on your disk drive at all. In this case, the **Find File** function provided by X-COM can be extremely useful. Suppose ou want to send a file called LETTER1.DAT, using X-COM, but you have forgotten in which sub-directory that this file is stored; and you are not really sure if you called it LETTER1.DAT or LETTER.DAT. Select the **Find File** item in the File/Dir Functions menu. You are asked to enter a file name, so type in ***.DAT** and press <Enter>. A window will appear showing – **Please wait**. **Searching file(s)**. X-COM will now find all files matching the filespec ***.DAT**. How long you have to wait will depend on the capacity of your disk drive, but it should be no more than a few seconds. Q

When completed, the display will list all files matching the filespec that you entered. Also,you willl be able to see that the file – LETTER1.DAT; or if no file called LETTER.DAT is found.

Again please note that the file search is only carried out on the drive from which X-COM was loaded.

## View / Edit File

This item can be selected when you wish to edit an existing text file with the text editor included with X-DOS. You may also create new text files with the X-DOS text editor. To call up the X-DOS text ediftor, select the **View/Edit file** item in the Files/Dir Functions menu. For full details of how to use the text editor, look at the chapter on ED in the X-DOS manual.

## Capture

The Capture function allows you to “capture” everything displayed on your Terminal Screen and store it on your disk drive under any file name in which you may choose for it. You can also capture files directly to your prInter. Suppose you have called up a database and you want to see a directory of files currently stored in that database. Not only do you want to see the directory of files on your screen, but you also want to be able to store that directory for reference in the future. In this case, you would use the Capture function to ensure that the information sent to your computer by the database is stored on your disk drive.

When you decide that you want to store the information, call up the X-COM Menu and select the Capture menu.

You have two options, **Begin Capture** and **End Capture**. Of course, you must first select **Begin Capture**. Select this item and you will be asked for a **Capture File Name**. This file name will be the file name under which the captured data will be stored on your disk drive. Enter any file name of eight letters with a three letter extension if desired, and press <Enter>.

Notice that the entry to the right of the box marked CD (or NCD) on the Status Line at the bottom of your screen, now shows **CA** (Capture), to indicate that a Capture is in progress. When all the data that you wish to capture has been sent to your computer, call up the Capture function again and select the **End Capture** option to finish the operation. The **CA** in the Status Line will go back to blank. You can now use the X-COM **File Function** to check that the file you just captured was saved to your disk drive under the filename you gave it.

You can then use the editor to view the contents of the captured file at any time.

## Capturing to your Printer

If you want the captured data to be sent directly to your prInter instead of being stored on your disk drive, the operation for capturing the file is the same. Select the Begin Capture function in the Capture menu. Then, when you are asked to enter the **Capture file name**, type :

PRN <Enter>

The captured data will be sent directly to your printer. When you wish to end the Capture function, select the End Capture option in the Capture menu, just as with capturing a file to disk.

## Gateway to DOS

This function allows you to jump between X-COM and DOS without actually leaving X-COM. You will often find, when you are using any program, that you will need to use some of the utilities provided by DOS. It would be very inconvenient if you had to quit X-COM to access the DOS functions, and then reload X-COM.

The Gateway to DOS function allows you to jump to DOS, do whatever you want to do, and then jump straight back to X-COM, even when you are online with a remote system. To use this function,select the **Gateway to DOS** item in the X-COM Menu. The X-COM screen will be cleared, and you will be returned to DOS. Once in DOS, you can perform any DOS function such as making a directory, checking what files you have on any of your disk drives, etc. You can even run another application program if you have enough memory.

When you want to return to X-COM, type **EXIT <Enter>** at the the DOS prompt; and you witl be returned to the Terminal Screen of X-COM, just as if you had never left it.

# An Introduction to Macro Files

A Macro File is a file which “remembers” a given sequence of actions and can repeat them automatically. If that sounds complicated, let’s start with an example to give you a clearer picture.

Suppose you have a Set in your Phonebook called NEWSBBS, which you want to use to call a BBS (Bulletin Board System) by that name. Suppose you have named the Macro file for the NEWSBBS Set – NEWSMAC. Now, you want to use this NEWSBBS Set to call the NewsBBS BBS for the first time.

So you call up the NEWSBBS Set in the Phonebook, and press <Enter> to cause it to dia. When you log on to the NewsBBS BBS, you are first asked for your first name, so you type this  in. Then, NewsBBS wants to know your last name, so you type this in. Finally, NewsBBS wants you to specify a password, and you type this in. You then perform some other operations which we will ignore for now. You then hang-up and quit NewsBBS.

Half an hour later, you decide that you want to call NewsBBS again, so you select the NEWSBBS Set and dial the number. This time, when NewsBBS asks for your first name, family name and password, you can sit back and have ae it in for you without you having to lift a finger.

That is what Macro files do. They remember something when you do it the first time around, and when activated, will repeat your keystrokes EXACTLY as you executed them, including the delay between each key-stroke. Macro files are especially useful when you call BBS systems that ask you for your name, password, zip code, driver’s license number, etc., every time you call up. With Macro files, when you have entered this information one time, you will never have to type it again. The Macro file will take over and od it for every time you call up that particular Set.

Macro files are saved on your diskette or fixed diskette with file extension **MAC**. This extension is automatically given to macro files by X-COM and you do not have to enter it, even when you are calling up a previously saved Macro file. You cannot edit macro files directly, they must be saved as detailed below.

## Entering a Macro File in the Phonebook

Having explained what macro files are, let's start from the beginning again, and teach you how to use them. You are in the Edit Phonebook menu and have finished entering all the Settings for a Set which you called BBS1. You now come to the last entry, Macro File. What do you do? With the entry Macro File highlighted, press <Enter>.

Why is the name BBS1 already in the Name of Macro window when you have not entered anything yet? When you first call up the Macro File option, the function will assume you for wanting the name of the Macro file to be the same as the name of the Set that your are editing. This is a reasonaole assumption since, by calling it the same name, you will know to which Set the Macro file refers. If you wish to keep the Macro file with the same name as the Set, press <Enter>. Of course, you may want to give your Macro file a different name, so you should use the <F7> function key to clear the default and then type in the name of your choice, followed by <Enter>. The name of the Macro file will appear in the Current Phonebook Set window.

