



Using Disk
Operating System
Version 4.00

Programming Family

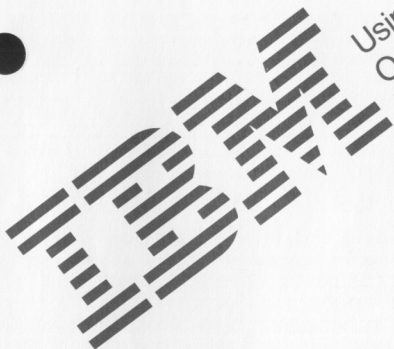
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First Edition (July 1988)

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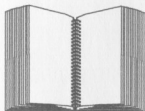
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DOS 4.00 Library



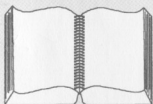
Getting Started With DOS 4.00

The first part of this book provides information you need to install DOS 4.00 and supplements the online information in the SELECT program. The second part introduces you to the DOS Shell.



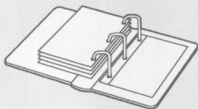
Using DOS 4.00

By using examples, this book explains how to manage your information from the command prompt, how to change the configuration of your system, and how to create and change batch files.



DOS 4.00 Command Reference

This book, an additional purchase item, provides detailed information on the commands used in DOS 4.00 and contains tables relating tasks to these commands.



DOS 4.00 Technical Reference and Application Programming

This book, an additional purchase item, is written for programmers who develop applications for IBM Personal Computers and Personal System/2®.

Preface

This book describes how to use the IBM Disk Operating System (DOS) to complete everyday tasks with your computer system. It is primarily written for new system users, although experienced users and programmers may also use this book along with the more advanced books listed in the *DOS 4.00 Library*. This book explains how to:

- Store and retrieve information.
- Manage information using files and directories.
- Use DOS commands from the command prompt.
- Redirect input and output using piping and filter commands.
- Customize your system to meet your individual needs.
- Create and change batch files.
- Familiarize yourself with all DOS commands.
- Create and edit files using the DOS editor, EDLIN.
- Find explanations for the messages that appear on your screen.

When reading this manual, keep in mind that:

italic lowercase letters mean that you are to substitute a variable. For example, *filename* means to type the name of your file instead of typing the word "filename."

CAPITAL letters show keywords, such as DOS command names. You can type these in any combination of uppercase and lowercase letters.

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Chapter 1. Introducing DOS 4.00

Think of the IBM Disk Operating System (DOS) as the conductor between you and your computer system. DOS is a special program that directs all disk operations and allows you to use devices such as display terminals, keyboards, and printers with your system. It is responsible for managing all system resources, such as processing the commands you enter on your keyboard or controlling how you store and recover information.

This chapter explains the summary of changes in this DOS version and presents introductory material for the new DOS user.

Summary of Changes

DOS 4.00 is the latest version of DOS containing many new and enhanced commands. Various new features include the DOS Shell, a menu-oriented way to manage your information. Use the DOS Shell to design menus tailored to your needs and the functions of your application programs. It is easy for inexperienced users and has features attractive to experienced DOS users.

New Commands

The following new commands have been added to DOS:

DOSSHELL

Allows you to start or return to the DOS Shell from the DOS command prompt. If you are at the Shell command prompt, you must type EXIT to return to the DOS Shell.

INSTALL

Provides an efficient means of loading terminate and stay resident commands previously included in your AUTOEXEC.BAT file. DOS 4.00 supports the following commands with INSTALL:

FASTOPEN.EXE
KEYB.COM
NLSFUNC.EXE
SHARE.EXE.

MEM

Displays the amount of used memory, unused memory, allocated and open memory areas, and all programs currently in the system.

SWITCHES

Specifies the use of conventional keyboard functions when an enhanced keyboard is installed.

XMA2EMS.SYS

Provides support for the Lotus, Intel, and Microsoft (LIM) Expanded Memory Specification (EMS) 4.0 under DOS 4.00. Expanded memory is addressed through a combination of the XMA2EMS.SYS device driver and an IBM hardware adapter capable of EMS, installed in your system.

XMAEM.SYS

Emulates the IBM Personal System/2 80286 Expanded Memory Adapter/A. It can be used only with 80386-based systems like the IBM Personal System/2 Model 80.

Enhanced Commands

The following is a list of enhanced commands, their general purposes, and what is new or changed in DOS 4.00:

ANSI.SYS

Allows you to enhance the standard input and output support with keyboard and display features such as:

- Reassigning the keyboard keys

- Manipulating the cursor

- Displaying color attributes

- Changing the number of rows in the screen using the MODE command.

New/Changed: ANSI.SYS now has the following three new parameters:

- The /X parameter that allows keys with extended key values to be redefined as distinct keys.

- The /L parameter that retains the number of rows in the screen set through the MODE command on application programs that normally change the number of rows back to the default value of 25.

- The /K parameter that prevents the use of extended keyboard functions. This allows DOS to use conventional keyboard functions when an extended keyboard is installed.

APPEND

Sets a search path for data files outside the current directory. The files may have any extension including .COM, .EXE, or .BAT.

New/Changed: APPEND now allows more control of its searching operations. It can now be instructed to ignore file operations that include a drive or path in the original file specification. Also, other DOS commands now make sure that the /X parameter is off before processing.

BACKUP

Backs up one or more files (or a complete drive) from the source disk to the target disk, allowing you to restore them by using the RESTORE command.

New/Changed: BACKUP now automatically formats the target diskette if it is not already formatted by using the FORMAT command. In prior versions, this was requested by the /F parameter.

BUFFERS

Determines the number of disk buffers that DOS allocates in memory when it starts.

New/Changed: BUFFERS now extends the DOS buffer cache created by BUFFERS and allows an increased count of buffers. In addition, as data is read or written to a disk, it can be processed as multiple sectors.

BUFFERS also has a new /X parameter, which allows BUFFERS to perform its function by using expanded memory.

CHKDSK

Analyzes the directories, files, and the file allocation table (FAT) on the specified or current drive, and produces a disk and memory status report.

New/Changed: CHKDSK now displays the volume serial number, if one exists, and the allocation units in the status report.

COUNTRY

Identifies the country for which the country-dependent information is selected.

New/Changed: COUNTRY now supports Japan, Korea, People's Republic of China, and Taiwan.

DEL or ERASE

Allows you to erase a specified file or all files in a directory, or on a disk, except for read-only and hidden files.

New/Changed: DEL/ERASE now has a new /P parameter that displays each filename and a message to verify that you want to delete the file.

DISPLAY.SYS

Allows you to use code page switching on EGA displays and the IBM PC Convertible LCD display.

New/Changed: DISPLAY.SYS now checks your hardware to select the type of the active display if you omit the display adapter type.

FASTOPEN

Allows you to access a file quickly by storing the location of directory and continuous space information of recently opened files in memory.

New/Changed: FASTOPEN now allows you to retrieve recently opened files faster than in previous versions of DOS by storing the file information in memory.

FASTOPEN also has a new /X parameter, which allows it to perform its function by using expanded memory, thereby saving space in low memory for application programs.

FDISK

Allows you to carry out tasks involving DOS partitions.

New/Changed: FDISK now presents you with screens that let you view existing disk partitions, create new ones, or erase existing ones. It has been enhanced to use 80-screen columns, accept disk partition sizes in MB or percentages, and to display the volume label and file system type for each partition.

FORMAT

Allows you to prepare a diskette or fixed disk for use on your system. It checks the disk for defects and prepares it to hold information.

New/Changed: FORMAT now has the following:

The */V:label* parameter that allows you to bypass the system prompting you for a volume label after formatting your diskette.

The */F:size* parameter that indicates the size of the diskette to format. This makes it easier to format media less than the maximum capacity of a drive.

FORMAT also displays the volume serial number, if one exists, and the allocation units in the status report.

GRAFTABL

Allows additional characters from a national language code page to be displayed when using display adapters in graphics mode.

New/Changed: GRAFTABL has been extended to support the multilingual code page, 850.

GRAPHICS

Allows for printing the contents of a screen that contains text and/or graphics with the following hardware:

- Color Graphics Adapter
- Enhanced Graphics Adapter
- IBM PC Convertible LCD
- Video Graphics Adapter
- IBM Personal System/2 Display Adapter.

New/Changed: GRAPHICS has been extended to support the graphics display modes of the Enhanced Graphics Adapter and the Video Graphics Adapter.

GRAPHICS also provides support for more printers. Depending on the printer, the contents of the screen can be printed in up to 19 shades of grey or up to eight colors.

KEYB

Selects a special keyboard layout to replace the default U.S. keyboard layout.

New/Changed: KEYB now has a new /ID:zzz parameter that selects a specific keyboard layout by specifying a keyboard identification code. For countries with more than one enhanced keyboard (such as France, Italy, and the United Kingdom), the zzz parameter allows you to select the keyboard you want.

MODE

Sets the way that devices operate.

New/Changed: MODE now is able to select keyboard typematic rates, lines on a screen, and asynchronous parameters.

PRINTER.SYS

Allows you to use code page switching on the IBM Proprinter™ Models 4201, 4202, 4207, and 4208, and the IBM 5202 Quietwriter III®.

New/Changed: PRINTER.SYS now has enhanced Proprinter support.

REPLACE

Selectively copies over files on the target with files of the same name from the source, or selectively adds files from the source to the target.

New/Changed: REPLACE now has a /U parameter that restricts REPLACE to only update files with a date and time on the source more recent than the date and time on the target.

Proprinter is a trademark of the International Business Machines Corporation.

Quietwriter is a registered trademark of the International Business Machines Corporation.

SELECT

Installs DOS on a new fixed disk or diskettes, or replaces a previous version of DOS.

New/Changed: SELECT now is an enhanced full-screen utility designed to aid you in installing or re-installing DOS on your system.

SYS

Transfers the operating system files, IBMBIO.COM and IBMDOS.COM, from the source drive to the target drive.

New/Changed: SYS now allows you to specify an optional source drive and path or SYS uses the current default drive. This simplifies installation of DOS across a network.

TIME

Permits you to enter or display the time known to the system.

New/Changed: TIME may now be entered on a 12- or 24-hour basis, depending on how it is specified by your country code.

TREE

Displays all the directory paths found on the specified drive and optionally lists the files in the root directory and each subdirectory.

New/Changed: TREE's display (or output) now uses block graphics and indents at each subdirectory level.

VDISK

Installs a simulated disk in memory, called a virtual disk.

New/Changed: VDISK now has a /X parameter, which allows VDISK.SYS to perform its function using expanded memory. VDISK.SYS also has a /E parameter which makes use of extended memory, thereby, saving space in low memory for application programs.

New Features

The following are the new features in DOS 4.00:

- DOS 4.00 now includes file system support of large media (more than 32MB) and national language support enhancements.
- The installation program, SELECT, is enhanced to be a full-screen utility designed to help you install or re-install DOS, without erasing the information already on your disk.
- This version of DOS introduces the DOS Shell, a menu-oriented way to manage your information.
- Many commands in previous versions of DOS reported the same error conditions with slightly different messages. A single version of these messages is generated in DOS 4.00.
- DOS has tightened its control over command syntax checking and now supports keyword parameters for greater usability. For example, unbalanced parentheses in commands like MODE, DISPLAY.SYS, and PRINTER.SYS now result in an error message.

Types of Systems

Your system can have diskette drives, fixed disk drives, or a combination of both. DOS refers to diskette drives and fixed disk drives by the letters A–Z. Beginning with the letter A, DOS first assigns letters to all the diskette drives internal to your system. Next, DOS assigns letters to any internal fixed disk drives and, finally, assigns letters to external diskette drives.

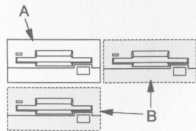
The following diagrams show types of systems with internal diskette drives, which are permanently installed in your system. External drives are separately attached to your system. Notice that the dotted lines in the diagram mean that the diskette drive can be in either of the positions shown.

One Diskette Drive



If your system has one diskette drive, call it both drives A and B. Instead of A and B representing physical drives, the A and B represent diskettes inserted in your drive. When you use DOS commands, DOS tells you when to exchange diskette A for diskette B in your one-diskette drive.

Two Diskette Drives

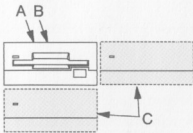


If your system has two diskette drives, call the first diskette drive A, and call the second B. DOS does not have to tell you to switch diskettes when running a program, unlike a one-diskette-drive system. You can have diskettes in both drives A and B at the same time.

Fixed Disk Drives

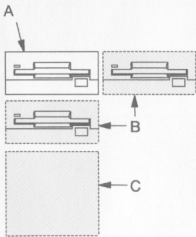
A fixed disk drive is a permanently installed disk storage device that reads and writes on magnetic disks. It is faster than a diskette and also has a larger storage capacity. If you are not aware whether your system has a fixed disk, refer to the documentation that came with your system.

Fixed Disk Drive and One Diskette Drive



If your system has a fixed disk drive and one diskette drive attached, call the diskette drive both A and B. Since DOS assigns drive letters to fixed disks next, call your fixed disk drive C.

Fixed Disk Drive and Two Diskette Drives



If your system has a fixed disk drive and two diskette drives, call the first diskette drive A, and the second diskette drive B. Call your fixed disk drive C.

Using Your Keyboard

Your keyboard has keys that carry out particular tasks or functions. This section describes these key functions. For information on the keys used in the DOS Shell, refer to the key assignments in *Getting Started With DOS 4.00*.

Note: Press and hold the keys in the order shown. For example, for restarting DOS, press and hold the Ctrl and Alt keys; then press the Del (Delete) key.

Key	Task
↑ or ↓ or → or ←	Moves the cursor
Enter	Processes a command Tells DOS to interpret the command or line that you just finished typing.
Ctrl+Break	Cancels a command Stops a command from completing its task normally.
Pause or Ctrl+Num Lock	Pauses the screen Causes the screen to pause when information on the screen is scrolling too fast to read.
Print Screen or Shift+PrtSc	Prints the screen Prints all the information currently shown on your screen.
Ctrl+Alt+Del	Restarts DOS If your system is not responding to your commands, this restarts your system in less time than turning your system off and then on again.

Key	Task
Ctrl+PrtSc	Prints what you type Prints one line at a time as it appears on the screen. To stop "echoing" to the printer, press the keys once again.
Esc	Cancels the current line Cancels the line currently displayed without processing the command or filename you entered.
Insert or Ins	Inserts characters Inserts characters within the current line.
Delete or Del	Deletes characters Removes the character that is above (or on) the cursor in the current line.
Backspace	Deletes one character at a time to the left of the cursor.
F1	Displays the last command you typed, one character at a time.
F2	Displays all the characters in a command up to the character you type after pressing F2.
F3	Displays the previously entered command again.
F4	Deletes all characters in a command before the character you type after pressing F4.
F5	Accepts the command that you edited as the current command.

Note: The use of some DOS commands may temporarily disable DOS function keys by occupying the section of the buffer that stores the function key operations.

Starting DOS on Your System

Follow the appropriate procedure to start DOS on your system.

Note: If you have a diskette-drive-only system, you must first insert a DOS diskette in drive A to start DOS on your system.

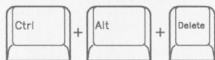
When Your System Is Off



Switch on your display terminal, system, and printer (if you have one).

Wait a moment while the system does a self-test.

When Your System Is On



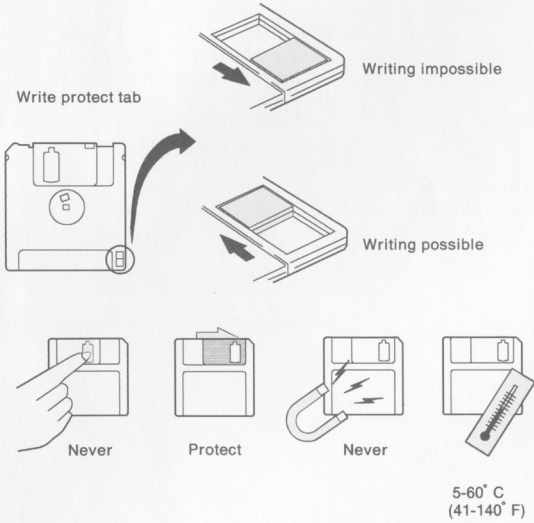
Press and hold the Ctrl and Alt keys; then press the Del (Delete) key. Release all three keys.

Wait a moment while the system restarts itself.

Handling Diskettes

The following figure shows the correct and incorrect ways of handling your diskettes. To reduce the chance of damaging your diskettes, please review these instructions carefully.

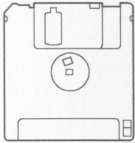
3.5-Inch Diskettes



Write-Protecting Diskettes

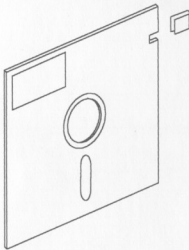
When you write-protect a diskette, it means that you can read information from a diskette but you cannot write on it. This helps prevent formatting a diskette by mistake or accidentally writing information on it. Diskettes can be write-protected in one of several ways:

3.5-Inch Diskettes



A 3.5-inch diskette contains a write-protect window in the lower corner. When the window is open (writing impossible), the diskette is write-protected and you cannot change information. If you close the window by sliding the plastic tab shut, you can write information on the diskette.

5.25-Inch Diskettes



A 5.25-inch diskette may contain a notch on the side of the diskette. If the notch is covered with a write-protect tab or a piece of tape, it is "write-protected."

Note: If you have a diskette without a notch, this means that the diskette is already write-protected and you cannot write information on it.

Inserting and Removing Diskettes

Before you start DOS, you need to know how to insert and remove diskettes in your diskette drives. Follow the steps for your particular system.

Note: Remember not to remove your diskette while the in-use light is on; this shows that your system is accessing information from your diskette drive.

Inserting 3.5-Inch Diskettes



1. Insert the diskette into the drive; the arrow side must be up and the arrow must be pointing to the diskette drive.
2. Press gently on the outer edge of the diskette until it "clicks" and drops into place.

Removing 3.5-Inch Diskettes

Press the disk eject button on the lower right of the diskette drive.

Inserting 5.25-Inch Diskettes



1. Remove the diskette from its paper envelope.
2. Make sure that the diskette drive door is open.
3. Gently insert your diskette into the drive until it "clicks" into place; the label must be facing up and the write-protect notch on the left.
4. Make sure that the diskette is all the way in, and close the drive door.

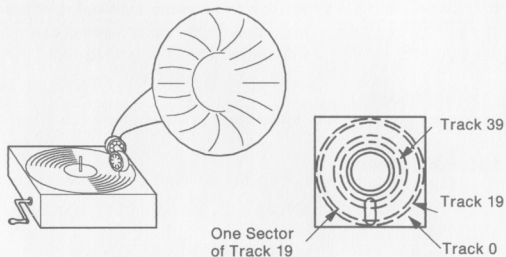
Removing 5.25-Inch Diskettes

Open your diskette drive door and gently pull out your diskette.

Storing and Retrieving Data

The method of storing and retrieving information on disks is similar to playing an album on your record player. Information, like a specific song on an album, is stored on disks along concentric circles called tracks. The read/write head of the disk drive, resembling the needle of a record player, moves back and forth from one track to another as the disk spins. As the head moves, DOS finds information to retrieve or locates a place on the disk to store information.

Sectors and bytes further divide the tracks where you store information. Bytes measure the space on a disk, one byte holding only one character. The number of tracks, sectors, and bytes on a disk depends on the type of disk you are using.



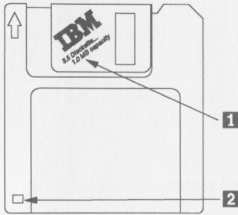
Note: A KB or kilobyte is equal to 1024 bytes, a MB or megabyte is equal to 1,048,576 bytes.

Diskette and Drive Compatibilities

Before storing information on diskettes, make sure that the diskettes you are using are compatible with the diskette drives on your system. See the documentation that came with your system for information about the capacity of the diskette drives on your system.

You can read information from or write information to a diskette under the following conditions:

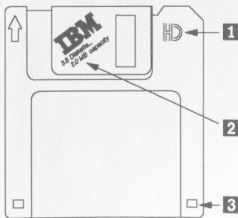
3.5-Inch Diskettes and Drives



Labeled "1.0 MB capacity" or "2HC" **1**, a 1MB diskette has a square cutout **2**.