Once a name is given to a Macro file in the Phonebook, the Macro file will automatically record all your key-strokes when you first use that Phonebook Set. The message MAC will appear in the Status Line, indicating that a Macro file is recording.

You must end the Macro file or it will continue recording your key-strokes, even if you have disconnected from the number that you are dialing. To see how to do this, read the section below.

## Dialing the Length of a Macro File

When you call a BBS, certain operations, such as entering your name and password, have to be done every time that you call that BBS. These are the operations that you will want to include in the Macro file. But having entered your name and password, you might then want to select the different options in the BBS. You might want to tretrieve a file, or you might want to transmit a file, or you might want to take a look in the mailbox to see if there are any messages for you. Of course, the

Macro file cannot read your mind, so it has no way of knowing which of the above actions that you want to perform, once you have entered the preliminary information.

So, what you want to do is to tell your Macro file to automatically enter your name and password, and probably stop there. The commands entered after that will be different each time, depending on what you want to do, unless you check your mailbox everytime you log on. In this case, you would want to include this operation in your Macro file.

Taking the example of calling up the BBS1 Set that we used above, you want to call the BBS1 Bulletin Board System for the first time and we will assume that the BBS called by the BBS1 Set always asks for your name and a password when you log on. Then, the BBS shows you a variety of options to choose from. You want your Macro file to enter your name and password, and then let you take over manually.

First, call up the BBS1 entry in the Phonebook and press <Enter> to dial the number. When you log on, the BBS ask for your first name, so type it in (remember this is the first time that you are calling this number, so the Macro file is recording everything that you type). There is a pause of about five seconds, while the BBS records your name. You are then asked for the password that you need to type it in. That is all you want to be recorded in the Macaro file, so how do you stop recording your entries? Each enough. Press the <F10> function key to call up the X-COM Menu onto your screen and select the **Macros** item, or if you are becoming familiar with the <Alt> keys in X-COM, you could use the <Alt> M command.

Select the item **End Macro** and press <Enter>. That is it! You have told the Macro file to finish recording after you have typed in your name and password, so any further key-strokes that you make will not be recorded in the Macro file. Press <Esc> to remove the X-COM Menu from the screen and you may then go ahead, and do whatever you want to do in the BBS1 database.

The next time that you call BBS1, the Macro file will automatically enter your name and password, and you can then take over and choose any of the options available. In our example above, we mentioned that, when you call

BBS1, thereis a five second pause between entering your password and your name. Won't the Macro file type in information too quickly? Don't worry! Macro files not only remember the keys that you type, they are also good timekeepers. Macro files actually remember the amount of time between key-strokes and will EXACTLY duplicate all entries including the time it takes to make them. If, when you entered your name, you made a made a typing error and used the <Backspace> key to delete a character, the Macro file will also repeat this operation. ANYTHING and EVERYTHING that you type on the keyboard will be EXACTLY duplicated.

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## Changing and Deleting Macro Files

Suppose you have recorded a Macro file in a Phonebook Set, and you then want to change it. Actually, you cannot change it. You will have to delete it and record the Macro file again. So remember – you cannot edit a Macro file. Once you have saved it, you will have to either stick with it or get rid of it and record a new one. To delete a Macro file, you work directly from the Macros entry in the X-COM Menu.

Let us use our BBS1 example above. If you remember, the BBS that you call with the BBS1 Set in your Phonebook, requires that you enter your name and password. For some reason, your password has changed, so of course, you cannot use the old Macro file. To delete the old Macro file, you must know the filename. If you cannot remember the Macro filename, just go to the BBS1 Set in the Phonebook,and it will be displayed. In our example, the name of the BBS1Set Macro file is BBS1. Call up the X-COM Menu with the <F10> function key and select the Macros item. The Macros menu will appear on your screen.

Highlight the item **DeleteMacro** and press <Enter>. In the window that appears, type in the name of the Macro file that you wish to delete, in our example, BBS1. Then press <Enter> and the Macro file will be deleted.

Please note, however, that when you delete a Macro file, the entry in the phonebook Set Is NOT deleted. Thus, if you delete the BBS1 Macro file and then go to the Phonebook and call up the BBS1 Set, you will see that there is

still an entry entitled BBS1 next to the Macro File entry. That means, that if you now want to save a new Macro file with the same name for the BBS1 Set in your Phonebook, you do not need to do anything except dial the BBS1 number with the Phonebook. When you are connected, you will then enter your name and the new password, and this will be recorded in the new Macro file. When everything that you want to be recorded in the Macro file has been recorded, you then call up the Macros item from the X-COM Menu and and select End Macro.

## Aborting a Macro File

If you have called up a number with an attached Macro file from the Phonebook, and you wish to cancel the automatic entry of data by the Macro file, this is easily done. Simply press any key on your keyboard and the Macro file will be aborted, allowing you to enter data manually from the keyboard.

For example, suppose there is a BBS that you often call and always enter your name, password and the command “S” to enter the Send File menu. Normally, when you call this number, the Macro file will automatically enter your name, password, and then enter the letter “S”, in order to enter to the Send File menu. But this time, you want to go to the Receive File menu, not the Send File menu. So, just call the number as usual from the Phonebook, let the Macro file enter your name, and password, and then press any key on your keyboard. The Macro will be discontinued and **REP** will disappear from the Status Line. You can then manually enter the “R” command to go to the Receive File menu, overriding the Macro file which is programmed to select the Send File menu. This is why you should allow a small amount of time to elapse between entries that you make while recording a Macro, allowing your time to abort the Macro, if you should wish to.

## Disabling a Macro File

Does every Set in my Phonebook have to have a Macro file? No, they do not. If you have a Set in your Phonebook to call your friend in the chat mode, to exchange messages and talk about the weather, obviously you do not need a Macro file since what you are going to enter will be different every time. In this case, just leave a blank next to the Macro File entry. If there is no filename in

the Macro File entry, there is no Macro file that can be called, so all operations will be manual. Any more questions?

Yes. If I have entered a Macro file name, can I temporarily disable it without deleting the Macro file, and then maybe enable it again in the future? Yes, you can. To disable a Macro file, select the Macro File entry in the Phonebook. The Macro File Name window will appear with the name of the Macro file in it. Use the <F7> function key to clear the filename in the window and press <Enter>. The entry next to the Macro File in the Phonebook window will be blank, which means that the Macro file is disabled and will not go into operatlon when you dial the number. Note, that only the entry, not the file, has been deleted. So if, in the future, you want to re-enable the Macro file, just type inthe same name of the Macro file in the Phonebook and it will be re-enabled. Remember, if there is no entry next to the Macro File entry in the Current Phonebook Set window, no macro flie will be activated.

## Advanced Macro Usage

With a little imagination, Macro flies can be used to automate key-stroke operations in a very flexible way. They can also be used to memorize a string of entries which can then be replayed to remind you, or help you learn a series of operatlons. They can also be used to memorize Hayes commands and even messages that you want to write to yourself.

As a basic illustration of this, press the <F10> function key and select the Macros item. We will assume that you wish to call a Bulleting Board System called BBS1, and that when you are connected to BBS1, you have to type in your name and password. This must be done every time you call up BBS1 to gain entry. Once you have done that, you have a choice of three operations. You can either send a file, receive a file, or look in the mailbox.

To select the Send File operation, you must enter the command “S”. You then have to enter the name of the file that you wish to send, and tell BBS1, what protocol you want to use to send the file. To choose the Receive function, you mus type “R”, enter the filename, and then

give the protocol. To select the Mailbox function, you must type the “M” command, enter your full name, and then enter “Y” (yes) or “N” (no) as to whether you want to retrieve the mail to your system (i.e. have the mail files transmitted to your computer). You are now going to learn how to use Macro files to automate individual operations as far as possible.

For the sake of this example, we are going to assume that you have to transmit a file called REPORT.NEW to the DATABASE BBS every week and receive a file called JOBLIST.NEW, also every week. We also assume that you always want mail files sent to your system. To automate all these processes, you must first make four Macro files.

The first Macro file that you should make is the one to be stored in the Phonebook, to enter your name ana password, since this must be done every time. You do this by following the instructions in the section entitled – Defining The Length of a Macro File. Having done this, you know that every time you call BBS1, the Macro file will automatically enter your name and password.

You then have three possibilities, send, receive or look in the mailbox. Thus, you should make three more Macro files, one to send, one to receive, and one to enter the mailbox function. Let’s look at send first. In the send Macro file, you want to be able to enter “s”, in order to select that option, type in REPORT.NEW since that is the name of the file in which you have to send every time, and type XMODEM since that is the protocol you wish to use. So, once you are connected to BBS1 and the Phonebook Macro file has entered your name and password, select the Macros menu, and in the Macros menu, select Begin Macro.

Enter a suitable filename, such as SENDDATA, and press <Enter>. The menu will disappear from the screen, an dyou will be back with BBS1. Now, everything that you type will be recorded in the SENDDATA Macro file. Type “S”, to enter the send file function; type REPORT.NEW, since this is the name of the file that you want to send every time, and then type XMODEM, since this is the protocol that you want to use every time. Select the Macros menu and select End

Macro. You have now made a Macro file called SENDDATA which will automatically enter “S”, REPORT.NEW and XMODEM.

Do the same for receive: Select **Begin Macro**, type in a filename (RECDATA, for example); then type in “R”, JOBLIST.NEW, XMODEM and then highlight **End Macro** in the Macros menu.

Repeat the operation for the mailbox : **Begin Macro**, filename (DATAMAIL for example), “M”, JOHN DOE, “Y”.

Once you have recorded these three in this way, it is easy to use them. Use your BBS1 Phonebook Set to call up BBS1. The Phonebook Macro will enter your name and password. Then, suppose you want to transmit a file, select the Macros menu. Highlight the entry **Replay Macro** and press <Enter>. You will be asked to enter the name of the macro file that you wish to replay.

Enter the relevant Macro file name, in this case, SENDDATA, and press <Enter>. The SENDDATA Macro file will run, automatically by typing in “S”, REPORT.NEW and XMODEM. Remember that Macro files remember the timing between commands, so the commands will be entered exactly as you entered them when you recorded the Macro file. If you had wanted to receive a file, you would have replayed the RECDATA file, and to look at your mail, you would have replayed the DATAMAIL file.

This simple example illustrates what can be done with Macro files. You can use them to record any sequence of characters that you type in from the keyboard. And you can then replay that sequence at any time. Even if you have a macro file attached to a particular Phonebook Set, you can replay that macro file at any time with the replay item. You do not have to use that Phonebook Set to be able to use it.

## Using Macro Files with Hayes Commands

If you are familiar with the use of Hayes commands, Macro files can also be very useful in recording Sets of commands which can be used to configure, a modem in a certain way. First, select **Begin Macro** in the Macros menu, and enter a file name.

Then, type the Hayes commands, which will appear on the Terminal Screen. For example :

ATS0 = 3 <Enter>
ATE0 <Enter>
ATV0 <Enter>
ATD 4123333 <Enter>

Finally, select **End Macro** in the Macros menu. The Hayes commands will be stored in the Macro and any time you want to send these commands to your modem, call up the Macros menu, select **Replay Macro**, and enter the relevant file name.

## Using Macro Files as Tutorials

If you want to record any sequence of key-strokes, so that you can replay them later as a reminder of the correct sequence or as a tutorial, you can make a Macro file to record the sequence of key-strokes. Then, when you want to review this sequence, just use the Replay Macro function to “play back” what you have recorded in the Macro file. You can use this feature to help you remember what you did the first time around, or to record a complicated series of keyboard entries. Just start a Macro file, give it a name, key-in the text and/or commands, and end the Macro file. Then use the Replay function to review what you have recorded.