Use a 3.5-inch, 1MB diskette, formatted to 720KB, in 1.44MB- or 720KB-diskette drives.

Use only 1MB diskettes formatted to 720KB if you transfer 3.5-inch diskettes between systems that have 3.5-inch diskette drives with different storage capacities.



Labeled "HD" **1** or "2.0 MB capacity" **2**, a 2MB diskette has two square cutouts **3**.

Use a 3.5-inch, 2MB diskette, formatted to 1.44MB, in 1.44MB drives only.

If you accidentally format a 2MB diskette to 720KB, its use may be unreliable.

5.25-Inch Diskettes and Drives



The diskette capacity must be less than or equal to the capacity of the 5.25-inch drive where you insert it. However, if you write information from a 1.2MB diskette drive to a diskette that does not have 1.2MB capacity, the information may be unreadable from a diskette drive with a different capacity.

Formatting Diskettes

When you first purchase a diskette, it is not prepared for your particular system. The manufacturer of the diskette is not able to tell what type of computer or operating system you are working on when the diskette is produced; therefore, before you begin using new or blank diskettes, you must first use the `FORMAT` command.

`FORMAT` checks the diskette for defects and prepares it to store information. If information is already written on a diskette, `FORMAT` erases the old information so that you can begin anew.

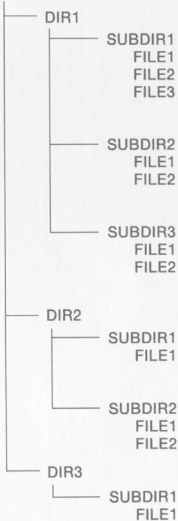
For instructions on how to format your diskettes, refer to "FORMAT (Preparing a Disk for Use)" on page 40. Also, make sure that you are using the appropriate diskettes for the diskette drives of your system.

Chapter 2. Managing Information

This chapter describes how to organize your information into files and directories from the command prompt. It also shows you how to name files, and gives you practical experience working with frequently used DOS commands.

Using Files and Directories

ROOT



A "file" is a means of storage for records with related information. Related files can be further grouped together into "directories" and "subdirectories."

Compare files and directories to the structure of a tree. The root directory is the directory you are in when you start DOS on your system. This supplies DOS with a base on which other directories are formed. When your information needs grow and you want to branch out and create other groups of related files, you can form directories called "subdirectories."

Naming Files and Directories

A good name for a file helps you remember what type of information is in the file, and whether it contains a program or just information. Each file must have a different name, but you can have the same "filename" on different disks or within different directories.

A "filename" and an optional "extension" make up a file. For example, a good name for a BASIC program file that prints an address list is:

```
ADDRLIST.BAS
```

A directory name must follow the same rules for naming as a file, but you should not name a subdirectory with the same name as one of the files that is in the subdirectory. It is also a good idea to name your subdirectory without an extension so that you don't confuse it with a filename.

Rules for Naming

When creating files and directories, you must follow these rules:

- The filename can have up to eight characters.
- The extension, which is optional, can have up to three characters, and you must separate it from the filename by a period (.).
- If an extension follows a filename, you must type in both parts when telling DOS about that file.
- Do not use a space in either the filename or extension.
- DOS does not recognize the following symbols and reserved device names when naming files. The reserved device names are defined below.

. " / \ [] : *

< > ! + = ; , ?

CLOCK\$	System clock device driver
CON	Console keyboard/display
AUX or COM1	First serial port
COM2	Second serial port
COM3	Third serial port
COM4	Fourth serial port
LPT1 or PRN	First parallel printer (as an output device only)
LPT2	Second parallel printer
LPT3	Third parallel printer
NUL	Nonexistent (dummy) device for testing applications

Types of DOS Commands

There are two types of DOS commands:

Internal commands process immediately because they are built into DOS when you install the program in your system.

External commands, on the other hand, are not read into the system's memory when you start DOS. They are read from a disk into the system's memory before they can process. This means that if you have a diskette-drive-only system, you must insert the DOS diskette into your diskette drive before DOS can find the external command and process it. You can find out which DOS diskette includes the command you want by using the DIR command to determine what each installation diskette contains. The following symbol indicates an external command:



Any file with an extension of .BAT, .COM, or .EXE is considered an external command. This allows you to develop your own unique commands and add them to the system.

Besides being internal or external, DOS commands may be grouped as follows:

- Filter** Filter commands redirect input by filtering information. A filter reads information from the keyboard (the standard input device), changes the information in some way, and writes the result to the screen (the standard output device). You can redirect the input and output of a filter from the standard devices to other devices or files.
- Configuration** Configuration commands process within the CONFIG.SYS file that is created when you install DOS. This file describes to your system, the devices, optional features, and programs that are installed.
- Device** Device commands install device drivers, which are configuration commands. A device driver is a file that contains the code needed to attach and use a device. DOS loads device drivers for standard IBM Personal Computer display terminals, keyboards, printers, diskette drives, fixed disk drives, and auxiliary devices. The user can replace these or add other devices by changing the DEVICE command in the CONFIG.SYS file.
- Batch** Batch commands run from within a batch file; that is, a special file containing DOS commands. When you process a batch file, DOS processes the commands you include in the batch file, one at a time, without having to repeatedly type in commands from the command prompt.

See the tables in Chapter 6 for the commands associated with these DOS command categories.

Information about DOS Commands

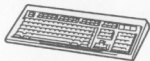
Once you have named your files and are ready to group them into directories, you are ready to use DOS commands.

The following information applies to all DOS commands:

- command prompt** When a command has finished processing, the command prompt (C:\>) reappears on the screen.
- You can type commands in uppercase letters, lowercase letters, or a combination of both.
- You can type in up to 128 characters (bytes) at the command prompt before pressing Enter.
- path** Commands that allow you to enter filenames can accept a path (directory) name before the filename. You cannot, however, specify a drive and path in the second filename of the RENAME or REN command.
- current directory** The "current directory" is the directory that DOS searches when a filename is entered with no path name. You have a current directory for every drive in your system.
- DOS searches the current directory of the drive you specify. If you want DOS to search another directory, you need to enter the drive and path to that directory either on the command line or by using the PATH or APPEND command.
- file specification** Do not put a space between the three parts of a file specification — the drive, path, filename and optional extension. The colon, backslash, and period already serve as separators.
- delimiters** Commands and parameters must be separated by delimiters (space, comma, semicolon, equal sign, or tab key). The delimiters can be different within one command. The examples on the following pages use a space as the delimiter in the commands.

- backslash (\)** The first backslash (\) symbol in a command specifies the root directory and tells DOS to begin searching there first. All other backslash (\) symbols are required delimiters between subdirectory names within the path, before the filename you want to access.
- source** A source disk or drive can refer to the "original," "master," or "first" disk or drive you are reading information from.
- target** A target disk or drive can refer to the "backup," "new," "blank," or "second" disk or drive you are writing information to.

Typing Commands



At the command prompt, type in the correct command order and press Enter to process the command. The correct order includes one or more of the following variables:

- command** The name of the DOS command you want to process.
- drive** The disk drive that stores the file or directory; for example, A, B, or C.
- path** The route of subdirectory names to follow to arrive at the file you want to access.
- filename** The name and optional extension of the file you want to access.
- parameters** The command parameters that can change or enhance the original function of the command (displayed in the examples on the following pages).

Using Global Filename Characters

You can use two special characters, `?` and `*`, in a filename or extension. Use these characters when searching for a file, not in naming a file. They give you greater flexibility when using DOS commands, such as in copying all the files from one subdirectory to another without having to copy each file individually. See further examples of global filename characters under the DOS commands in this chapter.

? Character

A `?` in a filename or extension shows that any character can occupy that space.

For example,

```
AB?DEF
```

specifies all filenames that have six characters beginning with AB, have any next character, and are followed by DEF.

* Character

An `*` in a filename or extension shows that any character can occupy that space and all the following character spaces in the filename or extension.

For example,

```
ABC*
```

specifies all filenames whose first three letters are ABC.

Using Frequently Used Commands

See the following alphabetic section for examples of frequently used DOS commands that you may use from your command prompt. The examples and parameters will also be helpful to you if you are working within the DOS Shell. Remember that you can use one or more parameters together unless specified otherwise in the "Remarks" section.



BACKUP (Backing Up One or More Files)

Purpose

Backs up one or more files (or a complete drive) from the source disk to the target disk, allowing you to restore them by using the RESTORE command.

Important:

- BACKUP automatically formats the target diskette if you have not formatted the diskette already using the FORMAT command; BACKUP does not format a fixed disk drive. When the format is complete, you are asked if you want to format another diskette. Enter an N to continue backing up your files or a Y if:
 - You need to replace your first diskette because it was unusable.
 - You want to format multiple diskettes before proceeding with BACKUP.
- After BACKUP fills a diskette, you are prompted to insert a new diskette. Label each diskette in consecutive order, recording the date and diskette number. When the files are restored, you are prompted to insert the backup diskettes in order.
- BACKUP works only within the source directory unless you specify the /S parameter that copies files in the source directory and in all directories below the starting source directory.

If You Want To:

Back up the contents of drive C, including all files and subdirectories within it to multiple diskettes on drive A

Back up a file named FRIDAY from the current directory on drive C to drive A

Back up the REPORTS subdirectory, including all files and subdirectories within it, from drive C to drive A

Enter:

```
BACKUP C:\*. * A: /S
```

```
BACKUP C:FRIDAY A:
```

```
BACKUP C:\REPORTS A: /S
```

BACKUP

(Backing Up One or More Files)



If You Want To:

Enter:

Back up files in the current directory on drive C that were changed since the last backup, adding the files to the backup already existing on the diskette in drive A

BACKUP C: A: /M/A

Add the files on drive B to the backed up files already on the diskette in drive A

BACKUP B: A: /A

Back up all files changed on or after November 12, 1985 from the current directory on drive C to drive A

BACKUP C: A: /D:11-12-85

Back up files that have been changed on or after 11:45 a.m. from the current directory on drive C to drive A
(You can combine the /T parameter with the /D parameter.)

BACKUP C: A: /T:11:45:00

Back up files from the current directory on drive C to drive A, and create a log file named BACKUP.LOG, containing the date, time, filename, and diskette number of the back up
(BACKUP.LOG is placed in the root directory of the source drive.)

BACKUP C: A: /L

Remarks

- If the source is a diskette, it should not be write-protected because BACKUP needs to reset the archive bit on the files backed up.
- BACKUP does not copy the DOS system files (IBMBIO.COM and IBMDOS.COM) or COMMAND.COM from the root directory of the source drive.



BACKUP (Backing Up One or More Files)

- If you are sharing files, you can only back up files that you have access to.
- If you specify the /A parameter, BACKUP does not check the first target diskette inserted (assumed to be the previous backup diskette) to see if it needs to be formatted. It does, however, check the rest of the diskettes inserted.
- Files that are backed up do not appear in the root directory on the target diskette. BACKUP creates two files in the root directory on the target diskette called BACKUP.XXX and CONTROL.XXX. The BACKUP.XXX file contains all the files backed up, and the CONTROL.XXX file saves paths, filenames, and other controlling information.

CHDIR or CD (Changing Subdirectories)

Purpose

Allows you to switch between subdirectories. CHDIR or CD changes the current directory and allows you to access any subdirectory you have created with the MD command.

If You Want To:

Change from the current directory to a subdirectory named REPORTS on the current drive

Enter:

```
CD \REPORTS
```

Change from the current directory to a subdirectory named ANNUAL, which is in your REPORTS subdirectory on the current drive

```
CD \REPORTS\ANNUAL
```

Change to a subdirectory named MONTHLY which is within the current directory on the current drive

```
CD MONTHLY
```

Change back to the root directory from any subdirectory on the current drive

```
CD \
```

Display the current directory's name on the current drive

```
CD
```

Display the current directory on drive C

```
CD C:
```

Change to the parent directory of the current directory

```
CD ..
```

Remarks

- If you do not know the path of the directory you want to change into, refer to the DIR or TREE commands in this chapter.
- If you change to the "parent directory" of your current directory, you will change to the previous subdirectory where your current directory is stored.



COMP (Comparing Files)

Purpose

Allows you to compare the contents of two files.

If You Want To:

Compare all files in the NOTE subdirectory on drive C with the files in the MEMO subdirectory on drive C

Enter:

```
COMP C:\NOTE C:\MEMO
```

Compare a file that is not on the same diskette as the COMP command itself and be prompted for the filenames

```
COMP
```

Compare all files with an .ABC extension on drive A with the files on drive C with the same extension

```
COMP A:*.ABC C:
```

Remarks

- The files you compare may be on the same or different drives or in the same or different directories.
- If you specify a drive or path with no filename for either the primary or secondary file specification, COMP assumes a filename of *.*.
- A comparison does not take place if the file sizes are different.
- After you compare the files, the system asks if you want to compare any more files. Enter a Y to compare two more files or end COMP by entering an N.

COPY (Copying Files)

Purpose

Allows you to make a copy of one file instead of a complete diskette. You can copy files from one diskette or fixed disk to another and you can copy files within directories.

Warning: If you want to copy one or more files to a subdirectory, make sure that the subdirectory exists. For example, if you enter:

```
COPY C:\MON C:\REPORTS
```

and a REPORTS subdirectory does not exist, DOS copies the contents of the MON file to a file named REPORTS.

If You Want To:

Copy a file named FRIDAY from the root directory on drive A to the root directory on drive C

Enter:

```
COPY A:\FRIDAY C:\
```

Copy a file named MON from the root directory on drive C to a subdirectory named REPORTS on drive C

```
COPY C:\MON C:\REPORTS
```

Copy all the files from the current directory on drive A to a subdirectory named REPORTS on drive C

```
COPY A:*. * C:\REPORTS
```

Copy a file named MONDAY from the current directory to drive C, naming the file TUESDAY

```
COPY MONDAY C:TUESDAY
```

Create a new file named STATUS in the current directory on the current drive by combining files named MON and FRI, also located in the current directory

```
COPY MON+FRI STATUS
```

Remark

Refer to "Using Global Filename Characters" on page 28 for more information on the use of the ? and * characters.

DEL or ERASE (Deleting Files)

Purpose

Allows you to remove a file from your fixed disk or diskette. Use DEL or ERASE interchangeably.

If You Want To:

Delete a file named FRIDAY from the current directory on the current drive

Enter:

```
DEL FRIDAY
```

Delete all files in the current directory on drive C

```
DEL C:*.*
```

Delete all files in the REPORTS subdirectory on drive C

```
DEL C:\REPORTS\*.*
```

Delete a file named FRIDAY from the REPORTS subdirectory on drive C

```
DEL C:\REPORTS\FRIDAY
```

Display the drive, path, and filename before deleting a file named FRIDAY from the current directory

```
DEL FRIDAY /P
```

Display the drive, path, and filename before deleting all files with an .ABC extension from the REPORTS subdirectory in the root directory on drive C

```
DEL C:\REPORTS\*.ABC /P
```

Remarks

- If you use the parameter /P, your system responds by displaying the drive, path, and filename.
- When deleting all files in a directory DOS displays a message stating: All files in directory will be deleted!
Are you sure (Y/N)?
Enter a Y to erase all files in the directory or enter an N to end the DEL/ERASE command.
- Read-only and hidden files cannot be deleted with ERASE or DEL.

DIR

(Listing Files in Directories)

Purpose

Allows you to see what files are on a disk. The DIR command lists all files and subdirectories in a directory. The system displays the name, size (in bytes), and the date and time you placed the information in the file. DIR also displays the total number of files and the amount of free space (in bytes) remaining on the disk.

If You Want To:

Enter:

List all the files in the current directory on the current drive

```
DIR
```

List all the files in the current directory on drive C

```
DIR C:
```

List all the files in a subdirectory named REPORTS, which is within the root directory on the current drive

```
DIR \REPORTS
```

List all the files in the current directory on the current drive, pausing after each full screen

```
DIR /P
```

List all the files in the current directory on the current drive, displaying the listing of files horizontally on your screen

```
DIR /W
```

List all the files in the current directory on the current drive with an extension of .XYZ

```
DIR *.XYZ
```

Have a listing of all the files in the current directory on the current drive sent to your printer

```
DIR >PRN
```

Remark

If you do not specify a drive, DOS searches the current default drive.



DISKCOMP (Comparing Diskettes)

Purpose

Compares the contents of the diskette in the specified source drive to the contents of the diskette in the specified target drive.

Important: Use DISKCOMP only between diskettes of the same size and storage capacity. Do not use DISKCOMP to compare information between 5.25-inch and 3.5-inch diskettes. Follow the examples under the COMP command to compare files between 5.25-inch and 3.5-inch media.

If You Want To:

Compare the complete contents of a diskette in drive A to a diskette in drive B

Perform a comparison using one drive, switching diskettes when prompted

Compare only the first side of a diskette in drive A to a diskette in drive B, even if the diskettes and drives are double-sided

Compares only eight sectors per track of a diskette in drive A to a diskette in drive B, even if the first diskette contains 9 or 15 sectors per track

Enter:

```
DISKCOMP A: B:
```

```
DISKCOMP
```

```
DISKCOMP A: B: /1
```

```
DISKCOMP A: B: /8
```

Remarks

- After you compare the diskettes, the system asks if you want to compare any more diskettes. Enter a Y to compare two more diskettes on the same drives that you originally specified, or end DISKCOMP by entering an N.
- Refer to "Information about DOS Commands" on page 26 for information on source and target diskettes.

DISKCOPY (Copying Diskettes)



Purpose

Allows you to make a copy of a complete diskette on another diskette of the same size and formatted capacity.

Important:

- DISKCOPY automatically formats (prepares) the target diskette before copying the contents of the original onto it if you have not formatted the diskette already using the FORMAT command.
- Use DISKCOPY only between diskettes of the same size and storage capacity. Do not use DISKCOPY to copy information between 5.25-inch and 3.5-inch diskettes. Follow the examples under the COPY command to copy files between 5.25-inch and 3.5-inch media.

If You Want To:

Copy the complete contents of a diskette in drive A to a diskette in drive B

Copy a source diskette to a target diskette using one drive, switching diskettes when prompted

Copy only the first side of a diskette in drive A to a diskette in drive B, regardless of the diskette or drive type

Enter:

```
DISKCOPY A: B:
```

```
DISKCOPY
```

```
DISKCOPY A: B: /1
```

Remarks

- After you copy the diskettes, the system asks if you want to copy any more diskettes. Enter a Y to copy two more diskettes on the same drives that you originally specified, or end DISKCOPY by entering an N.
- Use the /1 parameter only when the source is a single-sided, 5.25-inch diskette. Using any other type of media results in a nonusable target.



DOSSHELL (Starting or Returning to the Shell)

Purpose

Allows you to start or return to the DOS Shell from the DOS command prompt (pressing Shift+F3 or selecting the Exit option from the Action Bar).

Warning: Make sure you type EXIT to return to the DOS Shell when you exit from the Shell command prompt (Shift+F9 or the Switch option from the Action Bar). Otherwise, layers of secondary command processors are created and could cause memory problems.

If You Want To:

Start or return to the DOS Shell from the DOS command prompt

Enter:

DOSSHELL

Start or return to the DOS Shell from the Shell command prompt

EXIT

Remarks

- All DOS commands can be processed from either the Shell or DOS command prompt, except that by using the Shell command prompt, you return to your task in the Shell at the point you left.
- If you want the DOS command prompt to appear instead of the DOS Shell when you start or restart DOS on your system, remove the DOSSHELL command from the AUTOEXEC.BAT file, located in the root directory of your current drive.
- Approximately 7KB of memory is lost each time you use the DOSSHELL command instead of typing EXIT to return to the DOS Shell from the Shell command prompt. Eventually the error message "Out of memory" occurs.

FORMAT

(Preparing a Disk for Use)



Purpose

Allows you to prepare a diskette or fixed disk for use on your system. FORMAT checks the disk for defects and prepares it to hold information.

Warning: If you format a diskette or fixed disk that already contains information, all the information is erased. Also, if you don't specify a drive letter before the colon (:), DOS displays an error message that you have not specified a target drive.

Important: Refer to "Diskette and Drive Compatibilities" on page 19 before beginning the FORMAT command. For the capacities of the diskettes and drives on your system, refer to the documentation that came with your system.

If You Want To:

Format a 5.25-inch high-capacity diskette in high-capacity diskette drive A

Format a 5.25-inch low-capacity diskette in high-capacity diskette drive A

Format a 5.25-inch diskette for 8 sectors per track in diskette drive A
(The default is 9 or 15 sectors per track.)

Format a 5.25-inch diskette for single-sided use in diskette drive A

Format a 3.5-inch, 720KB diskette in a 1.44MB drive A
(See the "Remarks" section for possible size values.)

Enter:

FORMAT A:

FORMAT A: /4

or

FORMAT A: /F:360

FORMAT A: /8

FORMAT A: /1

FORMAT A: /F:720



FORMAT (Preparing a Disk for Use)

If You Want To:

Format a 3.5-inch, 2MB diskette in a 1.44MB drive A

Format a diskette in drive A and give the diskette a volume label of MYDISK (This saves you from being prompted for a volume label after the format is complete.)

Format and copy the operating system files from the DOS diskette in the current drive to drive A (Copies IBMBIO.COM first, IBMDOS.COM second, and COMMAND.COM last.)

Format a diskette to 9 or 15 sectors per track with space allocated for the IBMBIO.COM and IBMDOS.COM system files (This creates a diskette on which any version of DOS can be placed through that version's SYS command.)

Enter:

FORMAT A:

FORMAT A: /V:MYDISK

FORMAT A: /S

FORMAT A: /B

Remarks

- If you do not use the */V:label* parameter, FORMAT prompts you to identify your disk with a volume label. You can use any name up to 11 characters that follows "Rules for Naming" on page 23. The system then displays the total amount of disk space available, and asks if you want to format another. Enter a Y to format another diskette or end by entering an N.
- You should select a different volume label for each disk you format.
- If you use the */4* parameter, the information may be unreadable from a diskette drive with a different capacity.
- The */B* and */S* parameters cannot be used together.

FORMAT

(Preparing a Disk for Use)



- Listed below are the possible */F:size* values for the following diskette types. Keep in mind that you can always format a lesser capacity disk in a higher capacity drive, except for a 720KB diskette drive.

160KB	160, 160K, 160KB
180KB	180, 180K, 180KB
320KB	320, 320K, 320KB
360KB	360, 360K, 360KB
720KB	720, 720K, 720KB
1.2MB	1200, 1200K, 1200KB, 1.2, 1.2M, 1.2MB
1.44MB	1440, 1440K, 1440KB, 1.44, 1.44M, 1.44MB

- The following parameters are valid for the specified diskette types:

160KB/180KB	<i>/S, /V:label, /1, /8, /B, /4, /F:size</i>
320KB/360KB	<i>/S, /V:label, /1, /8, /B, /4, /F:size</i>
720KB/1.44MB	<i>/S, /V:label, /B, /F:size</i>
1.2MB	<i>/S, /V:label, /B, /F:size</i>
Fixed Disk	<i>/S, /V:label, /B</i>

MKDIR or MD (Making Subdirectories)

Purpose

Allows you to create subdirectories within the root directory (the directory you are in when DOS starts) or within another subdirectory.

If You Want To:

Make a subdirectory named ANNUAL in the current directory on the current drive

Enter:

```
MD ANNUAL
```

Make a subdirectory named REPORTS within the root directory on the current drive

```
MD \REPORTS
```

Make a subdirectory named REPORTS in the root directory on drive C

```
MD C:\REPORTS
```

Make a subdirectory named ANNUAL within the REPORTS subdirectory which is in the root directory on the current drive

```
MD \REPORTS\ANNUAL
```

Remarks

- Do not use the backslash (\) symbol if you have changed directories and you want to create a subdirectory in your current directory. If you use this symbol, the subdirectory you created is within the root directory.
- If you do not specify a drive, DOS creates your subdirectories on the current default drive.

PATH

(Searching Subdirectories)

Purpose

Allows you to search specified directories for commands or batch files that were not found by a search of the current directory.

If You Want To:

Enter:

Display the current path in your system

```
PATH
```

Search only the current directory for commands and batch files

```
PATH ;
```

Search the DOS subdirectory on drive C; then the LETTERS subdirectory of the DOS subdirectory

```
PATH C:\DOS;C:\DOS\LETTERS
```

Search the MEMOS subdirectory on drive A; then the REPORTS subdirectory on drive C

```
PATH A:\MEMOS;C:\REPORTS
```

Remarks

- Refer to page 113 for an example on how to include PATH in your AUTOEXEC.BAT file.
- If you enter a command that is not found in the current directory, DOS searches the named directories in the order you entered them.
- PATH only finds files that can be run, such as files with .COM, .EXE, and .BAT extensions.
- A path can be up to 128 characters long; an individual path containing up to a maximum of 63 characters.

PATH

(Searching Subdirectories)

Purpose

Allows you to search specified directories for commands or batch files that were not found by a search of the current directory.

If You Want To:

Enter:

Display the current path in your system

```
PATH
```

Search only the current directory for commands and batch files

```
PATH ;
```

Search the DOS subdirectory on drive C; then the LETTERS subdirectory of the DOS subdirectory

```
PATH C:\DOS;C:\DOS\LETTERS
```

Search the MEMOS subdirectory on drive A; then the REPORTS subdirectory on drive C

```
PATH A:\MEMOS;C:\REPORTS
```

Remarks

- Refer to page 113 for an example on how to include PATH in your AUTOEXEC.BAT file.
- If you enter a command that is not found in the current directory, DOS searches the named directories in the order you entered them.
- PATH only finds files that can be run, such as files with .COM, .EXE, and .BAT extensions.
- A path can be up to 128 characters long; an individual path containing up to a maximum of 63 characters.

MKDIR or MD (Making Subdirectories)

Purpose

Allows you to create subdirectories within the root directory (the directory you are in when DOS starts) or within another subdirectory.

If You Want To:

Enter:

Make a subdirectory named **ANNUAL** in the current directory on the current drive

```
MD ANNUAL
```

Make a subdirectory named **REPORTS** within the root directory on the current drive

```
MD \REPORTS
```

Make a subdirectory named **REPORTS** in the root directory on drive C

```
MD C:\REPORTS
```

Make a subdirectory named **ANNUAL** within the **REPORTS** subdirectory which is in the root directory on the current drive

```
MD \REPORTS\ANNUAL
```

Remarks

- Do not use the backslash (\) symbol if you have changed directories and you want to create a subdirectory in your current directory. If you use this symbol, the subdirectory you created is within the root directory.
- If you do not specify a drive, DOS creates your subdirectories on the current default drive.



PRINT (Printing Information)

Purpose

Allows you to print or cancel printing of one or more files.

Important: Only specify the /D, /B, /Q, /S, /U, and /M parameters the "first" time you use PRINT. They can be used in any combination the first time you use PRINT, but must precede any filenames.

If You Want To:

Enter:

Display the names of the files currently in the print queue

PRINT

Print a file named LISTING on your printer, if you only have one printer (Press Enter for the default list device PRN.)

PRINT LISTING

Print a file named LISTING, specifying the print device LPT1 (The default device is PRN.)

PRINT /D:LPT1 LISTING

Cancel a file named LISTING from the print queue

PRINT LISTING /C

Cancel all files in the print queue

PRINT /T

Set the print files that can be in the queue to 15

PRINT /Q:15

(You can set the number from 4 through 32; the default is 10.)

Print a file named A, a file named B, and a file named C; add the files to the print queue until a /C parameter is found at the command prompt

PRINT A B C /P

PRINT

(Printing Information)



Important: If you want to use more of your hardware resources for printing, enhancing the performance of the PRINT command, increase one or more of the values listed here.

If You Want To:

Set the size of the internal buffer to 512 bytes
(You can set the number from 512 through 16,000 bytes; the default is 512.)

Set the clock ticks PRINT can have to print characters on the print device to 1
(You can set the number from 1 through 255; the default is 2.)

Set the clock ticks that PRINT waits until the print device is available to 1
(You can set the number from 1 through 255; the default is 1.)

Set the time slice value to 1
(You can set the number from 1 through 255; the default is 10.)

Enter:

PRINT /B:512

PRINT /M:1

PRINT /U:1

PRINT /S:1

Remarks

- Refer to reserved device names under "Rules for Naming" on page 23 to find your PRINT device name.
- You can enter more than one filename at the command prompt, each with appropriate parameters (* and ? characters are allowed).
- The files are queued for printing in the order you enter.
- Refer to page 70 for information on buffers.
- A clock tick is a periodic signal used to control synchronization of data and the timing of certain functions.
- A time slice, an interval of time on the processing unit, is allocated for use in carrying out a task.

PROMPT

(Setting a New Command Prompt)

Purpose

Allows you to change the default command prompt and set a new one.

If You Want To:

Set the command prompt to say "GOOD MORNING"

Enter:

```
PROMPT GOOD MORNING
```

Set the command prompt to display the current drive and directory plus the > character (This is the prompt if you installed DOS on a fixed disk drive; for example, C:\path>.)

```
PROMPT $P$G
```

Set the prompt to display the default drive plus the > character

```
PROMPT
```

(Sets the prompt to the system default of \$N\$G. This is the default if you installed DOS on a diskette-drive-only system; for example, C>.)

Set the command prompt to display the date and time

```
PROMPT TIME = $T$_DATE = $D
```

Remarks

- If you use \$P and the default drive is a diskette drive, the diskette drive must always be ready. If it is not ready the system displays the following message:

```
Not ready reading drive A
Abort, Retry, Fail?
```

Type an F to return to the command prompt.

- You must precede each of the characters with a dollar sign (\$). You can include, in the text of the PROMPT command, the characters in the list on the following page.

PROMPT

(Setting a New Command Prompt)

\$	\$ character
-	Carriage return\line feed sequence
B	| character
D	Current date
E	Esc (Escape) character
G	> character
H	Backspace symbol
L	< character
N	Default drive
P	Current directory of the default drive
Q	= character
T	Time
V	Version number

RENAME or REN (Renaming Files)

Purpose

Allows you to change a filename and/or extension. Renaming a file does not change the contents of the file.

If You Want To:

Rename a file named MEMOS to a file named LETTERS in the current directory on the current drive

Enter:

```
RENAME MEMOS LETTERS
```

Rename a file named MEMOS in the current directory on drive C to a file named LETTERS

```
RENAME C:MEMOS LETTERS
```

Rename all files in the current directory on the current drive that have an extension named .OLD to an extension named .NEW

```
RENAME *.OLD *.NEW
```

Remark

You cannot specify a drive and path in the second filename.

RESTORE

(Restoring Backed-up Files)



Purpose

Restores one or more backup files from one disk to another disk.

Important:

- The files being restored must have been placed on the source with the BACKUP command.
- RESTORE works only within the source directory unless you specify the /S parameter that copies files in the source directory and in all directories below the starting source directory.
- When RESTORE prompts you to insert the source disk, make sure that you insert the first diskette that might contain the file you want to restore. When you restore all your files, you are prompted to insert the backup diskettes in order.

If You Want To:

Restore all files including subdirectories on the backup diskettes in drive A to fixed disk drive C

Restore all files that have an extension of .EXE from the backup diskette in drive A to the current directory on drive C

Restore a file named MONDAY to the REPORTS subdirectory on drive C from the backup diskette in drive A

Restore files that were changed or deleted since they were last backed up

Be prompted with (Y/N)? before restoring any read-only file or file changed since the last time you backed them up, from the backup diskette in drive A to the current directory of the fixed disk on drive C

Enter:

```
RESTORE A: C:\*. * /S
```

```
RESTORE A: C:*.EXE
```

```
RESTORE A: C:\REPORTS\MONDAY
```

```
RESTORE A: C:*. * /M
```

```
RESTORE A: C:*. * /P
```



RESTORE (Restoring Backed-up Files)

If You Want To:

Enter:

Restore files that no longer exist on the target

RESTORE A: C: /N

Restore all files changed on or before November 12, 1985
(Enter the current date format.)

RESTORE A: C: /B:11-12-85

Restore all files changed on or after November 12, 1985
(Enter the current date format.)

RESTORE A: C: /A:11-12-85

Restore only those files that were changed at or later than 11:45 a.m.

RESTORE A: C: /L:11:45:00

Restore only those files that were changed at or earlier than 11:45 a.m.

RESTORE A: C: /E:11:45:00

Remarks

- Refer to "Information about DOS Commands" on page 26 for information on source and target diskettes.
- RESTORE does not restore the DOS system files (IBMBIO.COM and IBMDOS.COM) or COMMAND.COM to the root directory of the source drive.
- If you are sharing files, you can only restore files that you have access to.

RMDIR or RD (Removing Subdirectories)

Purpose

Allows you to remove a subdirectory.

Important:

- Before using this command, you must empty the subdirectory of all files by using the DEL or ERASE command. If the directory contains subdirectories, all the files in each subdirectory must be deleted before using the RMDIR or RD command.
- Make sure you remove all hidden file attributes from all files except (.) and (..) or you receive an error message.
- You cannot remove the current directory; you must be in the previous directory before removing a subdirectory.

If You Want To:

Delete all the files in a subdirectory named REPORTS

Enter:

```
DEL \REPORTS\*.*
```

Delete all files in the REPORTS subdirectory on drive C

```
DEL C:\REPORTS
```

Remove a subdirectory named REPORTS from your root directory on the current drive, having deleted all the files and subdirectories within REPORTS

```
RD \REPORTS
```

Remove a subdirectory named ANNUAL, which is within a subdirectory REPORTS, which is in the root directory on the current drive

```
RD \REPORTS\ANNUAL
```

Remarks

- Remove a subdirectory only if it is empty. Only the two special hidden files of (.) and (..) remain.
- Remove only one subdirectory at a time.
- You cannot remove the root directory or the current directory.



TREE (Displaying File and Subdirectory Names)

Purpose

Allows you to display the names of all your subdirectories. Using the /F parameter, you can also view all the filenames in each subdirectory.

If You Want To:

Display all the subdirectory names without the filenames of the current directory

Enter:

```
TREE
```

Display the names of the files in the root directory and in all subdirectories on the current drive

```
TREE \ /F
```

Display the filenames listed in each of the subdirectories on drive C

```
TREE C:\ /F
```

Use an alternate set of graphics, which are universal across any code page (+, -, |, \)

```
TREE /A
```

Print the TREE output to your printer, speeding up the printout operation by using the following characters (+, -, |, \)

```
TREE /A >PRN
```

Have the names of all the directories and files of the current directory sent to your printer

```
TREE /F >PRN
```

Display subdirectory names on the screen, pausing with the message --More-- when a full screen of output is shown

```
TREE | MORE
```

Remarks

- The display (or output) from TREE indents at each subdirectory level and uses block graphics.
- TREE without a path parameter, only displays from the current directory out.

TYPE (Displaying File Contents)

Purpose

Allows you to look into a file by displaying the file's contents.

If You Want To:

Look at a file named MONDAY in the current directory on the current drive

Look at a file named MONDAY in the current directory on drive C

Look at a file named FRIDAY in the current directory on the current drive, pausing with the message --More-- when a full screen of output is shown

Enter:

TYPE MONDAY

TYPE C:MONDAY

TYPE FRIDAY | MORE

Remark

If the information displays too fast on the screen, you can also pause the screen by pressing the Ctrl+Num Lock keys or the Pause key, if available. Press any key to continue.



XCOPY (Copying Groups of Files)

Purpose

Copies groups of files, which can include lower level subdirectories.

Important:

- Remember to specify the drive, path, and filename for the source and target drives. If you do not specify a path, XCOPY starts from the current directory; if a filename is not specified, *.* is used as the default value.
- XCOPY works only within the source directory unless you specify the /S parameter that copies files in the source directory and in all directories below the starting source directory.

If You Want To:

Copy the subdirectories and their contents from the root directory on drive C to the root directory on drive A

Enter:

```
XCOPY C:\ A:\ /S
```

Copy the REPORTS subdirectory on drive C, including all files and subdirectories within it, to the root directory on drive A

```
XCOPY C:\REPORTS A:\ /S
```

Copy the contents of the MEMOS subdirectory including all files and subdirectories within it on drive C, including all empty subdirectories, to the root directory on drive A

```
XCOPY C:\MEMOS A:\ /S/E
```

Copy the contents of the MEMOS subdirectory including all files and subdirectories within it on drive C to a newly created subdirectory named LETTERS in the root directory on drive A

```
XCOPY C:\MEMOS A:\LETTERS /S
```

XCOPY

(Copying Groups of Files)



If You Want To:

Copy files in the MEMOS subdirectory whose date is the same or later than November 12, 1985, to the root directory on drive A

Be prompted with (Y/N?) before copying each file from the MEMOS subdirectory on drive C to the LETTERS subdirectory on drive A

Have XCOPY wait for you to insert a diskette in drive A before beginning to search for source files

Copy files from the root directory on drive C to the root directory on drive A whose archive bit is set on, then turning the archive bit of the source file off

Copy the contents of the root directory including all files and subdirectories within it on drive C to multiple diskettes on drive A (The archive bit of the source file is turned off.)

Verify that the sectors written from drive C to drive A are recorded properly

Copy only those files that have the archive bit set on, not changing the attribute of the source drive C when copied

Enter:

```
XCOPY C:\MEMOS A:\ /D:11-12-85
```

```
XCOPY C:\MEMOS A:\LETTERS /P
```

```
XCOPY A:\ B:\ /W
```

```
XCOPY C:\ A:\ /M
```

```
XCOPY C:\ A:\ /S/M
```

```
XCOPY C:\ A:\ /V
```

```
XCOPY C:\ A:\ /A
```



XCOPY (Copying Groups of Files)

Remarks

- Refer to page 26 for definitions of “source” and “target.”
- Depending on your particular country, the month, date, and year may be in different positions when you use the /D parameter.
- XCOPY does not support any path longer than 63 characters at any time while searching or copying.
- The source is optional only if you specify a target.
- Read-only, hidden, and system files cannot be copied with XCOPY.
- The /M parameter copies files whose archive bit is set, and turns off the archive bit of the source file. You can use the ATTRIB command to reset the archive bit for your files.
- If the specified target path does not exist on the target, XCOPY creates the directories before copying.
- You can rename files on the target by specifying a new filename on the target.
- Do not copy a file that is larger than the available size of the target itself (see the BACKUP command on page 29).

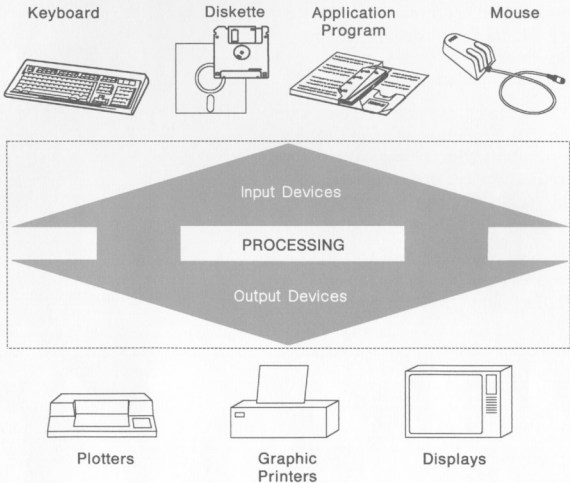
Chapter 3. Redirecting Input and Output

This chapter describes how you can redirect, filter, and pipe information to or from sources, using input and output devices.

Input/Output (I/O)

Input is information or data that an input device processes. An example of using an "input device" could be typing on your keyboard, gathering data from a disk, or operating a mouse.

Output is the information that has been processed and written to an output device. An example of using an "output device" could be displaying information on your screen, storing data on a disk, or printing information on a plotter or printer. Your screen is also known as the standard "error device." You cannot redirect error messages that appear on your screen to another source. This ensures that errors are reported to you if you redirect other output.



Redirecting I/O

By using the redirection symbols (> for output and < for input), DOS lets you select devices to use other than your standard keyboard and screen.

The following list shows how to redirect your input and output. The DIR command, which lists all files and subdirectories in a directory, is used as an example of an input source. The output of these DIR examples comes from the current directory on the current drive.