## Limitations of Macros

When making Macro files, there are two main points to consider :

1. The maximum number of characters that can be recorded in any Macro file is 2,000.

2. Macro files do not store menus or selections within menu. They can only store characters typed from your keyboard. Thus you could not record the sequence of calling up the X-COM menu, selecting Edit Phonebook and then making entries in the Edit Phonebook menu.

## The Host Mode

X-COM provides a **Host Mode** facility, allowing your computer to act as a host for another computer. When your computer is in the Host mode, a remote computer can connect with your computer either by a modem or a direct connection, and perform certain DOS operations on your computer. The remote user can Change Directory (CD), look in the current directory (DIR) and type any text file (TYPE) stored on your computer. The Host mode also allows a remote user to Send (UPLOAD) and Receive (DOWNLOAD) files, without you having to be anywhere near your computer at the time.

In fact, when in the Host mode, your computer behaves like a mini BBS and remote users can call your computer and have access to data. X-COM provides password protection to ensure that only users to whom you have given this password can connect toyour computer, thus protecting your data from uninvited “visitors”. If you use the Host mode with a direct connection, a password is probably not necessary, but we highly recommend that you specify a password when using the Host mode with a modem for your own security.

## Setting up the Host Mode

There are certain things that you have to do to setup Host mode correctly in X-COM. The best way to do this is to create a Phonebook set (which you could call HOST) with all the correct parameters. Then, whenever you want to set your computer in the Host mode, you can just go to the phonebook and select the HOST Set. The settings to use for the Phonebook Set named HOST are detailed in the section below, **Making a Host Set in the Phonebook**. There is one more thing that you must do to let a remote computer connect to your system. After settinng X-COM in the Host mode, call up the X-COM menu and highlight the **Auto Answer** item.This enables your modem to automatically answer, an incoming call and activate the Host mode. It is not nescessary to set X-COM in the Auto Answer mode when using a direct connection.

## Creating a Host Phonebook Set

Call up the **Edit Phonebook** menu from the X-COM Menu. Then, within the **Edit Phonebook** menu, carry out the following steps:

1. Call up the **Modify/Add Set** entry box and type in a name for your Host mode Set. We suggest that you call it Host.

2. Go to the **Emulation** menu and select the HOST emulation.

3. Go to the **Speed** menu and select the speed, at which you want your Host mode to operate. With a modem connection, the speed that you select will depend on the capabilities of both your modem and that of your expected callers. If you expect someone with a1200 bps modem to connect to your modem, you cannot specify a speed of 2400 bps. If you are using a direct connection, you will probably want to select a speed of 9600 bps to allow the fastest communication between two direct linked computers.

4. Go to the **Parity** menu and select NONE, if this is not already selected.

5. Go to the **Data Bits** menu and selects 8-bit Data, if this is not already selected.

6. Go to the **Stop Bit(s)** menu and select stop bit, if this is not already selected.

7. Go to the **Duplex Mode** menu and select Full Duplex, ifis is not already selected..

The other items in the Edit Phonebook menu need not be specified.

Exit the Edit Phonebook menu. If you did not set a Host password in the Basic Settings menu as explained in earlier in this chapter, call up the Basic Setup menu to enter the password now. Specify any password up to 10 charactrs long. You could also type in a Greetings String if you have not already done so, as the Greeting String will appear on the screen of all remote users, when they connect to your computer. If you need to change Connection Mode, you should do this in the Basic Setup menu too.

You are now ready to set X-COM in Host mode. Call up the Phonebook and select the Set that you specified to be the Host Set. Then select the Auto Answer if you want to use Host with a modem connection. Now the rest is up to the user hooking up to your computer.

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## Connecting to the Host Mode

If a remote user connects to your computer when it is in the Host mode, there are certain things he will have to do to gain access. The communication parameters of the remote user must be the same as those you have set. These parameters are Speed, Parity, Data Bits, Stop Bit(s) and Duplex Mode, which you set in your HOST Phonebook Set. The remote user should also set the CR Translation to CF/LF and preferably use the TTY terminal emulation.

With all of these parameters set up correctly, a remote user should have no trouble in connecting with your computer. If you find that callers cannot connect with your computer when you are in the Host mode, this is probably due to a conflict in the settings between your system and that of the remote user. In this case, you should ask the remote user to setup his system in accordance with the parameters that you have in your HOST Phonebook set.

In the direct connection mode, you can connect yourself to X-COM from any other PC when it is in Host mode. You will need a null-modem cable in this case. You will also have to run a communications package such as X-COM on the other PC.

If someone connects to your computer, when it is configured in the Host mode, the remote user should receive a message on his screen telling him that a connection has been made and your computer (the Host computer) will send the Greetings String (if one is specfied in your Basic Setup window) to the screen of the remote computer. The remote user must then press <Enter> or <Ctrl> C to cause the HOST prompt to appear on his (the remote) monitor.

From here on the procedure is the same for both a direct connection and a modem connection.

When the HOST prompt is displayed, the remote user must type :

LOGIN [password] <Enter>

where [password] is the optional password that you specified in the Basic Setup menu. Typing wrong password will cause the Host compute to display an error message. If no password is specified in the Basic Setup of the Host computer, pressing <Enter> key will log the user on and a list of available options will appear on the remote monitor. The remote user can use <Ctrl> S to pause the listing, and pressing any key will continue the scrolling of the list.

## Available Host Commands

The following commands are available to the remote user, accessi ng your computer, when you are running the Host mode :

### CD [pathname] directory

This command will change the current directory to the one specified in **[pathname] directory**. The remote user will only be able to access directories on the current drive of your Host computer.

### DIR [filename]

This command will cause the contents of the current directory of the Host computer to be displayed on the remote computer. The wildcards " * " and " ? " can be used in the command syntax to look for a specific range of files.

### DOWNLOAD protocol, filename

The remote user can use this command to Receive a file or a range of files from the your computer. The KERMIT, XMODEM, YMODEM and YMODEM BATCH protocols can be used to carry out the transfer. When the Host computer is ready to send the files to the remote user, it will prompt him to start the transfer.