If You Want To:

Redirect the output of DIR to your printer

Redirect the output of DIR to a file named DIRLIST, create the DIRLIST file if it does not exist, or open and write over the file if it exists

Redirect the output of DIR to a file named DIRLIST, create the DIRLIST file if it does not exist, or add the results of the command to the end of the file if it exists

Redirect all filenames with the extension .INP from the output of DIR to a file named DIRLIST, create the DIRLIST file if it does not exist, or add the results to the end of the file if it exists

Have a program named MYPROG receive input from a file named FILE.IN rather than the keyboard

Enter:

```
DIR >PRN
```

```
DIR >DIRLIST
```

```
DIR >>DIRLIST
```

```
DIR *.INP >>DIRLIST
```

```
MYPROG <FILE.IN
```

Filtering and Piping I/O

You can also redirect the input of a file by **filtering** information. A filter reads information from the keyboard (the standard input device), changes the information in some way, and writes the result to the screen (the standard output device).

There are three DOS commands that act as filters:

- FIND** Searches files for occurrences of specified lines of text, locates the lines, and sends the specified lines to your output device.
- MORE** Receives input and then displays it on an output device one screen at a time. After each screen, DOS pauses with the message "--More--" until you press Enter to continue.
- SORT** Receives input from an input device, sorts the information, and writes the changed information to an output device.

These filter commands only work with ASCII (readable) text files. (ASCII stands for the American National Standard Code for Information Interchange. It is the standard code used for information interchange among data processing systems, data communication systems, and associated equipment.)

DOS also has a feature that allows the output of one program, as it would normally display on the screen, to be used as the input to another program without re-entering the information on the keyboard.

Piping, as this is called, is symbolized by a vertical bar (`|`). See the following pages for examples of how to use piping and redirection symbols with filter commands.

FIND

(Searching Files for Lines of Text)



Purpose

FIND searches files for occurrences of specified lines of text, locates the lines, and sends the specified lines to your output device.

Important: Type the phrase or word in quotations in the exact format (uppercase or lowercase) you have written in the text.

If You Want To:

Display the lines that include the word CHAPTER from a file named BOOK.TXT on your output device

Display all the lines from BOOK1 and BOOK2 (in that order) that contain the word CHAPTER

Display a count of the number of lines that include the word CHAPTER in a file named BOOK.TXT

Display all lines that do **not** include the word CHAPTER in a file named BOOK.TXT

Display the line number where each occurrence of CHAPTER occurs in the text of the file named BOOK.TXT

Display the names of all the files in the current directory of drive B that **do not** contain the word CHAPTER

Enter:

```
FIND "CHAPTER" BOOK.TXT
```

```
FIND "CHAPTER" BOOK1 BOOK2
```

```
FIND /C "CHAPTER" BOOK.TXT
```

```
FIND /V "CHAPTER" BOOK.TXT
```

```
FIND /N "CHAPTER" BOOK.TXT
```

```
DIR B: | FIND /V "CHAPTER"
```

Remarks

- DOS uses the standard input device if you don't specify a filename.
- You may specify parameter /V together with /C or /N but parameter /N does not work together with /C.

**(Displaying Output, One Screen at a Time)****Purpose**

MORE receives input and then displays it on an output device one screen at a time. After each screen, DOS pauses with the message "--More--" until you press Enter to continue.

If You Want To:

Display the contents of a file named BOOK.TXT on your screen, and pause after each screen with the message "--More--"

Enter:

```
MORE <BOOK.TXT
```

Pipe the output of DIR to the input of MORE which displays the listing of DIR on your screen, and pause after each screen with the message "--More--"

```
DIR | MORE
```

Remarks

- Press any key to continue with the output on the screen.
- Press Ctrl+Break if you do not want to continue.

SORT

(Sorting Information by Letter or Number)



Purpose

SORT receives input from an input device, sorts the information, and writes the changed information to an output device.

Important: Keep in mind that when sorting large files, you might have to wait a few minutes until processing is completed. The maximum memory of a file you can sort is approximately 63KB or 64512 bytes.

If You Want To:

Sort a file named BOOK1 by the first column, and send the output to your screen

Sort a file named BOOK1 by the first column, and write the output to a file named ORDER

Sort a file named BOOK1 in reverse order, and write the output to a file named REV

Sort a file named CALENDAR.88 which contains dates, and start with the 7th column

Pipe the output of DIR to SORT, sort the listing starting with the 25th column, and send the output to your screen

Cause the output listing from DIR to be used by SORT as its input, redirect the output to your screen, and pause after each screen with the message "--More--"

Enter:

```
SORT <BOOK1
```

```
SORT <BOOK1 >ORDER
```

```
SORT /R <BOOK1 >REV
```

```
SORT /+7 <CALENDAR.88
```

```
DIR | SORT /+25
```

```
DIR | SORT | MORE
```



SORT

(Sorting Information by Letter or Number)

Remarks

- Sort means to rearrange lines of text according to specific instructions. Use SORT if you want to arrange a file in alphabetic or numeric sequence; for example, alphabetizing applicant names or numbering a schedule according to dates.
- The /R parameter means to sort in reverse order. For example, the letter Z comes before the letter A.
- Lowercase letters (a – z) are equated to uppercase letters (A – Z).

Chapter 4. Changing the System Configuration

This chapter describes how to customize your system by changing a file named CONFIG.SYS. The configuration commands are described in alphabetic sequence on the following pages.

Changing CONFIG.SYS

A configuration file contains a list of commands that set up your system. Each time you start your system, DOS searches the root directory of the starting drive for the file named CONFIG.SYS. When DOS finds the file named CONFIG.SYS, DOS reads the file and interprets the commands within the file.

When you first install DOS 4.00 on your system using the SELECT program, DOS creates a CONFIG.SYS file. If a CONFIG.SYS file already exists on your system, SELECT creates a file named CONFIG.400 so that the existing CONFIG.SYS file remains intact. At this point during installation, you probably chose to combine the command statements from the two files, rename or erase your CONFIG.SYS, and rename the CONFIG.400 file to CONFIG.SYS.

The following is an example of what you might find in your configuration file if you installed DOS 4.00 on a fixed disk, drive C:

```
BREAK=ON
BUFFERS=20
FILES=8
LASTDRIVE=E
SHELL=C:\DOS\COMMAND.COM /P /E:256
DEVICE=C:\DOS\ANSI.SYS
INSTALL=C:\DOS\FASTOPEN.EXE C:=(50,25)
```

These values are intended to provide the best performance for your particular system, but you may change them at any time. For example, special values might be recommended with the documentation that came with your application programs.

If you decide to change your CONFIG.SYS file after you installed DOS 4.00 using SELECT, you have the choice to either re-use the installation program and add, change, or delete command statements, or to use an editor such as EDLIN to change your CONFIG.SYS statements. In most cases, you probably would not want to repeat the entire installation process to make a few changes in your CONFIG.SYS file.

Note: Remember that if you add or change a statement in your CONFIG.SYS file, you must restart your system (Ctrl+Alt+Del) for the changes to take effect.

Using Configuration Commands

The following section describes, in alphabetic sequence, the commands that you can include in your CONFIG.SYS file. Remember that you can use one or more parameters together unless specified otherwise in the "Remarks" section.

Also, in the following examples, the command files are assumed to be installed in the DOS subdirectory of your drive C. If you are not installing on a fixed disk or your command file is not located in the DOS subdirectory, specify the drive and path where your command file is located; for example:

d:\path

BREAK (Checking for Ctrl+Break)

Purpose

Instructs DOS to check if you pressed the Ctrl+Break keys when a program requests DOS to carry out any functions.

If You Want To:

Check for Ctrl+Break being entered only when output is written on your screen or printer, or when input is read from your keyboard
(This is the default value.)

Enter In CONFIG.SYS:

BREAK=OFF

Have DOS check for Ctrl+Break when you request it

BREAK=ON

Remarks

- If you accept the system installation default for BREAK, SELECT places BREAK = ON in your CONFIG.SYS file.
- Pressing the Ctrl+Break keys stops a command from completing its task normally.
- Some DOS programs may themselves respond to Ctrl+Break at any time; setting BREAK does not affect these programs.
- If you want to display the current status of the BREAK command, enter the word, BREAK, at the command prompt.
- BREAK can be entered in the CONFIG.SYS file, a batch file, or on the command line.
- If BREAK = ON, processing may be slower but DOS will probably intercept Ctrl+Break faster. It allows you to break out of a program that produces few or no standard device operations (such as a compiler). For example, if a program is being compiled and it meets an error or loop, it is important to have a way to stop compilation.

BUFFERS

(Determining Disk Buffers)

Purpose

Determines the number of disk buffers that DOS allocates in memory when it starts.

Important:

Determine the best number of buffers, based on:

- The types of applications you use most often
- The memory size of your system
- Your analysis of system performance when using your applications with different numbers of buffers allocated.

If You Want To:

Enter In CONFIG.SYS:

Assign the number of buffers the system uses to 15

`BUFFERS=15`

(You can set the number from 1 through 99; the default is 2 or it is:

- 3 if any diskette drive > 360KB,
- 5 if memory size is > 128KB,
- 10 if memory size is > 256KB,
- 15 if memory size is > 512KB.)

Assign the number of buffers to 15, and assign the number of look-ahead buffers to 3 (A look-ahead buffer is the maximum number of sectors the system can read in advance of processing any input operations. You can set the number of look-ahead buffers from 1 through 8; the default is 0.)

`BUFFERS=15,3`

Assign the number of buffers the system uses to 500, the number of look-ahead buffers to 5, and use expanded memory

`BUFFERS=500,5 /X`

(You can set the number of buffers from 1 through 10,000, if the expanded memory is available.)

BUFFERS

(Determining Disk Buffers)

Remarks

- If you accept the system installation default for BUFFERS and balance DOS function with program workspace, SELECT places BUFFERS = 20 in your CONFIG.SYS file.
- A buffer is a block of memory that DOS uses to store data read from or written to a disk. For example, if an application reads a 128-byte record from a file, DOS reads the complete sector into one of its buffers, locates the correct 128-byte record in the buffer, and moves the record from the buffer into the application's area of memory. It then marks that buffer as having been used recently. The more buffers DOS has, the more data there is in memory.
- If you use database applications or run programs that carry out many random reads and writes of records, you may want to increase the number of buffers. You can determine the "best" number of buffers for your particular application by using different values until you reach the desired effect you want. For most database applications, from 10 through 20 buffers usually provides the best results.
- For systems with fixed disks, high-capacity drives, or both, it is a good idea to have a minimum of BUFFERS = 3.
- If your system has enough memory to cause BUFFERS to be greater than 2, you can set BUFFERS = 2 in the CONFIG.SYS file to reduce the amount of memory used by DOS.
- Before DOS reads or writes a record that is not an exact multiple of the sector size, it checks to see if the sector containing that record is already in a buffer. If not, it must read the sector as described previously. If the data is already in a buffer, DOS can transfer the record to the application's area without reading the sector from the disk. This saves time, both in reading and writing records, because DOS must first read a sector before it can write the record that your application is attempting to write. The buffer that reads disk sectors ahead to increase performance for sequential file processing is called a look-ahead buffer. For applications doing random reads and writes (read a complete file, write a complete file), there is little advantage to specifying a maximum number (8) of look-ahead buffers.

BUFFERS

(Determining Disk Buffers)

- Look-ahead buffers reside in base memory, each taking 512 bytes. An example of a look-ahead buffer is if the application accesses disk sector 5, IBMDOS reads sectors 5, 6, and 7 into the buffers (if look-ahead buffers=3). In this case, if the application later wants to access sector 6, IBMDOS can obtain it from look-ahead buffers without going to the disk. This saves the number of disk reads and increases performance.
- Because each additional buffer increases the resident size of DOS by at least 532 bytes (look-ahead buffers by 512 bytes), the amount of memory available to the application is reduced by that amount. Additional buffers may cause some applications to run more slowly because there is less memory available for the application to keep data. This can result in more frequent reads and writes than otherwise are necessary.
- If you use the /X parameter in the BUFFERS statement, the page frame, P255, is used. If you are writing an application program, do not use page frame 255 to map to the input/output area of disk file I/O or unpredictable results may occur.
- If expanded memory is not available or all expanded memory has been used, the system displays an error message. BUFFERS is then ignored and the system uses the default value.

COUNTRY (Identifying Country Information)

Purpose

Identifies the date, time, collating sequence, capitalization, folding format, currency symbol, and decimal separator for a particular country.

If You Want To:

Set the date and time format for the United States, using the 001 country code, set the code page of the desired country information to 850, and set the name of the file containing country information, COUNTRY.SYS

Enter In CONFIG.SYS:

```
COUNTRY=001,850 C:\DOS\COUNTRY.SYS
```

Refer to the table on the following page for the values to substitute for your particular country; the default country code is 001, the default code page is 437, and the default country information file is COUNTRY.SYS.

Remarks

- COUNTRY does not translate DOS messages for the country you specify.
- If you do not specify the code page in your COUNTRY command, your system uses the default code page for the country specified.
- If you do not specify the country information file, the system assumes that the COUNTRY.SYS file exists in the root directory of the current drive.
- The table on the following page lists the country code and supported code pages for each country. The first code page listed is the default or primary code page, and the second is an additional one that you can select.

COUNTRY (Identifying Country Information)

Country	Country Code	Code Pages Supported
Arabic-speaking	785	864 (Note 1), 850
Australia	061	437, 850
Belgium	032	850, 437
Canada (French-speaking)	002	863, 850
Denmark	045	850, 865
Finland	358	850, 437
France	033	437, 850
Germany	049	437, 850
Hebrew-speaking	972	862 (Note 1), 850
Italy	039	437, 850
Japan	081	932 (Note 2), 437
Korea	082	934 (Note 2), 437
Latin America	003	437, 850
Netherlands	031	437, 850
Norway	047	850, 865
Portugal	351	850, 860
Simplified Chinese	086	936 (Note 2), 437
Spain	034	437, 850
Sweden	046	437, 850
Switzerland	041	850, 437
Traditional Chinese	088	938 (Note 2), 437
United Kingdom	044	437, 850
United States	001	437, 850

Notes:

1. This code page is supported only with a country supplement.
2. This code page is supported only with the Asian version of DOS 4.00 on Asian hardware.
3. If your country is not listed, select the most similar country supported.

DEVICE (Installing Device Drivers)

Purpose

Installs a device driver by specifying the path and complete filename of the device driver in your CONFIG.SYS file.

Important:

- When using DEVICE, use only the specified device drivers.
- The standard default device drivers loaded by DOS support the keyboard, display terminal, printer, diskette, fixed disk, and clock devices. These device drivers must not be listed in your CONFIG.SYS file with DEVICE statements. To install other device drivers, DEVICE statements are required.
- DEVICE statements are processed in the order in which they appear in your CONFIG.SYS file.

Using Device Drivers

A device driver is a file that contains the code needed to attach and use a device. It makes sure that communications between DOS and your hardware device take place successfully. DOS loads device drivers for standard IBM Personal Computer display terminals, keyboards, printers, diskette drives, fixed disk drives, and auxiliary devices. The user can replace these or add other devices by coding and loading a device driver using DEVICE statements in the CONFIG.SYS file.

DEVICE (Installing Device Drivers)

Your DOS diskette includes the following device drivers:

Device Driver	Purpose
ANSI.SYS	An enhanced standard input and standard output device driver that replaces standard input and output support.
DISPLAY.SYS	Allows you to use code page switching on EGA displays and the IBM PC Convertible LCD display.
DRIVER.SYS	A block device driver for external diskette drives, that accesses and uses disks by referencing a logical drive letter.
PRINTER.SYS	Allows you to use code page switching on the IBM Proprinter Models 4201, 4202, 4207, and 4208, and the IBM 5202 Quietwriter III.
VDISK.SYS	A virtual disk device driver that installs a simulated disk called a virtual disk.
XMAEM.SYS	A special driver that emulates the IBM Personal System/2 80286 Expanded Memory Adapter/A. You can use it with 80386-based systems like the IBM Personal System/2 Model 80.
XMA2EMS.SYS	This is a device driver that supports the Lotus, Intel, and Microsoft (LIM) Expanded Memory Specification (EMS) 4.0 under DOS 4.00.

You must include a DEVICE statement in your CONFIG.SYS file and restart your system before you can use these device drivers.

ANSI.SYS (Using Extended Keyboard/Display Features)

Purpose

Allows you to enhance the standard input and output support with keyboard and display features such as:

- Reassigning the keyboard keys
- Manipulating the cursor
- Displaying color attributes
- Changing the number of rows in the screen using the MODE command.

If You Want To:

Install ANSI.SYS, enhancing standard input and output support

Reassign the extended keys in the enhanced keyboard distinctively through ANSI control sequences (For example, the cursor control keys of the enhanced keyboard.)

Retain the number of rows in the screen set through the MODE command on application programs that normally change the number of rows back to the default of 25

Prevent ANSI.SYS from using extended keyboard functions (This forces the system to use the conventional keyboard functions when an enhanced keyboard is installed.)

Enter in CONFIG.SYS:

```
DEVICE=C:\DOS\ANSI.SYS
```

```
DEVICE=C:\DOS\ANSI.SYS /X
```

```
DEVICE=C:\DOS\ANSI.SYS /L
```

```
DEVICE=C:\DOS\ANSI.SYS /K
```

Remarks

- If you accept the system installation default for ANSI.SYS, SELECT places `DEVICE = C:\DOS\ANSI.SYS` in your CONFIG.SYS file.

ANSI.SYS

(Using Extended Keyboard/Display Features)

- Refer to "Reassigning the Keyboard Keys" in the *DOS 4.00 Command Reference* for more information on ANSI control sequences.
- While the /L parameter is useful in many cases, it may cause some problems with your application program. If this happens, stop using this parameter.
- If you decide you no longer want the extended functions, remove the `DEVICE = ANSI.SYS` from your `CONFIG.SYS` file and restart the system.

Purpose

Allows you to use code page switching on EGA displays and the IBM PC Convertible LCD display.

Important: For information on code page switching, who needs to use it, values to substitute, and installing instructions, refer to Chapter 7, "Using Code Page Switching" on page 153.

If You Want To:

Install code page switching support for your display and tell the CON driver your display adapter type is EGA, the code page supported by your hardware is 437, and that you want to add one additional code page,

Enter In CONFIG.SYS:

```
DEVICE=C:\DOS\DISPLAY.SYS CON=(EGA,437,1)
```

Refer to the "Remarks" section which follows, for details on your display adapter type, hardware code page, and the number of additional code pages you want to add.

Remarks

- If you reside in a country that uses code page switching and you installed DOS using the default values of SELECT, code page switching is installed on your system.
- If you leave out the display adapter type, EGA for example, DISPLAY.SYS checks the hardware to select the type of the active display.
- If you specify your display adapter's code page, 437 for example, it must match the real hardware code page; DISPLAY.SYS cannot verify the match. If you do not know what your display adapter's code page is, omit this parameter; for example, (EGA,,1).
- The IBM Personal System/2 video support is not functionally equivalent to EGA video support.

DRIVER.SYS

(Assigning Logical Drive Letters)

Rules for Drive Letters Assigned to Device Drivers

DOS refers to the first physical internal diskette drive as A and the second internal diskette drive as B. Letters from C on are assigned in the order devices or device drivers are encountered. DOS first checks to see how many internal physical devices (diskettes and fixed disks) your system has and then checks the CONFIG.SYS file for device drivers. For DOS to recognize an external physical device, the CONFIG.SYS file must have the correct device driver information.

The drive letter B is automatically used, even if there is only one physical diskette drive; thus, a system with only one diskette drive has two logical diskette drives: A and B. In this case, a specified parameter of /D:1 is an error. The first fixed disk or the first block device driver cannot have a drive letter lower than C assigned.

For systems with an external drive, if the external device driver is loaded twice, where /D:x is the same, this creates two logical drives for the one physical drive, giving you the ability to transfer data from one diskette to another using the same drive.

DRIVER.SYS (Assigning Logical Drive Letters)

Purpose

Allows DOS to assign a logical drive letter to any internal or external diskette drives that you might add onto your system.

If You Want To:

Assign a logical drive letter to the first external 720KB diskette drive (third physical diskette drive) that you have attached to your system (You can set the number from 0 through 127. Use:

0 - first diskette drive (internal)

1 - second diskette drive
(internal)

2 - third diskette drive (external
and so on.)

Copy from a 720KB external diskette drive to the same drive, put the same command in the CONFIG.SYS file twice, which (for an IBM Personal Computer XT™) assigns the logical drive letters D and E to the drive

Enter In CONFIG.SYS:

```
DEVICE=C:\DOS\DRIVER.SYS /D:2
```

```
DEVICE=C:\DOS\DRIVER.SYS /D:2  
DEVICE=C:\DOS\DRIVER.SYS /D:2
```

Remarks

- DRIVER.SYS is not intended to drive IBM fixed disks. If you desire a logical drive letter for the fixed disk, use SUBST.
- Refer to the *DOS 4.00 Command Reference* for additional information regarding parameters used in DRIVER.SYS.
- The parameter specified should exactly match the physical capacity of the diskette drive; otherwise, unpredictable results may occur.

PRINTER.SYS (Using Code Page Switching)

Purpose

Allows you to use code page switching on the IBM Proprinter Models 4201, 4202, 4207, and 4208, and the IBM 5202 Quietwriter III.

Important: For information on code page switching, who needs to use it, values to substitute, and installing instructions refer to Chapter 7, "Using Code Page Switching" on page 153.

If You Want To:

Install code page switching support for your printer, telling the LPT1 port that your printer is a 4201 Proprinter, the code page supported by your hardware is 437, and you want to add one additional code page,

Enter In CONFIG.SYS:

```
DEVICE=C:\DOS\PRINTER.SYS LPT1=(4201,437,1)
```

Refer to the "Remarks" section which follows, for details on your printer type, hardware code page, and the number of additional code pages you want to add.

Remarks

- If you reside in a country that uses code page switching and you installed DOS using the default values of SELECT, code page switching is installed on your system.
- If you specify your hardware's code page, 437 for example, it must match the real hardware code page; PRINTER.SYS cannot verify the match. If you do not know what your hardware's code page is, omit this parameter; for example, (4201,,1).

PRINTER.SYS (Using Code Page Switching)

- Both the IBM Proprinters and the IBM 5202 Quietwriter III printers usually have a 437 hardware code page built into the printer. For the IBM 5202 Quietwriter III, the hardware code page can be one code page, such as 437, or it can be a pair of code pages, such as 437, or 850. If you have specified two hardware code pages on this printer, you cannot prepare any additional code pages, and the value must equal 0.
- A MODE PREPARE or MODE SELECT must not be done while PRINT is printing data.
- The LPT# specifies the printer device that you can enter up to three times, one for printers LPT1, LPT2, and LPT3. You may use the device name PRN instead of LPT1. For example:

```
DEVICE=C:\DOS\PRINTER.SYS PRN=(4201,437,1) LPT2=(5202,437,0)
```

VDISK.SYS

(Installing a Simulated Disk)

Using Virtual Disks

The VDISK.SYS file on your DOS diskette is a device driver that imitates a disk drive by using a section of your system's memory as the storage medium. These simulated disks are called "virtual disks." The following characteristics apply to virtual disks:

- The contents of a virtual disk are lost if you restart the system or if power is lost.
- Virtual disks are fast, because they operate at the speed of the system's memory.
- You can install more than one virtual disk; each is referred to by a drive letter, the same way as you refer to disk drives. For example, if your system has two diskette drives and no fixed disks, call the diskette drives A and B, call the first virtual disk C, the second D, and so on.
- VDISK.SYS uses expanded memory when you specify the /X parameter, or extended memory when you specify the /E parameter.
- VDISK may change the sector size from what you may have specified in CONFIG.SYS. The sector size is adjusted to address all clusters of a virtual disk.
- For each virtual disk, you can specify the amount of memory to use (the "disk size"), the sector size, and the number of file entries it is to contain.
- DOS creates a volume label on each virtual disk to aid in its identification.
- Each virtual disk created increases the resident size of DOS by about 1300 bytes for the VDISK.SYS device driver, plus the size of the virtual disk buffer you specify if the driver is installed in low memory.
- You cannot format virtual disks. Each VDISK you install is in formatted form.

VDISK.SYS (Installing a Simulated Disk)

Purpose

Installs a simulated disk in memory, called a virtual disk.

Important: In addition to the /X:x parameter shown in the following example, there is an /E:x parameter that allows VDISK to perform its function by using extended memory, therefore saving space in low memory for application programs. The x parameter specifies the maximum number of sectors of data VDISK transfers at one time. The values range from 1 through 8; the default is 8.

If You Want To:

Install a 1MB virtual disk with 512 byte sectors and 256 directory entries using expanded memory, specifying that VDISK transfers 8 sectors of data at one time,

Enter In CONFIG.SYS:

```
DEVICE=C:\DOS\VDISK.SYS 1024 512 256 /X:8
```

Refer to the "Remarks" section which follows, for the range of values and defaults.

Remarks

- You can set the virtual disk size from 1KB through the maximum amount of available memory on your system; the default is 64KB. VDISK may adjust the amount of memory actually used for the virtual disk as follows:
 - If there is 64KB or less available memory at the time you install VDISK, VDISK issues an "Insufficient memory" message and does not install the virtual disk.
 - If the size you specify is less than 1KB, VDISK uses the default value of 64KB.
 - If the specified size leaves less than 64KB of available memory, VDISK adjusts the virtual disk size downward. VDISK always leaves a minimum of 100KB of available memory after the installation of the virtual disk.

VDISK.SYS

(Installing a Simulated Disk)

- The buffer size includes the space used by VDISK for a boot sector, the file allocation table and directory entries. The available space for files is less than the number of bytes specified.
- You can set the sector size to be 256, 512, or the default value of 128. If you do not specify the sector size or if you specify an incorrect value, VDISK uses the default. If you use your virtual disk to hold relatively small files, you may want to use a smaller sector size to minimize wasted space but you can achieve better performance with the larger sector size.
- You can set the directory entries (number of files) from 2 through 512; the default is 64. This is the number of file entries that the virtual disk can contain (VDISK requires one file entry for each file). VDISK may adjust the value you entered as follows:
 - VDISK adjusts the value upward to the nearest sector size boundary. For example, if you specify a value of 10 and your sector size is 128, VDISK generates 12 directory entries (12 entries at 32 bytes each to round up to a multiple of the sector size).
 - If the virtual disk size specified previously is too small to hold the file allocation table, the directory, and two additional sectors, VDISK adjusts the directory size downward, one sector at a time, until it meets these conditions. If the directory size reaches one sector and VDISK still cannot meet the conditions, it issues an error message and does not install the virtual disk.
 - VDISK uses one of the directory entries to hold the volume label.

VDISK.SYS (Installing a Simulated Disk)

- The /X parameter allows VDISK.SYS to use expanded memory; therefore, saving space in low memory for application programs. The 8 in the example specifies the maximum number of size sectors of data VDISK transfers at one time. This value can be from 1 through 8; the default is 8.
- If you specify the /X parameter, the DEVICE = XMA2EMS.SYS statement must be loaded prior to VDISK in your CONFIG.SYS file. Make sure that the /X for BUFFERS is also loaded in your CONFIG.SYS file or DOS will ignore the /X parameter for VDISK.
- You may use expanded or extended memory of up to 16MB for one VDISK. A VDISK of this size will be useful to users with large files needing rapid access. For users with small files, multiple virtual disks less than 4MB will achieve better performance.
- You can install more than one virtual disk in extended or expanded memory by including more than one DEVICE = VDISK command in the CONFIG.SYS file.
- When installing multiple virtual disks, it is a good idea to set the LASTDRIVE statement in your CONFIG.SYS file to a number of drives beyond the number of virtual disks.

For example, if you presently have three physical drives (A, B, and C) and you want to install 10 virtual drives, set the LASTDRIVE command as follows:

```
LASTDRIVE=N
```

XMAEM.SYS **(Supporting Expanded Memory)**

Types of Memory

There are three types of memory that you can have installed in your system:

Conventional memory is memory addressed from 0KB through 1024KB (1MB). This is the basis of all memory used for DOS and the processing of your application programs. Previous versions of DOS only used conventional memory in the 0KB through 640KB boundary, address segments ranging from hexadecimal 0000 through 9FFF. Memory in the 640KB through 1MB boundary is reserved by your system for hardware devices and items like reading input from your keyboard, and showing output on your screen.

Extended memory is memory addressed above 1MB, "extending" the regular conventional memory up to 16MB. It is usually between address segments ranging from hexadecimal 10000 through FFFFF, available on an 80286-based system when operating in protected virtual address mode. Its use in the past was limited to applications written specifically to make use of extended memory, using this area for items such as virtual disks.

Expanded memory is memory that is addressed through a combination of an Expanded Memory Specification (EMS) device driver such as XMA2EMS.SYS and an IBM hardware adapter capable of expanded memory. Expanded memory does not fill a certain range of memory like conventional and extended memory. Instead, it can be "mapped" or put in the place of a reserved area of conventional memory from the 640KB through 1MB boundary, usually between address segments ranging from hexadecimal C000 through EC00.

XMAEM.SYS (Supporting Expanded Memory)

Purpose

Emulates the IBM Personal System/2 80286 Expanded Memory Adapter/A by using 80386 memory map registers with extended memory. The XMAEM.SYS device driver can be used only with 80386-based systems like the IBM Personal System/2 Model 80.

Important: If you are using an 80386-based system, the DEVICE statement for XMAEM.SYS must be placed before the DEVICE statement for XMA2EMS.SYS in your CONFIG.SYS file.

If You Want To:

Enter In CONFIG.SYS:

Use all available extended memory

```
DEVICE=C:\DOS\XMAEM.SYS
```

Use 1MB of extended memory

```
DEVICE=C:\DOS\XMAEM.SYS 64
```

You can set the value from a minimum of 64 pages through the default value, which is the maximum total available memory in multiples of 16KB pages.

Remarks

- XMAEM.SYS may cause conflicts when loaded with other software that manipulates the 80386 memory map registers.
- If you want to change the amount of memory allocated, you must make a change in the CONFIG.SYS file and restart the system.

XMA2EMS.SYS

(Supporting Expanded Memory)

Purpose

This is a device driver that supports the Lotus, Intel, and Microsoft (LIM) Expanded Memory Specification (EMS) 4.0 under DOS 4.00.

Important:

- Expanded memory is memory addressed through a combination of an Expanded Memory Specification (EMS) device driver such as XMA2EMS.SYS and an IBM hardware adapter capable of expanded memory. This memory enhancement is available to you if you have one of the following installed:
 - IBM 2MB Expanded Memory Adapter
 - IBM Personal System/2 80286 Expanded Memory Adapter/A
 - IBM Personal System/2 80286 Memory Expansion Option
 - Model 80 or other 80386-based systems with the XMAEM.SYS device driver loaded.
- You must specify the XMAEM.SYS device driver before XMA2EMS.SYS in the CONFIG.SYS file if you have an IBM Personal System/2 Model 80 or 80386-based system.
- Refer to the EMS application manual for further information about how to allocate the memory in your system.

If You Want To:

Specify a 64KB page frame for EMS applications, two 16KB pages for DOS usage, and 1MB as the amount of expanded memory to allocate,

Enter In CONFIG.SYS:

```
DEVICE=C:\DOS\XMA2EMS.SYS FRAME=D000 P254=C000 P255=C400 /X:64
```

Refer to the "Remarks" section which follows, for details on the values to substitute. The default value is the total available expanded memory in multiples of 16KB pages.

XMA2EMS.SYS (Supporting Expanded Memory)

Remarks

- The FRAME = D000 parameter specifies the default EMS page frame. It consists of a 64KB contiguous (connecting) space of available memory, specified as one address that automatically sets the next four contiguous pages. You may substitute the address segment, D000, with any 64KB available page frame from address segments hexadecimal C000 through E000.
- If you specify the FRAME parameter (such as FRAME = D000) to set pages P0, P1, P2, and P3, you cannot individually specify page P0, P1, P2, or P3 in the DEVICE statement. By specifying the FRAME parameter, you are already identifying four contiguous pages.

For example, you could set pages P0 through P3 from D000 through DC00 or have a page frame begin at D000 if you have a 64KB contiguous space in memory:

```
DEVICE=XMA2EMS.SYS P0=D000 P1=D400 P2=D800 P3=DC00 P254=C000 P255=C400
```

or

```
DEVICE=XMA2EMS.SYS FRAME=D000 P254=C000 P255=C400
```

- The P254 = C000 and P255 = C400 parameters in the example represent "pages." A page is a fixed-length block of memory that is equal to 16KB of memory and can represent the value P0, P1, P2, P3, P254, or P255. Pages P254 and P255 are reserved for use by DOS. If you specify the P254 page, you can run VDISK.SYS and FASTOPEN in expanded memory by specifying the /X parameter. If you specify P255, you can run the BUFFERS command with the /X parameter specified. If you do not specify P254 or P255 in your DEVICE statement, DOS cannot use expanded memory and, therefore, uses conventional memory for DOS functions.
- You can set the size value of /X from a minimum of four 16KB pages through the default value which is the maximum total available memory in multiples of 16KB pages. For example, the minimum amount of memory you may specify is 64KB (4 16KB pages):

```
DEVICE=C:\DOS\XMA2EMS.SYS FRAME=D000 P254=C000 P255=C400 /X:4
```

- If you specify the size parameter on XMAEM.SYS and the /X size parameter on XMA2EMS.SYS, DOS ignores the XMA2EMS.SYS size parameter.

Resolving EMS Conflicts

Use this material if your system becomes disabled, loses information, or shows one or more of the following messages on your screen:

No page addresses specified

Specified page address conflicts with installed adapter at address: xxxx

Possible 16KB page available at: xxxx

Possible 64KB frame available at: xxxx

Your system may be experiencing memory address conflicts derived from the installation of the expanded memory device driver, XMA2EMS.SYS. If you supply an address segment that DOS finds a possible conflict with, or, if you don't specify an address for the XMA2EMS.SYS driver, one or more of the previous messages appears during CONFIG.SYS processing. Other messages may also appear on your screen such as:

Error in CONFIG.SYS line x

Refer to Appendix D on page 201 for further explanations of these error messages. The xxxx in the messages represents the address segment.

Conflicts on your system may occur because:

- Specified address segments may already be occupied in memory by previously installed adapters.

XMA2EMS.SYS may not recognize the adapter addresses already installed in memory even if you install the LIM EMS 4.0 device driver using the default values of SELECT.

- You added new hardware that uses expanded memory in your system that caused conflicts with the existing address segments specified in the DEVICE = XMA2EMS.SYS statement in your CONFIG.SYS file.

Resolving EMS Conflicts

Use the following table to determine which procedure you need to follow to resolve the EMS conflict on your system. The procedures are outlined on the pages following this table.

Important:

Before using a procedure in the following table:

1. **Write** down all conflicting addresses and possible 16KB page and 64KB frame addresses available in memory. These messages are displayed on your screen after starting or restarting DOS.
2. **Read** the XMA2EMS.SYS device driver section starting on page 90 for information and examples of how to replace page and frame addresses before beginning a procedure.

If You:	Refer To Procedure:
Receive the following message along with other messages on page 92: Specified page address conflicts with installed adapter at address: xxxx	1
Receive the following message one or more times: Specified page address conflicts with installed adapter at address: xxxx	2
Receive the following message: No page addresses specified	2
Notice a loss of information or your system becomes disabled	2
Use a LIM EMS 3.2 application	3

Resolving EMS Conflicts

Procedure 1

You need to replace an address in the XMA2EMS.SYS statement in your CONFIG.SYS file, depending on what conflicting address (xxxx) was specified in the following message:

```
Specified page address conflicts  
with installed adapter at address: xxxx
```

Assuming that the default parameters of the DOS SELECT program are installed on your system, the following statement is set up in your CONFIG.SYS file:

```
DEVICE=C:\DOS\XMA2EMS.SYS FRAME=D000 P254=C000 P255=C400
```

Depending on how many conflicting address messages you receive, your system might have a conflict with an address specified in one or more of the following parameters in the XMA2EMS.SYS statement:

```
FRAME=D000 P254=C000 P255=C400
```

The following steps help you resolve EMS conflicts:

1. Edit your CONFIG.SYS file to see where the address or addresses are located that are causing the EMS conflict.
 - a. If the FRAME = xxxx parameter is shown to have the conflicting address, check to see if the following message appeared on your screen when you started DOS:

```
Possible 64KB frame available at: xxxx
```

If this message appeared, replace the FRAME = xxxx with the 64KB frame address available in the message.

Resolving EMS Conflicts

If this message did not appear, but you received one or more of the following messages on your screen:

Possible 16KB page available at: xxxx

Delete the FRAME = xxxx parameter and, using the possible 16KB available page addresses, add one or more of the following pages to the XMA2EMS.SYS statement:

P0=xxxx P1=xxxx P2=xxxx P3=xxxx

(P0 – P3 represent the page addresses available for a 16KB page. You may use up to four of these 16KB addresses if you have possible 16KB page addresses available. Refer to page 91 for an example.)

- b. If the P254 = xxxx and/or the P255 = xxxx address conflicts with an installed adapter, replace the xxxx(address) with a possible 16KB available page address.
2. Save the changed information in your CONFIG.SYS file.
3. Press and hold the Ctrl and Alt keys; then press the Del key.

This restarts your system and allows DOS to recognize the changes you have made to your CONFIG.SYS file.

4. Do you experience any more EMS conflicts?

Yes – Replace the next possible 16KB page available and restart this procedure. *

No – You have resolved the EMS conflict on your system.

* If you still experience an EMS conflict but have no more possible available page or frame address messages, you may re-allocate the memory in your system or possibly remove conflicting hardware adapter cards.

Resolving EMS Conflicts

Procedure 2

The following procedure helps you resolve EMS conflict(s):

1. Edit your CONFIG.SYS file and delete the addresses specified in the DEVICE = XMA2EMS.SYS statement; for example:

```
DEVICE=C:\DOS\XMA2EMS.SYS
```

If you received a "No page addresses specified" message, skip to step 4a.

2. Press and hold the Ctrl and Alt keys; then press the Del key.

This restarts your system and should produce one or more of the following messages:

```
Possible 16KB page available at: xxxx
```

```
Possible 64KB frame available at: xxxx
```

3. Write down all possible page and/or frame addresses that may be available in memory.
4. Edit your CONFIG.SYS file and add available addresses to your DEVICE = XMA2EMS.SYS statement.

- a. Check to see if the following message appeared on your screen when you started DOS:

```
Possible 64KB frame available at: xxxx
```

If this message appeared, add the 64KB frame address available in the message to the FRAME = xxxx parameter.

Resolving EMS Conflicts

If this message did not appear, but you received one or more of the following messages on your screen:

Possible 16KB page available at: xxxx

Delete the FRAME = xxxx parameter and, using the possible 16KB available page addresses, add one or more of the following pages to the XMA2EMS.SYS statement:

P0=xxxx P1=xxxx P2=xxxx P3=xxxx

(P0 – P3 represent the page addresses available for a 16KB page. You may use up to four of these 16KB addresses if you have possible 16KB page addresses available. Refer to page 91 for an example.)

- b. If you want to allocate pages for DOS usage, add the P254 and/or P255 parameters with a possible 16KB available page address (xxxx).
5. Save the changed information in your CONFIG.SYS file.
 6. Press and hold the Ctrl and Alt keys; then press the Del key.
This restarts your system and allows DOS to recognize the changes you made to your CONFIG.SYS file.
 7. Do you experience any more EMS conflicts?

Yes – Replace the next possible 16KB page available and restart this procedure. *

No – You have resolved the EMS conflict on your system.

* If you still experience an EMS conflict but have no more possible available page or frame address messages, you may re-allocate the memory in your system or possibly remove conflicting hardware adapter cards.

Resolving EMS Conflicts

Procedure 3

A LIM EMS 3.2 application requires a 64KB contiguous space of memory or a 64KB frame of memory. XMA2EMS.SYS tries to help you find an available frame by displaying the following message during CONFIG.SYS processing:

Possible 64KB frame available at: xxxx

Important: If you do not receive this message, follow Procedure 2 on the previous page to try to resolve the EMS conflict; XMA2EMS.SYS might not have been able to detect a possible available frame. If a possible 64KB available frame is not displayed after following Procedure 2, you may need to re-allocate the memory in your system or possibly remove conflicting hardware adapter cards so that you have a 64KB contiguous space available in memory to install XMA2EMS.SYS.