### HELP

The remote user can type HELP to display the help message from the your computer on his screen.

## LOGOFF

This command will terminate the remote user's session with your computer.

## TYPE Filename

This command allows a remote user to display the contents of any text file stored on your computer on his screen. Use the <Ctrl> S key to pause the scrolling.

## UPLOAD protocol, filename

With this command a remote user can send a file or range of files from his computer to your computer. He can choose between the KERMIT, XMODEM, YMODEM and YMODEM Batch protocols to carry out the transfer. When your computer is ready to receive files from the remote user, it will prompt the remote user to start the transfer from his computer.

We have explained the Host mode as if a remote user was calling your computer when it is configured in the Host mode. Of course, you may also call remote users who have configured their computers in the Host mode. In that case, you can use the commands detailed above to access data stored on the remote computer (if the remote Host uses X-COM). If you are using a direct connectlon, you can set the computer that you are connected to, in the Host mode, giving you easy access to the data stored on that computer.

# Chapter 13

# Memory Management

## Introduction

Included with X-DOS 5.0 is the EMM386 program which provide powerful memory management functions for 80386 and 80486 PC. The EMM386 programs enhance the utilization of extended memory (memory above 1 megabyte) and high memory (memory between 640K and 1024K) by providing up to 32 megabytes of EMS version 4.0 and 944K of conventional memory for use MS-DOS programs.

## Functions of EMM386

The EMM386 memory management package consists of two main programs – EMM386 and LOADHI. These two programs are designed to be completely compatible with one another. Although both will function alone with maximum features will be obtained by using both in conjunction with each other. EMM386 creates EMS 4.0 expanded memory and LOADHI provides an expanded memory enhancement package for 80386 PCs. The main features of the EMM386 package are as follows:

- EMM386 can convert e 壯 ended memory Into EMS version 4.0 expanded memory by using the special paging capability of the 80386 processor. EMM386 enables you to run programs that can utilize expanded memory, such as Microsott Windows, Lotus 1-2-3 (version 2.2 and 3.0); dbase IV and Paradox 3, more efficiently, without having to buy additional hardware.

- EMM386 can manage your PC's high memory area between 640K and 1024K. When used in conjunction with LOADHI, EMM386 fills unused memory addresses high memory with expanded memory, creating up to 944K of DOS memory.

- Depending on the hardware configuration of your PC, EMM386 can create up to 208K of high DOS memory, and up to 208K of high DOS memory for use byTSRs and device drivers (such as network drivers).

- EMM386 consists of a single program, EMM386.SYS, that is loaded as device driver when your PC is turned on or restarted. Optional command line parameters let you fine tune the program, allowing you to specify the amount of expanded memory to create or the amount of extended memory to leave free and what areas of conventional memory are mappable.

- Compatible with all programs that support any version of the Lotus/Intel/Microsoft (LIM) expanded memory specification.

- Allows the creation of very large worksheets in Lotus 1-2-3, Symphony, Quattro, Excel, and other software.

- Supports theMcrosoft VxD Specification to ensure that EMM386 is compatible with Windows 3.0.

- Supports the Expanded Memory Specification version 4.0. All functions are supported, not just a subset.

- Supports physical page mapping of conventional memory (0 – 640K) which allows multi-tasking programs to swap applications.

- Fully supports the Virtual Control Program Interface version 1.0, which allows DOS extenders, Multitaskers, and memory managers to coexist on a PC.

- Uses the paging capability of the 80386 processor for maximum speed. EMM386 is much faster than expanded memory managers designed to run on both 286 and 386 PCs.

# System Requirements

In order to be able to use the EMM386 package, you must have the following system :

- A PC with a 80386 or 80486 microprocessor.
- A Minimum of 256K of extended memory.

# Installing EMM386.SYS

The EMM386.SYS program is installed as a device driver by adding the following line to your CONFIG.SYS file and restarting your PC :

DEVICE = EMM386.SYS

When your PC is turned on or restarted, each [device = ] line in your CONFIG.SYS file loads a particular device driver. Since EMM386.SYS is a driver, expanded memory is available to drivers that are loaded after it. The line that loads EMM386.SYS should be located after any device drivers that control your hard disk and before any drivers that use expanded or extended memory. If your are loading the X-DOS XMS driver (XMS=ON), EMM386.SYS should be loaded after it.

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## Default Settings

When loaded without options the default settings of EMM386.SYS will be implemented as described below :

- All extended memory, except approxlmately 64K, is converted to expanded memory.
- The page frame is located at the highest 64K area of free memory.
- In addition to the page frame, the memory range 1000 – A000 (hex) (64K—640K) is mappable.

## Optional Switches

EMM386.SYS can be loaded with several optional switches. These switches are detailed individually below.

The syntax of the EMM386.SYS statement which should be entered in your CONFIG.SYS file is as follows :

DEVICE = D: \PATH \EMM386.SYS [options]

## [options]

Specifies the optional EMM386 parameters described in the following section.
The full list of switches that can be used with the EMM386 statement is as follows :

### / 3

Simulate LIM 3.2. With this option, EMM386 supports version 3.2 of the Lotus/Inte/Microsoft Expanded Memory Specification instead of 4.0.

### / e (K bytes)

Amount of extended memory to leave available. This option ensures that the specified amount of extended memory in kilobytes will be available after EMM386 is loaded. This amount of extended memory will not be converted into expanded memory. For example, to leave 512K of extended memory free, use [/e512].

### / f 

Page frame base address.  specifies the hexadecimal segment address of the start of the page frame. The page frame is a 64K area into which expanded memory pages are swapped. If you omit this parameter, EMM386 puts the page frame in the highest 64K block of unused memory.

### / h

Search for unused areas in the high memory and consider them mappable. This option instructs EMM386 to allow the mapping of expanded memory pages to any area of high memory that is not in use by a hardware device. If this option is omitted, EMM386 will not map pages to any high memory areas outside the page frame except those specified by the / i (include range) option (see below).

This option must be specified when using EMM386 with LOADHI.