1. Edit your CONFIG.SYS file to see where the address or addresses are located that are causing the EMS conflict.

If the P254 = xxxx and/or the P255 = xxxx address conflicts with an installed adapter, replace the address(s) with a possible 16KB available page address. If no possible 16KB page available message appeared, go to Procedure 2.

2. Substitute the value of the possible 64KB frame available for the frame address that conflicts with an installed adapter.

For example, if the message displayed an available frame at address C000, enter the following in your CONFIG.SYS file:

```
DEVICE=C:\DOS\XMA2EMS.SYS FRAME=C000
```

3. Save the changed information in your CONFIG.SYS file.
4. Press and hold the Ctrl and Alt keys; then press the Del key.

This restarts your system and allows DOS to recognize the changes you have made to your CONFIG.SYS file.

Resolving EMS Conflicts

5. Do you experience any more EMS conflicts?

Yes — Re-allocate the memory in your system or possibly remove conflicting hardware adapter cards so that you have a 64KB contiguous space available in memory to install this device driver.

No — You have resolved the EMS conflict on your system.

Note for Programmers: The algorithm that checks for possible 64KB contiguous spaces in memory only checks addresses from C000 through EC00 because addresses from A000 through BC00 are often used for display adapter memory. If you have an IBM Personal Computer XT™ or an IBM Personal Computer AT® without EGA cards, it is possible to have a page frame available to use in this area of memory even though you don't receive a possible available 64KB frame message.

FCBS (Using File Control Blocks)

Purpose

Specifies the number of file control blocks that can be opened by DOS at the same time.

Important:

- The FCBS command applies only when file sharing is loaded with the SHARE command. If you do not load file sharing, there is no limit to the number of files that can be open at the same time.
- You do not need to use this configuration command unless you have an old application that uses file control blocks instead of internal file identifiers (handles).

If You Want To:

Specify the total number of file control blocks that can be open at one time to 7
(You can set the number from 1 through 255; the default is 4.)

Enter In CONFIG.SYS:

FCBS=7

Set the total number of file control block files that can be open at one time to 7, and the number protected from being closed to 2
(You can set the number from 1 through 255; the default is 0.)

FCBS=7,2

Remarks

- A file control block (FCB) is a record that contains all of the information about a file; for example, its structure, length, and name. If a program tries to open more than the number of files specified in the FCBS statement, DOS closes the least recently used file control block and opens the new file.

FCBS (Using File Control Blocks)

- The value of the first number must be greater than or equal to the value of the second number.
- Some application programs use file control blocks to create, open, delete, read, and write to files. DOS keeps track of the least-recently used file control block. If the program tries to open more than the number of file control blocks specified in the FCBS statement, the action DOS takes depends on whether file sharing is loaded.
- If a program receives critical errors because of file control block files being closed by DOS, increasing the value of the FCBS statement may prevent these errors from occurring.
- If you specify FCBS in your configuration file, this increases the resident size of DOS.
- If you set the two values equal to each other in the FCBS statement, DOS cannot close any files if a program tries to open more than the total number of file control blocks you specified. If a program tries to open (at the same time) more than the number of file control blocks you specified, DOS does not open the new file.

FILES

(Keeping Track of Open Files)

Purpose

Specifies the maximum number of files that can be open at the same time.

Important: The value specified is the maximum number of files allowed for the complete system. This includes files in use by currently running foreground tasks (programs such as COMP and CHKDSK) and background tasks like PRINT and the *IBM PC Local Area Network Program*.

If You Want To:

Specify that no more than eight files can be open at the same time (You can set the number from 8 through 255; the default is 8.)

Enter In CONFIG.SYS:

FILES=8

Remarks

- If you accept the system installation default for FILES, SELECT places FILES=8 in your CONFIG.SYS file.
- There is no effect on the number of files that can be open at the same time using the traditional (OPEN FCB) functions. The default value of 8 is enough for most operating environments; however, if applications are installed that result in error messages indicating too many open files, FILES should be used to provide DOS with additional files.
- The value specified in the FILES statement becomes the new maximum number of files that DOS allows to be open at the same time. Refer to *DOS 4.00 Technical Reference and Application Programming* for further information.
- If you specify FILES in your configuration file, the size of the resident portion of DOS increases by 64 bytes for each additional file above the default value of 8. Consequently, the memory available to the application is reduced by the same amount.

INSTALL

(Installing Programs at DOS Startup)

Purpose

Provides a more efficient means of loading terminate and stay resident commands previously included in your AUTOEXEC.BAT file.

Important:

- DOS 4.00 supports the following commands with INSTALL:
 - FASTOPEN.EXE
 - KEYB.COM
 - NLSFUNC.EXE
 - SHARE.EXE.

If You Want To:

Install SHARE which provides support for file sharing and diskette change protection

Enter In CONFIG.SYS:

```
INSTALL=C:\DOS\SHARE.EXE
```

Remarks

- If you accept the system installation default for INSTALL, SELECT places INSTALL = C:\DOS\FASTOPEN.EXE C: = (50,25) in your CONFIG.SYS file.
- A terminate and stay resident command is a command that terminates a process but still remains in a particular area of memory. The INSTALL command better utilizes where these programs are loaded in memory during DOS startup.

LASTDRIVE (Setting the Maximum Number of Drives)

Purpose

Sets the maximum number of drives that you may access.

If You Want To:

Set the maximum number of drives equal that you may access on your system to 16

(You can set the number of drives from A through Z; the default is E.)

Enter In CONFIG.SYS:

```
LASTDRIVE=P
```

Remarks

- If you accept the system installation default for LASTDRIVE, SELECT places LASTDRIVE = E in your CONFIG.SYS file.
- The value represents the last valid drive letter that DOS may accept.
- The minimum number you can set LASTDRIVE equal to is the number of drives you have installed on your system.
- If the value is less than the number of physical drives on your system, DOS ignores this command in the configuration file.

REM (Making Comments in CONFIG.SYS)

Purpose

Allows remarks from within the configuration file, CONFIG.SYS.

If You Want To:

Use REM to add comments of your own about a particular command statement such as helping you remember why you installed the LASTDRIVE command

Enter In CONFIG.SYS:

```
REM ACCESS UP TO 6 DRIVES  
LASTDRIVE = F
```

Remarks

- You can also use REM to “comment out” a line in your CONFIG.SYS file so that you may retrieve the statement at a later date.
- Unlike REM in batch files, the REM command in your CONFIG.SYS file does not display statements during system startup.

SHELL

(Installing a Command Processor)

Purpose

Loads and starts the DOS command processor, COMMAND.COM., or another top-level command processor.

Important: This is a configuration command statement, unlike the DOSSHELL command, which allows you to start or return from the menu-driven screens.

If You Want To:

Install COMMAND.COM as the permanent command processor, load all system messages including the text for all DOS extended errors, and specify an environment size of 256 bytes (characters),

Enter In CONFIG.SYS:

```
SHELL=C:\DOS\COMMAND.COM /P /E:256
```

The bytes setting the environment size must be from 160 through 32768, rounded up to the nearest paragraph (16-bit) boundary. If the environment size contains any non-numeric characters, invalid values, or is less than 160, the system defaults to 160 bytes.

Remarks

- This command lets you replace the DOS command processor with another command processor. Substitute the complete name of the file containing your command processor where COMMAND.COM is in the example. Because the internal commands and the batch processor reside in COMMAND.COM, these functions are not available to you unless they are duplicated in your command processor.

(Installing a Command Processor)

- If you specify a SHELL statement that contains a file specification other than the default, set the COMSPEC environment variable to the same file specification when DOS is started. For example, if you have a command processor named COM2.COM in the DOS subdirectory, you can place a SET command in your AUTOEXEC.BAT file:

```
SET COMSPEC=C:\DOS\COM2.COM
```

- SHELL does not affect COMSPEC or the SHELL command in BASIC. To make sure that the same command processor is used for reloading (only the transient portion), set COMSPEC to point to that command processor.
- Each string in the environment is ended by an invisible null character, and the complete environment is ended by two null characters. The number of visible characters in the environment is less than the size specified.
- The /P parameter is required if you are adding a SHELL=COMMAND.COM statement. If you do not use the /P parameter, COMMAND.COM is not loaded as a permanent command processor.
- A /MSG parameter is recommended if you have a diskette-drive-only system. This causes the system to retain the text for all DOS parse and extended error messages in memory. DOS allows the /MSG parameter only if the /P parameter is also present. If you do not specify the /MSG, DOS will read these messages from your disk each time they are displayed. If the disk cannot be accessed to display a message, DOS displays one of the following messages:

```
Extended Error x  
Parse Error x
```

where x is the extended error number. Refer to "Extended and Parse Errors" in Appendix A for further information.

STACKS

(Providing for System Hardware Interrupts)

Purpose

Overrides the default size of the system stack pool for the hardware interrupts.

If You Want To:

Enter In CONFIG.SYS:

Specify the number of stack frames to 15 `STACKS=15`

(You can set the number from 8 through 64; the default is 9.)

Set 15 stack frames with the size of 128 bytes each `STACKS=15,128`

(You can set the number from 32 through 512; the default is 128.)

Remarks

- If you have an IBM Personal Computer, IBM Personal Computer XT, or IBM Portable Personal Computer and have not included a STACKS statement in your CONFIG.SYS, the default value is `STACKS=0,0`.
- Increasing stack resources reduces available memory. It is a good idea to increase the number of stack frames first when trying to alleviate the stack error condition.
- A special case of `STACKS=0,0` indicates that STACKS support should not be installed. For example:

```
STACK=0,0
```

specifies that no dynamic stacks are to be provided. When set to 0, DOS does not intercept any hardware interrupts and uses only the internal DOS stacks.

- Each time a hardware interrupt occurs, DOS uses one frame from the stack pool. After processing the interrupt, DOS returns the stack frame to the pool.

SWITCHES (Using Conventional Keyboard Functions)

Purpose

Specifies the use of conventional keyboard functions when an enhanced keyboard is installed.

If You Want To:

Prevent the system from using extended keyboard functions, and force the system to use the conventional keyboard functions when an enhanced keyboard is installed

Enter In CONFIG.SYS:

SWITCHES=/K

Remark

This option provides compatibility for those applications that do not understand the extended keyboard function.

Chapter 5. Creating and Changing Batch Files

A "batch file" is a special file containing DOS commands. When you process a batch file, DOS processes the commands you included in the batch file, one at a time. Grouping commands saves time so that you don't have to repeatedly type in commands from the command prompt.

Information about Batch Files

The following information and general rules apply when creating and using batch files:

- filename.BAT** All batch files must have a .BAT filename extension.
- It is not necessary to type the .BAT extension when ready to process a batch file unless a program has the same name as a batch file.
- Do not name batch files with internal command names like COPY.BAT.
- Ctrl+Break** Press Ctrl+Break, if you want to stop running a batch file.
- chaining** This allows you to start one batch file from another when the first finishes processing. You can "chain" batch files by making the last command in a batch file the name of another batch file.
- nesting** You can "nest" batch files by using the CALL command, which calls a batch file from within another batch file without ending the first batch file. This allows the complete sequence of batch file commands in the second batch file to process before returning to the first batch file.

Information

If you remove a diskette containing a processing batch file, DOS prompts you to insert it again before DOS can read the next command.

DOS remembers the directory the batch file started in. Therefore, the commands within the batch file may change the current directory during processing.

Batch files process quickly if placed on a virtual disk. Refer to page 84 for information on virtual disks.

Any command you can enter from the command prompt, can be entered into a batch file.

Changing AUTOEXEC.BAT

When you install DOS 4.00 on your system using SELECT, DOS creates a batch file named AUTOEXEC.BAT, probably the first batch file you encounter. Located in the root directory, AUTOEXEC.BAT is a special batch file that DOS automatically processes when you start or restart DOS on your system. It is useful if you want to process certain commands every time you start DOS. For example, unless you include the ECHO OFF statement in the AUTOEXEC.BAT file, all DOS commands are shown on your screen as they process.

If you install DOS 4.00 on a fixed disk, drive C, the following is an example of what you might find in the AUTOEXEC.BAT file:

```
@ECHO OFF
SET COMSPEC=C:\DOS\COMMAND.COM
VERIFY OFF
PATH C:\DOS
APPEND /E
APPEND C:\DOS
PROMPT $P$G
C:\DOS\GRAPHICS
VER
DOSSHLL
```

Notice that the PATH command shows a subdirectory named DOS where many of your DOS command files may be located. The PATH command searches specified directories for commands or batch files that were not found by a search of the current directory. The PATH can be up to 128 characters long, each individual path containing up to a maximum of 63 characters.

As you create your own subdirectories, you can change the PATH statement to reflect your new directory structure by using an editor or the COPY command; an example is shown on the following page. This avoids having to set the PATH command from the command prompt each time you turn on your system.

The following is an example of the PATH command in a typical user's AUTOEXEC.BAT file:

```
PATH
C:\DOS;C:\REPORTS\GENERATE;C:\TEXT\EDITOR
```

Creating and Running Batch Files

You can create a batch file or change an existing one by using an editor or by using the COPY command directly from the keyboard. From the command prompt, follow these steps to create a batch file using COPY:

1. Enter:

```
COPY CON filename.BAT
```

Substitute a *filename* for your batch filename but remember not to use an existing filename or COPY will write over the existing information in your file.

2. Enter the commands you want to include in the batch file.

Press Enter after each command you type.

If you make a mistake typing a command or want to stop creating the batch file, remember to press Ctrl+Break. This ends COPY without saving the batch file; then, repeat the steps.

3. Press Ctrl+Z or F6 after entering the commands; then press Enter.

This ends the COPY command and saves the batch file. A message is displayed, saying the file was copied.

You can, for example, create a batch file named BACK.BAT that backs up the complete contents of the root directory on drive C to multiple diskettes on drive A. Your file looks like this:

```
BACKUP C:\*.* A: /S
IF ERRORLEVEL 1 GOTO ERROR
ECHO BACKUP WAS SUCCESSFUL
GOTO END
:ERROR
ECHO BACKUP FAILED!
:END
```

You can run a batch file by typing the filename of the batch file at the command prompt and then pressing Enter. For example, to run the batch file named BACK.BAT at the command prompt, Enter:

```
BACK
```

Using Replaceable Parameters

A replaceable or “dummy” parameter lets you pass information to a batch file when it is running. These parameters, named %0–%9, are placed within a batch file so that they can be replaced by other values such as files or directories. You supply these values when you enter the batch command from the command prompt or from another batch file. Remember that the %0 parameter is always replaced by the file specification (drive, path, and filename) of the batch file itself.

For example, if a batch file named SAMPLE.BAT contains these commands:

```
COPY %1 %2  
TYPE %2 | MORE
```

DOS sequentially replaces parameters %1 and %2, and so on up to %9 with the parameters supplied when the file is run.

If you want to run the SAMPLE.BAT file and pass values to the replaceable parameters, type the filename of the batch file followed by the parameters you want sequentially substituted for %1, %2, and so on. For example, Enter:

```
SAMPLE A:DATA.OLD C:INFO.NEW
```

The batch filename, SAMPLE, is substituted for %0, A:DATA.OLD for %1, and C:INFO.NEW for %2. The result is the same as if you entered each of the commands from the keyboard with their parameters, as follows:

```
COPY A:DATA.OLD C:INFO.NEW  
TYPE C:INFO.NEW | MORE
```

Notes:

1. If you want to specify more than 10 replaceable parameters, you may do so by using the SHIFT command on page 125.
2. If you want to use a percent sign % as part of a filename within a batch file, you must specify it twice. For example, to specify a file named ABC%.EXT in the batch file, type:

```
ABC%.EXT
```

Using Replaceable Parameters with Names

By using the SET command in a batch file, you can define replaceable parameters with values besides numbers, such as "strings," which can be names or lines of text. The SET command sets one string in the environment equal to another string for later use in programs.

When you use a string instead of a number, you must begin and end the string with a percent sign in the places where you want the substitution carried out. However, do not use percent signs when you define its value with SET. For example, suppose you have a batch file that has multiple occurrences of a filename. You would like to use this batch file at different times and specify a different filename each time. You can specify the string each place where you want the filename in the batch file. For example, if you use a string called WEEK:

```
%WEEK%
```

Set the value for WEEK with a SET command that precedes the occurrences of %WEEK% in the batch file, for example:

```
SET WEEK=MONDAY.ABC
```

Then run your batch file. The batch processor substitutes each occurrence of this parameter with the value you defined with the SET command. When you want to specify a different filename, you need only change the SET command, for example:

```
SET WEEK=TUESDAY.XYZ
```

You can also specify environmental system variables as replaceable parameters in a batch file. For example, suppose you have this replaceable parameter in your batch file:

```
%PATH%
```

When the batch processor meets this parameter, the processor replaces it with the current value in the environment for PATH.

Using Batch Commands

The following section describes batch commands in alphabetic sequence.

CALL (Nesting Batch Files)

Purpose

Calls a batch file from within another batch file without ending the first batch file. This allows a batch file to be treated as a command in another batch file.

If You Want To:

Call the files ACCT.BAT and BILL.BAT (which process monthly accounts and send out bills) from within another batch file

Pass the second and third parameters entered on its own command line along with the value of FILE, an environment variable, to the batch file named MARKET

Process the batch file named KEEP for each file in the current directory

Enter In Your Batch File:

```
CALL ACCT  
CALL BILL
```

```
SET FILE=NEW.TXT  
CALL MARKET %2 %3 %FILE%
```

```
FOR %%D IN (*.*) DO CALL KEEP %%D
```

Remarks

- Piping and redirection should not be used on the CALL line.
- Use CALL from any line inside a batch file.
- The number of batch files is limited only by available memory. A batch file may call itself, but make sure that the batch file eventually ends.
- CALL causes the currently running batch file's data structure and file pointer position to be saved, and a new data structure to be created. When the called batch file ends, the original batch file continues its processing with the statement following CALL.
- Batch parameters can be passed to another batch file with CALL.
- You cannot CALL a file with the same name as an internal command.

ECHO

(Displaying Commands as They Process)

Purpose

Allows or prevents the display of DOS commands processed from a batch file.

If You Want To:

Enter In Your Batch File:

Display the existing ECHO state

```
ECHO
```

Show all commands as they process on your screen

```
ECHO ON
```

Disable the display of commands, including the REM command

```
ECHO OFF
```

Display the message "PROGRAM FAILED" on your screen, whether ECHO is ON or OFF
(Do not exceed 122 characters)

```
ECHO PROGRAM FAILED
```

Prevent DOS from interpreting the | and > symbols, enclose them in double quotes

```
ECHO OFF  
ECHO PIPING "|"  
ECHO REDIRECTION ">"
```

Prevent DOS from displaying a batch file line, place a @ before the command

```
@ECHO ON  
@REM THIS LINE DOES NOT DISPLAY  
REM THIS LINE DISPLAYS  
@FILE1
```

Remarks

- When you turn the system on or reset the system, ECHO is ON and displays all the commands on the standard output device as they process.
- Processing a command beginning with the @ character results in a "File not found" message. But, if the command is preceded by another @ character, DOS processes the command.
- Each line preceded by the @ is not displayed. DOS displays all other lines.

FOR

(Repetitively Processing Commands)

Purpose

Allows repetitive processing of DOS commands.

If You Want To:

Process the commands, TYPE FILE1, and TYPE FILE2 from the command prompt (include one %)

Enter In Your Batch File:

```
FOR %H IN (FILE1 FILE2) DO TYPE %H
```

Have a batch file process the commands, TYPE FILE1, and TYPE FILE2, having the result be the same as if you typed both commands from the command prompt

```
FOR %%D IN (FILE1 FILE2) DO TYPE %%D
```

Remarks

- Piping and redirection should not be used on the FOR command line.
- The item(s) in parenthesis specifies the "set," which can include file and path names.
- FOR sequentially sets the %%D parameter in the first example to each item in the set and then evaluates the command you want to run (TYPE in the above examples).
- If an item in the set is an expression involving a * or ? character, DOS sets the character beginning with the double percent sign to each matching filename from disk. The character following the double percent sign, %, can specify any character, 0 through 9.
- Use only one percent sign, %, before the variable if you are processing from the command prompt; two percent signs, %, if you are using the variable in a batch file.
- You can only specify one FOR on a command line.