Some devices, such as network adapters, cannot be detected when EMM386 searches for unused high memoryyou're your system does not work properly when using / h, EMM386 is incorrectly identifying an unused memory area. This block of memory must be excluded from mappable memory using the /x (exclude range) option (see below).

You may use the CHKMEM /e command to list the memory segments EMM386 considers mappable. You must ensure that none of the segments listed by this command are in use by a device in your PC.

### / i <address range>

Include address range. The range of addresses specified by <address range> will be mapped by EMM386.<address range> is specified with hexadecimal segment addresses. which must be multiples of 16K (0000, 0400, 0800, 0C00,1000,1400, …). For example, to include the range from segment 0000 to segment 1000, use the parameter [/ i 0000 – 1000]. Multiple include ranges should be separated by commas. For example, [/ i0000 –1000, A000 –B000].

### / s <Kbytes>

Expanded memory size. This parameter specifies the size of expanded memory in 1K increments. For example, 1024K of expanded memory would be specified by [/s1024].

### / x <address range>

Exclude address range. This option prevents EMM386 from mapping a particular range of addresses. <address range> is specified with hexadeclmal segment addresses which must be multiples of 16K. For example, to exclude the range from segment 0000 to segment 4000, use the parameter [/x0000 – 4000]. Mulitple exclude ranges should be separated by commas. For example, [/x0000 – 4000, A000 – B000].

This option is particularly important if you have a hardware device, such as a network adapter, that cannot be detected by EMM386. You must use the /x option to exclude the range of memory in use by the device. For example, if a network adapter in your PC uses 16K of

memory at D000 (hex), you must exclude this area with the option [/xD000 – D400].

## NOTE

If your PC “lock up”, it is most likely due to a conflict in high memory between EMM386 and a hardware device. The CHKMEM /e command detailed later in this chapter can be used to list the memory segments EMM386 considers mappable. You must ensure that none of the segments listed by this command are in use by a device in your PC. If such a conflict exits, use the /x (exclude range) option to remove this range from the mappable memory. For the same reason, do not use the /I (include option) to include a range of high memory, unleass you are certain the range is not used by a hardware device.

## Examples of Typical Settings

The following line installs EMM386 with its default settings in which all extended memory is turned into expanded memory and no high memory, except the page frame, is mappable.

```
DEVICE = EMM386.SYS
```

The following line turns all extended memory into expanded memory and maps all unused areas of high memory

```
DEVICE = EMM386.SYS /H
```

The following line creates 1024K of expanded memory and maps of all unused areas of high memory except for that in the range C800 to D000 (hex):

```
DEVICE = EMM386.SYS /S1024 /H /XC800-D000
```

The following line turns all extended memory into expanded, except 512K (which could be used by a RAM disk). The page frame is located at D000 (hex); other areas of high memory are not mappable.

```
DEVICE = EMM386.SYS /E512 /FD000
```

## EMM386.SYS Error Messages

### Can’t enable A20 line

EMM386 was unable to enable the A20 address line which allows access to extended memory. EMM386 is not compatible with you PC.

### Can’t install

EMM386 can’t be installed on your system.

### Free block not available for page frame (64K)

EMM386 reports this error if it cannot find a free 64K block in high memory, which requires for the page frame. This usually occurs when the hardware devices in your PC are located so that you memory is fragmented into blocks of less than 64K. You must relocate one or more of your devices (such as a network adapter), so that a contiguous block of 64K is free.

### Invalid expanded memory size.

Expanded memory size is specified in 1K increments and must be between 64 and 32786. For example, two megabytes of expanded memory would be specified by [DEVICE= EMM386.SYS /S2048].

### Invalid parameter

At least one of the parameters on the command line is invalid. Read the section, “Command Reference”.

### Not enough extended memory

There is not enough extended memory to simulate the amount of expanded memory requested. EMM386 requires approximately 50K of extended memory for its own use. Either specify less expanded memory or omit the /s option.

### Processor not 80386/80486

Your PC does not have an 80386 or 80486 processor which is a requirement of EMM386 ·

VRAM is already installed

EMM386 is already installed. Modify your CONFIG.SYS file so that EMM386 is only loaded once.

## Testing Your Memory with CHKMEM

Enter the command **CHKMEM** to display the amount of expanded memory in your system, and the amount of memory that is mappable above 640K. Example output is shown below :

655360 bytes conventional memory

355536 bytes extended memory

0 bytes XMS memory

3031040 bytes exDanded memory

163840 bytes mappable memory above 640K

If you have any “mappable memory above 640K”, then LOADHI can this memory into high DOS memory.

If CHKMEM displays 0 bytes of mappable mory above 640K, you cannot use LOADHI, because you do no have expanded memory in your PC (or it is not active) and you do not have shadow RAM.

If you have expanded memory and you have only 65,536 bytes (64K) of mappable memory above 640K, your expanded memory is not fully compatible with the EMS version 4.0 specification, since it can only be mapped to the 64K page frame in the high memory. The lack of extra mappable memory limits LOADHI’s effectiveness. You can force LOADHI to use the page frame (with the/f option), but this prevents other programs from utilizing expanded memory.

Usign the CHKMEM command [CHKMEM /e] will display additional information about the expanded memory in your PC, including a list of the segment addresses into which expanded memory can be mapped. If DEVHIGH.SYS reports an error, refer to the section “LOADHI Error Messages”.

# Using the LOADHI Programs

To obtain the full range of features available with the EMM386 package, you should also load the HRAMDEV.SYS device driver in your CONFIG.SYS file. With this program loaded, you will then be able to use the DEVHIGH.SYS and LOADHI.EXE programs to relocate drivers and TSR's to the higher memory area.

First, install the HRAMDEV.SYS device driver as described below :

1. Add the following line to your CONFIG.SYS file to load HRAMDEV.SYS as a device driver :

   DEVICE = HRAMDEV.SYS

   The Location of this line in your CONFIG.SYS file is important. It Should be located immediately after the device driver that manages your expanded memory. If you are installing LOADHI with EMM386, this line should be placed immediately after the line that loads the EMM386.SYS program.