GOTO

(Transferring Processing to a Specified Label)

Purpose

Transfers control to the line following the one beginning with the appropriate label.

If You Want To:

Go to a section in your batch file that has a label, :EXIT, if the error level of the program you are running is 1 or greater

Show an indefinite sequence of "rem looping ..." and "goto loop" messages on your screen
(Press Ctrl+Break to stop running the batch file.)

Enter In Your Batch File:

```
IF ERRORLEVEL 1 GOTO EXIT
:
:EXIT
```

```
:LOOP
REM LOOPING ...
GOTO LOOP
```

Remarks

- A label is a set of characters within your batch file at which DOS may continue processing. It can be a name or a string of characters, the first eight characters being significant (making it different).
- A label is inserted in a batch file as a colon (:), followed by the label name, like :EXIT in the above example. It causes commands to be processed beginning with the line immediately following the one containing the label. If you specify a label that is not defined in the batch file, the current batch file ends.
- A label cannot contain a period (.).
- DOS does not display labels within a batch file while it processes the batch file. Therefore, nonreferenced labels provide a handy means for placing comments (within your batch file) that DOS does not display when it processes the file.

(Allowing Conditional Processing of Commands)**Purpose**

Allows conditional processing of DOS commands.

Important:

- The IF command is followed by one of the following "conditions":
 - An **ERRORLEVEL *number*** condition is true if the previous program had an exit code of the *number* or higher. The number is specified as a decimal value. Refer to the *DOS 4.00 Command Reference* manual for the exit codes of the DOS commands like FORMAT, BACKUP, and RESTORE.
 - A ***string1* == *string2*** condition is true when *string1* and *string2* are identical. The corresponding characters of *string1* and *string2* must both be uppercase or lowercase to be identical; a blank string is not valid.
 - An **EXIST *filename*** condition is true if the *filename* is found in the specified directory; global filename characters (? and *) are allowed.
- When the condition is true, DOS processes the command; otherwise, DOS skips the command and processes the next command in the file.

If You Want To:

Test the condition where the BACKUP command is terminated due to an error (exit code 4); then display "FAILED" on your screen

Test the condition where if the %1 parameter is equal to ERROR, ECHO displays the message "BACKUP FAILED"

Enter In Your Batch File:

```
BACKUP C:\*. * A: /S
IF ERRORLEVEL 4 ECHO FAILED
```

```
IF %1 == ERROR ECHO BACKUP FAILED
```

IF

(Allowing Conditional Processing of Commands)

If You Want To:

Test the condition where if the %1 parameter is equal to ERROR, ECHO displays the message "BACKUP FAILED"

(Notice the same character (.) added in each string. This example avoids the error of using a blank in the first string.)

Test the condition where DOS checks to see if FILE1 is in the current directory on the default drive and if so, process the GOTO command which causes the system to skip to the command following the :END label

Test the condition where DOS checks to see if the file A:\%1 exists, %1 being a replaceable parameter

(If the file exists on drive A, processing continues. If the file does not exist, the COPY command is processed.)

Enter In Your Batch File:

```
IF %1. == ERROR. ECHO BACKUP FAILED
```

```
IF EXIST FILE1 GOTO END  
:  
:END
```

```
IF NOT EXIST A:\%1 COPY B:\%1 A:
```

Remarks

- Piping and redirection should not be used on the IF command line.
- Refer to the command descriptions in *DOS 4.00 Command Reference* to find out if a command sets an ERRORLEVEL that can be tested.

PAUSE (Temporarily Breaking Processing)

Purpose

Temporarily suspends processing and displays a "Press any key to continue ..." message.

If You Want To:

Suspend processing of your commands in a batch file by displaying a comment and then press any key to resume processing

(For example, if you want to change diskettes between the commands entered in a batch file.)

Enter In Your Batch File:

```
ECHO CHANGE DISKETTE IN DRIVE A  
PAUSE
```

Remarks

- If you include a comment, it displays before the "Press any key to continue ..." message only if ECHO is ON.
- The comment can be any string of characters up to 121 characters long.
- You can control how much of a batch file you want to process by placing PAUSE commands at strategic points in the file. At each PAUSE statement, the system stops and gives you time to decide whether to stop the batch from processing. Press Ctrl+Break and type a Y to stop a batch file from running. To continue processing, press any key.

REM

(Displaying Remarks)

Purpose

Adds remarks or line spacing in a batch file.

If You Want To:

Display REM and a remark like "This is an inventory program" from within a batch file

Enter In Your Batch File:

```
REM This is an inventory program
```

Prevent DOS from interpreting the piping symbol `|`, enclose it in double quotes (Only the first line causes a directory listing.)

```
REM MAY NOT WANT TO PIPE TO | DIR  
REM USE DOUBLE QUOTES "|" DIR
```

Remarks

- DOS displays the remark when batch processing reaches the REM command. If ECHO is OFF, DOS does not display the remarks.
- Remarks can be any string of up to 123 characters.
- You can use REM without remarks for spacing within your batch file, for readability.

(Using More than 10 Replaceable Parameters)**Purpose**

Allows command lines to use more than 10 replaceable parameters in batch file processing.

If You Want To:

Shift the parameters on the command line one position to the left, with the %0 parameter being replaced with the %1 parameter, and so on

Enter In Your Batch File:

```
ECHO %0  
:  
ECHO %8  
SHIFT  
ECHO %9  
:
```

Remarks

- Command files are limited to handling 10 parameters, %0 through %9, unless you use the SHIFT command.
- All parameters on the command line are shifted one position to the left, the %1 parameter replacing the %0 parameter, the %2 parameter replacing the %1 parameter, and so on. Each following shift command causes all the parameters to be shifted to the left by one position.
- There is no backward shift. Once SHIFT is run, the %0 parameter that existed before the shift cannot be recovered.
- For further information on using replaceable parameters in batch files, see "Using Replaceable Parameters" on page 115.

Chapter 6. DOS Command Tables

The tables in the following pages provide you with an overview of DOS commands. The first five tables are quick-reference tables of DOS commands covered in this manual:

Frequently Used Commands

Filter Commands

Configuration Commands

Device Commands

Batch Commands

Refer to the page number listed under the command.

The sixth table is:

Debug Commands

A quick-reference table of the DEBUG program, it provides a controlled testing environment that allows you to monitor the processing of a program. These commands are explained in detail in the *DOS 4.00 Technical Reference and Application Programming*.

The last table is:

Additional Commands







This outlines additional DOS commands to use on your system. These commands are explained in detail in the *DOS 4.00 Command Reference*.





Note: When a *filename* is mentioned under the caption "Command," the drive letter and path of the *filename* are optional.






This symbol designates an "external" command and appears below the command's first format example. This means that for diskette-drive-only systems, you must insert the DOS diskette before the external command can be processed. You can find out which DOS diskette includes the command you want by using the DIR command to determine what each installation diskette contains.

Frequently Used Commands

Command	Purpose
BACKUP 	Backs up one or more files. (Page 29)
CHDIR or CD	Changes the current directory of a drive, or displays its name and directory path. (Page 32)
COMP 	Compares the contents of two files. (Page 33)
COPY	Copies one or more files. (Page 34)
DEL or ERASE	Deletes one or more files in a directory with the exception of read-only and hidden files. (Page 35)
DIR	Lists the files in a directory. (Page 36)
DISKCOMP 	Compares the contents of diskettes with like media. (Page 37)
DISKCOPY 	Copies the contents of one diskette to another diskette of like media. (Page 38)
DOSHELL 	Allows you to start or return to the DOS Shell from the DOS command prompt. If you are at the Shell command prompt, you must type EXIT to return to the DOS Shell. (Page 39)
FORMAT 	Prepares a disk to accept DOS files, and analyzes a disk for any defective tracks. (Page 40)

Command	Purpose
MKDIR or MD	Creates a new directory within the current directory. (Page 43)
PATH	Searches specified directories for commands or batch files that were not found by a search of the current directory. (Page 44)
PRINT	Allows you to print or cancel printing one or more files. (Page 45)
	
PROMPT	Allows you to change the default command prompt and set a new one. (Page 47)
RENAME or REN	Changes the name of one or more files. (Page 49)
RESTORE	Restores backup files. (Page 50)
	
RMDIR or RD	Removes a directory. (Page 52)
TREE	Displays file and directory names in block graphics. (Page 53)
	
TYPE	Displays the contents of a file. (Page 54)
XCOPY	Copies groups of files from multiple subdirectories. (Page 55)
	

Filter Commands

Command	Purpose
FIND 	Searches files for occurrences of specified strings of text. (Page 62)
MORE 	Shows a screen full of data at a time, then pauses with the message "--More--." (Page 63)
SORT 	Receives input from an input device, sorts the information, and writes the changed information to an output device. (Page 64)

Configuration Commands

Command	Purpose
BREAK	Instructs DOS to check if you pressed the Ctrl+Break keys when a program requests DOS to carry out any functions. (Page 69)
BUFFERS	Determines the number of disk buffers that DOS allocates in memory when it starts. (Page 70)
COUNTRY	Identifies the date, time, collating sequence, capitalization, folding format, currency symbol, and decimal separator for a particular country. (Page 73)
DEVICE	Installs a device driver by specifying the path and complete filename of the device driver in your CONFIG.SYS file. See the following "Device Commands" table for the device drivers you may install. (Page 75)
FCBS	Specifies the number of file control blocks that can be opened by DOS at the same time. (Page 100)
FILES	Specifies the maximum number of files that can be open at the same time. (Page 102)
INSTALL	Allows DOS to check for commands when reading and interpreting the commands within the CONFIG.SYS file when you start or restart DOS. (Page 103)
LASTDRIVE	Sets the maximum number of drives that you may access. (Page 104)
REM	Allows remarks from within the configuration file, CONFIG.SYS. (Page 105)
SHELL	Loads and starts the DOS command processor, COMMAND.COM., or another top-level command processor. (Page 106)

Command	Purpose
STACKS	Overrides the default size of the system stack pool for the hardware interrupts. (Page 108)
SWITCHES	Specifies the use of conventional keyboard functions when an enhanced keyboard is installed. (Page 109)

Device Commands

Command	Purpose
ANSI.SYS	Allows you to enhance the standard input and output support with keyboard and display features. (Page 77)
DISPLAY.SYS	Allows you to use code page switching on EGA displays and the IBM PC Convertible LCD display. (Page 79)
DRIVER.SYS	Allows DOS to assign a logical drive letter to any internal or external diskette drives that you might add to your system. (Page 80)
PRINTER.SYS	Allows you to use code page switching on the IBM Proprinter Models 4201, 4202, 4207, and 4208, and the IBM 5202 Quietwriter III. (Page 82)
VDISK.SYS	Installs a simulated disk in memory, called a virtual disk. (Page 84)
XMAEM.SYS	Emulates the IBM Personal System/2 80286 Expanded Memory Adapter/A that can be used only with 80386-based systems like the IBM Personal System/2 Model 80. (Page 88)
XMA2EMS.SYS	Provides support for the Lotus, Intel, and Microsoft (LIM) Expanded Memory Specification (EMS) 4.0 under DOS 4.00. (Page 90)

Batch Commands

Command	Purpose
CALL	Calls a batch file from within another batch file without ending the first batch file. (Page 117)
ECHO	Allows or prevents the display of DOS commands processed from a batch file. (Page 118)
FOR	Allows repetitive processing of DOS commands. (Page 119)
GOTO	Transfers control to the line following the one beginning with the appropriate label. (Page 120)
IF	Allows conditional processing of DOS commands. (Page 121)
PAUSE	Temporarily suspends processing and displays a "Press any key to continue ..." message. (Page 123)
REM	Adds remarks or line spacing in a batch file. (Page 124)
SHIFT	Allows command lines to use more than 10 replaceable parameters in batch file processing. (Page 125)



Debug Commands



Command	Purpose
A <i>addr</i>	Assembles IBM Personal Computer Macro Assembler language statements directly into memory.
C <i>range addr</i>	Compares the contents of two blocks of memory.
D <i>addr</i>	Displays the contents of a portion of memory.
or	
D <i>range</i>	
E <i>addr</i>	Displays and allows modification of bytes in a sequential manner.
E <i>addr list</i>	Replaces the contents of one or more bytes, starting at the specified address (<i>addr</i>), with the values contained in the <i>list</i> .
F <i>range list</i>	Fills the memory locations in the range with the values in the list.
G	Processes the program you are debugging without breakpoints.
G = <i>addr addr addr</i>	Stops the processing of the program when the instruction at the specified address (<i>addr</i>) is reached (breakpoint), and displays the registers, flags, and the next instruction to be processed.
H <i>value value</i>	Adds the two hexadecimal values, then subtracts the second from the first. Displays the sum and difference on one line.
I <i>portaddr</i>	Inputs and displays (in hexadecimal) 1 byte from the specified port.


Command	Purpose
L or L <i>addr</i> L <i>addr drive sect sect</i>	Loads the file whose file specification is at CS:80. Loads data from the disk specified by <i>drive</i> and places the data in memory beginning at the specified address (<i>addr</i>).
M <i>range addr</i>	Moves the contents of the memory locations specified by <i>range</i> to the locations beginning at the address (<i>addr</i>) specified.
N <i>filename</i>	Defines file specifications or other parameters required by the program being debugged.
O <i>portaddr byte</i>	Sends the <i>byte</i> to the specified output port.
P = <i>addr value</i>	Causes the processing of a subroutine call, a loop instruction, an interrupt, or a repeat string instruction to stop at the next instruction.
Q	Ends the DEBUG program.
R	Displays the contents of all registers and flags and the next instruction to be processed.
R F	Displays all flags.
R <i>registername</i>	Displays the contents of a register.
S <i>range list</i>	Searches the <i>range</i> for the characters in the <i>list</i> .
T = <i>addr value</i>	Processes one or more instructions starting with the instructions at CS:IP, or at = <i>addr</i> , if it is specified. It also displays the contents of all registers and flags after each instruction processes.





Command	Purpose
U <i>addr</i> or U <i>range</i>	Unassembles instructions (translates the contents of memory into assembler-like statements) and displays their addresses and hexadecimal values, together with assembler-like statements.
W or W <i>addr</i>	Allows you to use the WRITE command without specifying parameters or only specifying the address (<i>addr</i>) parameter.
W <i>addr drive sect sect</i>	Writes data to disk beginning at a specified address (<i>addr</i>).
XA <i>count</i>	Allocates a specified number of expanded memory pages to a handle.
XD <i>handle</i>	Deallocates a handle.
XM <i>lpage ppage handle</i>	Maps an EMS logical page to an EMS physical page from an EMS handle.
XS	Displays the status of expanded memory.

Additional Commands



Command	Purpose
APPEND 	Displays a list of appended paths, if you use APPEND without any parameters after it is loaded. (After APPEND is loaded, it is an internal command.)
APPEND <i>path;path</i>	Specifies one or more <i>paths</i> to be searched, separated by a semi-colon.
APPEND ;	Cancels the APPEND paths.
APPEND /X:OFF	Turns off the search and processing sequence of executable files. This is the default value.
APPEND /X:ON or /X	Allows APPEND to search and process executable files similar to the PATH command.
APPEND /PATH:ON	Tells APPEND to search for files that have a drive or a path specified. This is the default value.
APPEND /PATH:OFF	Tells APPEND not to search for files that have a drive or path specified.
APPEND /E	Keeps the APPEND paths in the DOS environment, similar to the DOS PATH command. APPEND searches the environment on each call to find the path.
ASSIGN 	Resets all drive assignments so that normal drive assignments resume.
ASSIGN <i>x=y</i>	The <i>x</i> parameter specifies the drive to which current disk I/O requests are sent. The <i>y</i> parameter specifies the drive that you now want disk I/O requests to be sent.

Command	Purpose
ATTRIB <i>filename</i> 	Displays the current setting of the read-only attribute and the archive bit for the <i>filename</i> .
ATTRIB +R <i>filename</i>	Turns on the read-only attribute of a file.
ATTRIB -R <i>filename</i>	Turns off the read-only attribute of a file.
ATTRIB +A <i>filename</i>	Turns on the archive bit of a file.
ATTRIB -A <i>filename</i>	Turns off the archive bit of a file.
ATTRIB <i>x d:\path*.* /S</i>	Processes all files in the specified directory and its subdirectories. The <i>x</i> parameter specifies +R, -R, +A, or -A.
CHCP	Displays the current code page that DOS is using.
CHCP <i>nnn</i>	Selects the code page that DOS uses and selects that code page for as many devices as possible.
CHKDSK 	Analyzes the directories, files, and the file allocation table on the designated or default drive and produces a disk and memory status report.
CHKDSK <i>filename</i>	CHKDSK analyzes the specified <i>filename</i> .
CHKDSK /F	The /F parameter fixes errors that are found in the directory or file allocation table.
CHKDSK /V	The /V parameter displays all files and their paths on the default or specified drive.
CLS	Clears the screen.

Command	Purpose
COMMAND	Starts a secondary command processor.
	
COMMAND /P /MSG	The /P parameter causes the copy of the new command processor to become permanent in memory. Restart DOS to remove the second command processor. The /MSG parameter loads in system messages and retains the text for all DOS parse and extended errors. DOS allows the /MSG parameter only if /P is also present.
COMMAND /C <i>string</i>	The /C parameter passes a <i>string</i> and then automatically exits back to the primary command processor after the command is completed. <i>String</i> is a command or batch file that you want to pass to the command processor.
COMMAND /E:xxxxx	The xxxxx parameter is a base-10 integer that you specify to set the size of the environment. This number must be between 160 through 32768 and is rounded up to the nearest paragraph boundary.
CTTY <i>device</i>	Changes the standard input and output console to an auxiliary console. Specify AUX, COM1, COM2, COM3, or COM4 to use that device as the primary console.
CTTY CON	Resets the primary standard input and output devices to the primary console.
DATE	Prompts you to enter or change the date.

Command	Purpose
DATE <i>mm-dd-yy</i>	Changes the date.
EXIT	Exits from a secondary command processor.
FASTOPEN <i>d:</i> 	Stores in memory the location of directories and recently opened files on the specified drive.
FASTOPEN <i>d:=n</i>	Specifies the number of directories or files (10–999).
FASTOPEN <i>d:=(n,m)</i>	Specifies the number of continuous space entries (1–999).
FASTOPEN <i>d: /X</i>	Allows FASTOPEN to use expanded memory. Make sure that you also specify the <i>/X</i> parameter for BUFFERS.
FDISK 	Creates, sets up, displays, and/or deletes the DOS partitions on a fixed disk. (Refer to <i>Getting Started With DOS 4.00</i> for further information.)
GRAFTABL 	Loads the default 437 code page into memory for the color/graphics mode.
GRAFTABL ?	Displays the number of the code page currently being used and a list of the code page options.
GRAFTABL /STATUS	Displays the number of the code page currently being used.
GRAFTABL <i>nnn</i>	The <i>nnn</i> parameter is a three-digit number that specifies the code page to be used.
GRAPHICS 	Allows the contents of a graphics display to be printed on an IBM Personal Computer printer when using a Color/Graphics Monitor Adapter and display terminal.