2. When you have added the above statement to your CONFIG.SYS, restart your computer.

   If the installation of HRAMDEV.SYS is successful, it reports :

   LOADHI : high DOS memory created during the bootprocess.

   You may use the CHKMEM Command to display the amount of high DOS memory in your PC.

## Function of HRAMDEV.SYS

HRAMDEV.SYS creates high DOS memory into which device drivers and TSRs can be loaded. HRAMDEV.SYS works in conjunction with your expanded memory as follows :

- When your expanded memory manager is loaded, it searches for regions into which expanded memory pages can be mapped. Most managers automatically include conventional memory from 0 to 640K, and all areas within high memory thst are not in use by hardware devices or ROM. The 64K page frame is also allocated from the high memory area.

- HRAMDEV.SYS searches for mappable high memory, excluding the page frame, and maps expanded memory into those areas. It then builds contrd structures, so DOS can use the additional memory.

It is important to remember that the functions of LOADHI are dependent on the capability of your expanded memory hardware. HRAMDEV.SYS can only create high DOS memory in areas your expanded memory can map. Some EMS version 4.0 boards do not fully implement the version 4.0 specification and cannot map expanded memory to segments outside the page frame.

## HRAMDEV.SYS Command Reference

The HRAMDEV.SYS statement should be entered in your CONFIG.SYS file as follows :

DEVICE = D: \PATH \HRAMDEV.SYS [options]

[options] consist of the optional HRAMDEV.SYS parameters described individually below :

### / e

Use expanded memory only. HRAMDEV.SYS will not use Chips & Technologies shadow RAM to create high DOS memory.

## / f

Use the expanded memory page frame for high DOS memory. The page frame is a 64K buffer in the high memory area into which expanded memory pages are mapped. Although EMS version 4.0 supports mapping of expanded memory to areas outside the page frame, most software programs, at a minimum, require the page frame to be available. This option will create an additional 64K of high memory, but will, in most cases, prevent other programs from utilizing expanded memory.

## / I <address range>

Include address range. The memory range specified by address range > will be converted to high DOS memory. It must be above A000 (hex). The [address range] is specified with hexadecimal segment addresses which must be multiples of 16K (0000, 0400, 0800, 0C00, 1000, 1400, …). For example, to include the range C000 to C800, use the parameter [/ iC000 – C800]. Multiple include ranges should be separated by commas. For example, [/ iC000 – C800, E000 – F000].

If / i is used, only the memory areas with the include range(s) will be available as high DOS memory. This option is useful only if there are mappable areas in high memory that should not be under the control of HRAMDEV.SYS. Normally, this option should not be used; HRAMDEV.SYS will automatically convert all mappable high memory (excluding the page frame) into high DOS memory.

## / n

No pause on error. If HRAMDEV.SYS reports an error, it waits for you to press a key. This option causes HRAMDEV.SYS to continue without waiting for a key.

## / s

Use shadow RAM only.HRAMDEV.SYS will not use expanded memory to create high DOS memory.

## / x <address range>

Exclude address range. This option prevents HRAMDEV.SYS from mapping a particular range of addresses. <address range> is specified

with hexadecimal segment addresses which must be multiples of 16K. For example, to exclude the range C000 to C800, use the parameter [/ xC000–C800]. Multiple exclude ranges should be separated by commas. For example, [/ xC000–C800, E000–F000].

## Getting Started with LOADHI.SYS and LOADHI.EXE

After HRAMDEV.SYS has been successfully installed, you can use LOADHI.EXE and DEVHIGH.SYS to install TSRs and device drivers into high DOS memory. DEVHIGH.SYS loads drivers into high memory with an appropriate [device = ] line in your CONFIG.SYS file as detailed later. LOADHI.EXE loads TSRs into high memory, either from the DOS prompt or from a line in your AUTOEXEC.BAT file. LOADHI.EXE also displays a status report of high memory usage. Read the sections “Using DEVHIGH.SYS” “Using LOADHI.EXE” for more detailed information on each program.

Note that you MUST first install the HRAMDEV.SYS device driver as detailed above, before attempting to use the DEVHIGH.SYS and LOADHI.EXE programs.

Below are the basic instructions on how to get started with DEVHIGH.SYS and LOADHI.EXE.

1. To list the memory region(s) into which TSRs and device drivers can be loaded, type the command **LOADHI /M**. This command can also be used at any time to list the programs that have been loaded into high memory allocations in high memory.

2. If you are using a monochrome or a CGA display, you can use LOADHI program to convert up to 96K of your expanded memory into low DOS memory. To do this, type the command.

   LOADHI /1

3. To load a TSR into a high memory region, use the command:

   LOADHI [program]

where [program] is the name of the TSR that you want to load. You may specify a drive and/or path before the program name. If you do specify a path, LOADHI will search the Path string.

4. To load a device driver into a high memory regio, insert the following line into your CONFIG.SYS file:

   DEVICE = DEVHIGH.SYS [driver]

   where [driver] is the name of the device drive that you want to load. You must include a path as part of the driver name.

## Using LOADHI.EXE

The LOADHI.EXE program can be used to display regions and programs in high memory. The command **LOADHI /m** will displayed the status report of the high memory created by HRAMDEV.SYS. As illustrated in the following example, the report lists the location and size of each high memory region as well as the TSRs and drivers that been loaded :

```
Region   address  paragraphs      bytes
--------  ----------  --------------      -------
0c800          7ff   32752
1e800         1000   65536

Region   address  paragraphs      Bytes program
--------  ----------  --------------      -------
0c800          12e     4832 (block device)
0c92e          1ea     7842 (char dev) mouse
0cb18           30      786   (block device)
0cb5a          4a5    19024 (avail)
Ocb12          288    other blocks

1e000    24          576 scrnsave.com
1e024    2d          720 fastkey.com
1e051    5e          1504 unblink.com
1e0af    f51         62736 (avail)
```

Note that each region is identified by a number, staring 0, and that the report indicates into which region each TSR or device driver has been loaded. The amount of available space remaining in each region is listed also.

The command **LOADHI /a** will list the raw memory allocations in high memory.

---

## Loading TSRs into High Memory with LOADHI.EXE

LOADHI.EXE loads TSRs into the high DOS memory created by HRAMDEV.SYS. To load a TSR, specify the command that you normally use to run the TSR as a parameter to the LOADHI.EXE program. For example, suppose you wish to load TSR program called Notepad into high DOS memory. To command you normally use to load it into low memory is :

```
NOTEPAD / i
```

The command to load it into high memory would be :

```
LOADHI NOTEPAD / i
```

The LOADHI command can be executed at the DOS prompt or it can be used within a batch file (including your AUTOEXEC.BAT file). The file specified on the LOADHI command line must be an “.exe” or “.com” file.

## LOADHI.EXE Command Reference

The syntax of the LOADHI command is:

LOADHI [options] [program] [program options]

### [options]

Specifies the optional LOADHI parameters described in the following section.

### [program]

Specifies the program to be loaded into high DOS memory.

### [program options]

Specifies any options for the program.

The following options can appear in the LOADHI command.

### / ?

Display help.

### / a

List raw memory allocations in high DOS memory. Use this option of display the memory control blocks that have been allocated from high memory.

mapped a region in high memory starting at A000 (hex) and you have exactly 640K of low DOS memory, you can use this option to add this region to the DOS memory pool, giving you up to 736K of low memory. This region is available only, if you have a monochrome or CGA display, and your expanded memory is capable of mapping pages to the area starting at A000.

### / m

List regions and programs in high DOS memory. LOADHI /m lists a status report of high memory, including the size and location of each memory region and program or device driver.

### / n

No pause on error. If LOADHI.EXE reports an error, it waits for you to press a key. This option causes HRAMDEV.SYS continue without walting for a key.

### / r <region>

Load into memory region number <region>. This option causes LOADHI to load the program into the specified memory region. For example, the following command would load the program, NOTEPAD.EXE, into memory region 1 :

```
LOADHI / r1 NOTEPAD
```

Without this option, LOADHI loads the program into the flrst memory region in which the program fits. This option gives the user greater control over the placement of programs and may be useful in obtaining the optimum use of high memory.

### / u

Remove pages from low DOS memory.This option removes the pages from low DOS memory that have been added by the command LOADHI / 1.

## Using DEVHIGH.SYS

DEVHIGH.SYS loads device drivers into the DOS memory created by HRAMDEV.SYS. To load a device driver, modify the line in your CONFIG.SYS file so that it is a parameter to the DEVHIGH.SYS program. To illustrate, suppose you wish to load the device driver ANSI.SYS into high DOS memory. The line to load it into low memory is :

```
DEVICE = \DOS \ANSI.SYS
```

The command to load it into hilgh memory is :

```
DEVICE = DEVHIGH.SYS \DOS \ANSI.SYS
```

The syntax of the DEVHIGH.SYS command when enters in the CONFIG.SYS file is :

DEVICE = DEVHIGH.SYS [options] [drive]
[driver options]

### [options]

Specifies the optional DEVHIGH.SYS parameters described in the following section

### [driver]

Specifies the device driver to be loaded into high DOS memory.

### [driver options]

Specifies the options for the device driver.

---

## DEVHIGH.SYS Command Reference

The following options can be used with the DEVHIGH.SYS command :

### / n

No pause on error. If DEVHIGH.SYS reports an error, it waits for yo to press a key. This option causes DEVHIGH.SYS continue without waiting for a key.

### / r <region>

Load into memory region number <region>. This option causes DEVHIGH.SYS to load the device driver into the specified memory region. For example, the following command would load the ANSI.SYS device driver into memory region 1 :

DEVICE = DEVHIGH.SYS/ r1 ANSI.SYS

Without this option, DEVHIGH.SYS loads the driver into the first memory region in which the driver fits. This option gives the user greater control over the placement of programs and may be useful in obtain the optimum use of high memory.

## NOTES

The HRAM utility depends entirely on the mapping capability of your expanded memory. If your expanded memory cannot map pages

to areas outside the page frame, HRAM's effectiveness will be severly limited. Consult your expanded memory user's manual or, if necessary, contact the manufacturere, for information on how to configure your expanded memory optimally.

Some TSR's and device drivers do not function properly when loaded into high memory. If you encounter a problem after loading several device drivers and TSR's into high memory, determine which program is not working by loading and testing each program individually.

HRAM will be able to use high memory more efficiently, if your memory is divided into the fewest memory regions, a few large fregions is better than a lot of small ones. You may be able to improve the configuration of your high memory by changing the location of certain hardware devices. For example, most expanded memory boards allow you to move the page frame to any free memory area and most network adapters allow you to change the location of their ROM.

# HRAMDEV.SYS Error Messages

## HRAMDEV.SYS

### EMM error

An error was returned by the expanded memory manager.

### EMM is not EMS 4.0

HRAM is not compatible with your expanded memory. HRAM requires expanded memory that is compatible with the EMS 4.0 memory specification.

### Expanded memory manager not installed

Your expanded memory is not active, because your expanded memory manager is not installed. Expanded memory managers typically have "EMM" in their name and are loaded with a [device=] command in your CONFIG.SYS Make sure the line that loads the HRAMDEV.SYS in your CONFIG.SYS file comes after the line that loads your expanded memory manager.

### Invalid parameter(s)

Once or more the parameters on the HRAMDEV.SYS command line is not valid.

### Mappable physical address array too large

HRAMDEV.SYS is not compatible with your expanded memory manager.

### No mappable pages in include range

Your expanded memory cannot be mapped to the memory range specified by / i (include range) option. HRAMDEV.SYS can only use memory that can be mapped by your expanded memory. To list the memory segments that are mappable, remove the line in your CONFIG.SYS file that installs HRAMDEV.SYS, restart your PC, and then run the CHKMEM /e command.

### No pages available in high memory area

HRAMDEV.SYS is unable to create a high DOS memory, because your expanded memory may be mapped to the page fram only. This may occur because you have no unused areas in high memory, or, more likely, because your expanded memory does not fully support EMS 4.0 specification.