Command	Purpose
GRAPHICS <i>type</i>	<p>Specifies the type of printer you are using. You can select from the following types:</p> <p>COLOR1 IBM 5182 Color Printer when a monochrome screen is used, a black ribbon is installed, or when you want to use only the black band of a color ribbon.</p> <p>COLOR4 IBM 5182 Color Printer with RGB (red, green, blue, black) ribbon</p> <p>COLOR8 IBM 5182 Color Printer with YMC (yellow, magenta, cyan, black) ribbon</p> <p>GRAPHICS IBM 5152 Graphics Printer Model 2 IBM 4201 Proprinter IBM 4201 Proprinter II IBM 4202 Proprinter XL with 8 1/2-inch wide paper IBM 4207 Proprinter X24 with 8 1/2-inch wide paper IBM 4208 Proprinter XL24 with 8 1/2-inch wide paper IBM 3812 Pageprinter IBM 5201 Quietwriter II IBM 5202 Quietwriter III</p> <p>GRAPHICSWIDE IBM 5152 Graphics Printer Model 2 with 11-inch wide paper IBM 4202 Proprinter XL with 11-inch wide paper IBM 4207 Proprinter X24 with 11-inch wide paper IBM 4208 Proprinter XL24 with 11-inch wide paper</p> <p>THERMAL IBM PC Convertible Printer</p>

Command	Purpose
GRAPHICS <i>type profile</i>	Specifies the file containing the printer information. The GRAPHICS.PRO file is used if the <i>profile</i> is omitted.
GRAPHICS /R	Prints black and white (as seen on the screen) on the printer. If the /R is not specified, the default is to print black as white and white as black.
GRAPHICS /B	Prints the background color. This parameter is only for printer types COLOR4 and COLOR8. If /B is not specified, the default is not to print the background color.
GRAPHICS /LCD	Prints the image exactly as it appears on the IBM PC Convertible Liquid Crystal Display.
GRAPHICS /PRINTBOX: <i>id</i>	Prints the image using the print box size specified by the <i>id</i> . This <i>id</i> should match the first operand of a Printbox statement in the printer profile.
JOIN 	Displays a list of drives connected to other drives if any exist.
JOIN <i>d: d:\directory</i>	Specifies the drive to be connected (<i>d:</i>) and the directory that joins to (<i>d:\directory</i>).
JOIN <i>d: /D</i>	Disconnects a join. You must specify the drive letter of the drive whose join you want to delete.
KEYB 	Returns the current status of the keyboard, the display terminal, and the ID if the ID has been specified before the status request.

Command**Purpose**KEYB *xx*

Selects a special keyboard layout (*xx*) to replace the default U.S. keyboard layout. See page 157 for a list of possible keyboard layouts.

KEYB *xx,yyy*

Specifies the code page (*yyy*) of the country defined. If you do not specify *yyy*, KEYB uses the country default code page.

KEYB *xx,,filename*

Specifies the filename of the keyboard definition file (KEYBOARD.SYS) to support a country language. If you do not specify *filename*, KEYB looks for the file KEYBOARD.SYS in the root directory of your current drive.

KEYB *xx /ID:zzz*



Selects a specific keyboard layout by specifying a keyboard identification code. The keyboard ID code must be compatible with the language, otherwise, an error occurs. If you do not specify */ID:zzz*, the system uses the default value. The keyboard ID codes are for the enhanced keyboard layouts identified in the manual *IBM Keyboard Layouts For Your PC and PS/2*.

KEYB *xx,yyy,filename /ID:zzz* Specifies the keyboard layout, code page, filename, and keyboard ID code.

LABEL

Creates, changes, or deletes a volume label on a disk.



Command	Purpose
LABEL <i>label</i>	Specifies the volume label.
MEM	Displays the amount of used and free memory, allocated and free memory areas, and all programs loaded in the system.
	
MEM /PROGRAM	The /PROGRAM parameter displays more information than MEM by displaying the programs that are loaded in memory.
MEM /DEBUG	The /DEBUG parameter shows display programs, internal drivers, and other information useful to programmers.
MODE <i>mode</i>	The <i>mode</i> parameter specifies one of the following:
	
	<p>40 Sets the display width to 40 characters per line for the Color/Graphics Monitor Adapter.</p>
	<p>80 Sets the display width to 80 characters per line for the Color/Graphics Monitor Adapter.</p>
	<p>BW40 Switches the active display adapter to the Color/Graphics Monitor Adapter, and sets the display mode to black and white (disables color) with 40 characters per line.</p>
	<p>BW80 Switches the active display adapter to the Color/Graphics Monitor Adapter, and sets the display mode to black and white (disables color) with 80 characters per line.</p>

CO40

Switches the active display adapter to the Color/Graphics Monitor Adapter, and sets the display mode to color and 40 characters per line.

CO80

Switches the active display adapter to the Color/Graphics Monitor Adapter, and sets the display mode to color and 80 characters per line.

MONO

Switches the active display adapter to the monochrome display adapter (that always has 80 characters per line).

MODE *mode*, *lines*

The *lines* parameter specifies 25, 43, or 50 lines per inch of vertical spacing.

MODE *mode*,*m*

The *m* parameter specifies R or L, which represent shift screen right or left.

MODE *mode*,*m*,*T*

The *T* parameter requests a test pattern used to align the screen.

MODE LPT#

Cancels reroute to serial device. The # parameter defines the printer number 1, 2, or 3.

MODE LPT#=COM*n*

Requests parallel to serial reroute. The *n* parameter is the Asynchronous Communications Adapter number 1, 2, 3, or 4.

MODE LPT# COLS=*m*

Sets the line length for a parallel printer. The *m* parameter specifies 80 or 132 characters per line.

MODE LPT# LINES=*n*

Sets the lines per inch for a parallel printer. The *n* parameter specifies 6 or 8 lines per inch of vertical spacing.

MODE LPT# RETRY=*ra*

Tells MODE how to respond to a status check or status request for the printer ports. The *ra* parameter specifies the following:

E - Return error from status check of busy port.

B - Return busy from status check of busy port.

R - Return ready from status check of busy port.

None - No retry action provided (default).

MODE CON COLS=*m*

Sets the number of characters per line on the screen. The *m* parameter specifies 40 or 80 characters per line.

MODE CON LINES=*n*

Sets the number of rows on the screen. The *n* parameter specifies 25, 43, or 50 lines.

MODE CON RATE=*r* DELAY=*d*

Sets keyboard rates. The RATE = parameter shows interval time, the rate of approximate repetitions per second. The DELAY = parameter shows the auto-repeat start delay time.

MODE *device* CP PREP=((*cplist*) *filename*)

Prepares a device for code page switching. The *cplist* parameter specifies a list of code pages. Refer to page 157 for the code page listing. The code page must be of the following values, 437, 850, 860, 863, 865 or any other code page that is supported by your code page information. The *filename* specifies the file containing the code pages (.CPI extension).

MODE *device* CP SELECT=*cp*

Identifies the code page to be started. Refer to page 157 for the code page listing. Select one of the following codes — 437, 850, 860, 863, 865 or any other code page that is

	supported by your code page information file.
MODE <i>device</i> CP /STATUS	Displays the currently active code page.
MODE <i>device</i> CP REFRESH	Refreshes a code page.
MODE <i>device</i> /STATUS	Displays the status of the device specified.
MODE COMx BAUD= <i>b</i>	Initializes a serial port. The <i>b</i> parameter specifies the baud rate. The rates are 110, 150, 300, 600, 1200, 2400, 4800, 9600, or 19200.
MODE COMx BAUD= <i>b</i> PARITY= <i>x</i>	Initializes a serial port. The <i>x</i> parameter in PARITY = specifies the following values: ODD EVEN MARK SPACE NONE
MODE COMx BAUD= <i>b</i> DATA= <i>c1</i>	Initializes a serial port. The <i>c1</i> parameter in DATA = specifies the value of data bits.
MODE COMx BAUD= <i>b</i> STOP= <i>c2</i>	Initializes a serial port. The <i>c2</i> parameter in STOP = specifies the value of stop bits.
MODE COMx BAUD= <i>b</i> RETRY= <i>ra</i>	Initializes a serial port. The <i>ra</i> parameter RETRY = sets infinite retry and the status to be returned from a busy port.

The *ra* parameter specifies the following:

- E - Return error from status check of busy port (default).
- B - Return busy from status check of busy port.
- R - Return ready from status check of busy port.
- None - No entry action given.

NLSFUNC *filename*



Provides support for extended country information and allows you to use the CHCP command to select code pages for all devices defined as having code page switching support. The *filename* specifies the name of the file containing the country information (COUNTRY.SYS).

RECOVER *filename*



Recovers files from a disk that has defective sectors or a damaged directory.

RECOVER *d:*

Recovers a disk that has defective sectors.

REPLACE *filename d:\path*



Replaces all files on the target (*d:\path*) that are satisfied by the source file specification (*filename*).

REPLACE *filename d:\path /A*

Copies all files specified by the source that do not exist on the target, allowing you to add files to the target without overwriting the files that already exist on the target. You cannot use /A with /S or /U.

REPLACE *filename d:\path /P*

Prompts you as each file is met on the target, allowing selective replacing or adding.

REPLACE *filename d:\path* /R Replaces files that are read-only on the target.

REPLACE *filename d:\path* /S Searches all directories of the target for files matching the source filename.

REPLACE *filename d:\path* /U Replaces files on the target if they are older than those on the source. Allows you to replace files, from the source, that have a newer date/time attribute than the target file. You cannot use /A and /U together.

REPLACE *filename d:\path* /W Waits for you to insert a diskette before beginning to search for source files.

SELECT



Installs DOS on a new fixed disk or diskettes or replaces a previous version of DOS. Refer to *Getting Started With DOS 4.00* for further information.

SET

Displays the current set of environment strings. (Page 116)

SET *name=string*

The *name* and *string* are inserted (or deleted in the next SET example) in the environment. If the name already exists in the environment, it is replaced with the new *string*.

SET *name=*

The *name =* parameter removes the *name = string* parameter from the command processor's environment.

SHARE



Provides support for file sharing and diskette change protection. SHARE must be loaded if a fixed disk partition size greater than 32MB is used.

SHARE /F:fileSpace

Allocates file space in bytes for the area used to record the information necessary for file sharing. Each open file requires the length of the full filename plus 11 bytes. The default value is 2048 bytes.

SHARE /L:locks

Allocates space for the number of locks you want. The default value is 20 locks.

SUBST



Displays a list of drive specifiers used to refer to other drives or paths, if any exist.

SUBST d: d:path

Specifies the drive letter (d:) to use to refer to another drive or path and the drive or path (d:path) that you want to refer to with a nickname.

SUBST d: /D

Deletes a substitution by specifying the letter of the drive whose substitution you want to delete.

SYS d:



Transfers the operating system files — IBMBIO.COM and IBMDOS.COM — from the source drive to the target drive. If a source is not specified, SYS attempts to find the system files on the current default drive.

TIME

Prompts you to enter or change the time known to the system.

TIME hh:mm:ss.hh

Changes the time. The output from the TIME command accepts input on either a 12- or 24-hour basis. If you are entering the time on a 12-hour basis, you must enter an **a** or a **p** directly after the last parameter entered (no space).

VER	Displays the DOS version number that is installed on your system.
VERIFY	Displays the current status of the VERIFY command.
VERIFY <i>x</i>	The <i>x</i> parameter specifies either ON or OFF. VERIFY ON ensures that information written to the disk can be read without error.
VOL	Displays the disk volume label.
VOL <i>d:</i>	Displays the disk volume label of the specified drive.

Chapter 7. Using Code Page Switching

Code page switching is a feature of DOS that changes certain characters displayed on a screen or printed on a device. This chapter describes how code page switching works, why it is used, and how you can install code page switching without having to reinstall DOS using the SELECT installation program.

If you review installation choices when you install DOS 4.00 using SELECT, you have the option of installing code page switching if needed. For those countries that require code page switching, the code page switching default choice is preset as "Yes." If your country does not require code page switching, you do not need to use code page switching unless you want to display or print characters in certain other languages.

Supported Devices

Before you install code page switching on your system, you must have the necessary devices to allow you to view or print language-specific characters. Code page switching is supported on the following equipment:

Display Terminals

- Enhanced Color Display
- IBM Personal System/2 family displays
- IBM PC Convertible LCD

Display Adapters

- Enhanced Graphics Adapter
- IBM Personal System/2 Display Adapter 8514/A
- IBM Personal System/2 family
- IBM PC Convertible LCD

Printers

- IBM 4201 Proprinter family
- IBM 4202 Proprinter XL
- IBM 4207 Proprinter X24
- IBM 4208 Proprinter XL24
- IBM 5202 Quietwriter III.

What Is a Code Page?

Computer systems store data as numeric values. When you need to display or print information, the system translates the numeric values into letters, numbers, symbols, and characters that you can recognize. Your system uses a table called a "code page" to achieve this (refer to "System Code Pages" on page 195 for examples).

A code page contains the definition of one or more character sets. For example, a character set may be defined as:

```
abcdefghijklmnopqrstuvwxyz  
0123456789  
~!@#$%^&*()_+,. /; ' []?
```

A character set could also be defined as:

```
abcdefghijklmnopqrstuvwxyzăéîôú  
0123456789  
~!@#$%^&*()_+,. /; ' []?
```

Both of these character sets are contained in the 437 code page; however, a character set such as:

```
abcdefghijklmnopqrstuvwxyzĂĚİÖÛ  
0123456789  
~!@#$%^&*()_+,. /; ' []?
```

is not in the 437 code page but is in the 860 code page. Therefore, code page switching provides a way to display and switch between different code pages.

Why Use Code Page Switching?

Information created in a certain code page must be viewed in that code page; otherwise, some characters will not look the same as when they were entered. Menus, for example, may turn into strings of accented characters, and help text may become unreadable because alphabetic letters may display as graphics. If you are likely to come across files that have been created in a code page other than that for your country (see page 157) or your character set is not contained in the hardware code page 437, then you will need to install code page switching.

- If you are new to DOS, you should install code page 850, because it contains all the characters necessary for most European and North and South American languages.
- If you have been using a previous version of DOS and code pages 437, 860, 863, or 865, you should install code page switching so that you can switch between your old code page, and the multilingual code page 850.

Warning: Some PC applications written for one code page may have usability problems when using the multilingual code page. If this happens, end the application program and switch out of the multilingual code page to the other code page before re-entering the application.

Installing Code Page Switching

DOS allows switching among several pairs of code pages. In the step-by-step procedure in this chapter, substitute your system's values from the following table:

Country	Keyboard Layout	Code Pages Supported	Keyboard ID
Belgium	BE	850, 437	120
Canada (French-speaking)	CF	863, 850	058
Denmark	DK	850, 865	159
Finland	SU	850, 437	153
France	FR	437, 850	120, 189
Germany	GR	437, 850	129
Italy	IT	437, 850	141, 142
Latin America	LA	437, 850	171
Netherlands	NL	437, 850	143
Norway	NO	850, 865	155
Portugal	PO	850, 860	163
Spain	SP	437, 850	172
Sweden	SV	437, 850	153
Switzerland (French-speaking)	SF	850, 437	150
Switzerland (German-speaking)	SG	850, 437	000 *
United Kingdom	UK	437, 850	168, 166
United States	US	437, 850	103

* A 000 value is assigned to Switzerland (German-speaking) because the actual keyboard ID for both Switzerland (German-speaking) and Switzerland (French-speaking) is 150.

Note: Keyboard ID codes are associated with enhanced keyboards only. Since France, Italy, and the United Kingdom have more than one enhanced keyboard, the keyboard ID allows you to select the keyboard you want. If you don't specify an ID code when using the KEYB command, the system uses the default value. Refer to *IBM Keyboard Layouts For Your PC and PS/2* if you do not know the ID code associated with your enhanced keyboard.

If you didn't install code page switching using the SELECT installation program, you must add command statements to both the CONFIG.SYS and AUTOEXEC.BAT files. The CONFIG.SYS file contains commands that tell DOS what kinds of devices are attached to your system. The AUTOEXEC.BAT file contains commands that DOS processes each time you start it. By changing these two files, you can tell DOS which devices support code page switching and which code pages should be loaded. By using the MODE and CHCP commands, you can switch the current code page to another code page.

If you do not add code page switching to your system by reinstalling DOS, the commands you need to add to the CONFIG.SYS and AUTOEXEC.BAT files are in the following listing.

DEVICE	Describes the display terminal and printer devices that use code page switching. Refer to "DISPLAY.SYS" and "PRINTER.SYS" in Chapter 4 for further information.
KEYB	Loads keyboard support for the language you specify.
NLSFUNC	Loads national language support code. This command provides support for extended country information and allows you to use the CHCP command to select code pages for all devices defined as having code page switching support.
MODE	Prepares and selects code pages specified for devices defined in the CONFIG.SYS file.
CHCP	Selects the code page DOS uses and selects that code page for as many devices as possible.

Notes:

1. The NLSFUNC and KEYB commands can be added using the new INSTALL configuration command.
2. To prevent file access problems when switching between code pages, name your files and subdirectories using only the characters A-Z and 0-9.

If you want to install code page switching on your system without having to reinstall DOS, you can add the following statements to your CONFIG.SYS and AUTOEXEC.BAT files using an editor or the COPY command. In the steps on the following pages, the COPY command is used to add statements to your CONFIG.SYS file.

Important:

- The following examples assume that a CONFIG.SYS and AUTOEXEC.BAT file already exist on your system.
- Remember to change into your root directory (CD\) where you installed CONFIG.SYS and AUTOEXEC.BAT before continuing.
- In the following procedure, the command files are assumed to be installed in the DOS subdirectory of your C drive. If you are not installing on a fixed disk or your command file is not located in the DOS subdirectory, specify the drive and path where your command file is located; for example:

d:\path

- Substitute your system's values for the parameters listed under the installing steps on the following pages.
- KEYB should be loaded before loading any application program that redefines the keys such as an emulator or an application which redefines key strokes.

CONFIG.SYS Statements

1. Enter the following at the command prompt:

```
COPY CONFIG.SYS+CON
```

2. Enter the following to prepare the code page driver for your display terminal:

```
DEVICE=C:\DOS\DISPLAY.SYS CON=(type,hwcp,n)
```

Parameters:

type Specifies the display adapter type. If you omit the type, DISPLAY.SYS checks the hardware to select the type of the active display; for example, (,437,1). Use:

LCD for an IBM PC Convertible LCD

EGA for all other adapter types listed on page 154.

hwcp Specifies the code page supported directly by your hardware; most countries use 437. If you are not certain what your display adapter's code page is, omit this parameter.

n Specifies the number of additional code pages you want to add (from 1 through 12); called the number of prepared code pages. Use:

1 if 437 is your existing code page

2 all other code pages.

3. Enter the following to prepare the code page driver for your printer:

```
DEVICE=C:\DOS\PRINTER.SYS LPT#=(type,hwcp,n)
```

Parameters:

LPT# Each printer requiring code page switching must have an LPT# parameter, where # is the port position for the printer, usually LPT1. You may specify as many as three printers in the same DEVICE statement.

type Specifies the type of printer you have. Use:

4201 for the IBM 4201 Proprinter family
and IBM 4202 Proprinter XL

4208 for the IBM 4207 Proprinter X24
and IBM 4208 Proprinter XL24

5202 for the IBM 5202 Quietwriter III.

hwcp Specifies the code page supported directly by your hardware; usually the supported printers have 437. If you are not certain what your hardware's code page is, omit this parameter; for example, (4201,,1).

n Specifies the number of additional code pages that can be prepared (from 1 through 12). If you have an IBM 5202 Quietwriter III, refer to page 82 for further information. Use:

1 if 437 is your existing code page

2 for all other code pages.

4. Enter the following to install extended country information:

```
INSTALL=C:\DOS\NLSFUNC.EXE C:\DOS\COUNTRY.SYS
```

5. Press Ctrl+Z or F6 after you have typed in the previous statements; then press Enter.

The CONFIG.SYS setup procedure is complete.

AUTOEXEC.BAT Statements

In the following steps, the COPY command is used to add statements to your CONFIG.SYS.

1. Enter the following at the command prompt:

```
COPY AUTOEXEC.BAT+CON
```

2. Enter the following to prepare the display devices defined in the CONFIG.SYS:

```
MODE CON: CP PREP=((cplist) C:\DOS\cpfile)
```

Parameters:

cplist Is 850, if your default code page is 437. If code page 437 is not your default code page, *cplist* is 850 plus your default code page; for example, 850, 865.

cpfile Specifies the name of the code page font file; a file which contains device information describing the various code pages. Use:

LCD.CPI for the IBM PC Convertible LCD

EGA.CPI for all others.

3. Enter the following to prepare the printer for code page switching:

```
MODE LPT#: CP PREP=((cplist) C:\DOS\cpfile)
```

Parameters:

LPT# Each printer requiring code page switching must have an LPT# parameter, where *n* is the port position for the printer, usually printer number 1.

cplist Is 850, if your existing code page is 437. If code page 437 is not your existing code page, *cplist* is 850 plus your existing code page; for example, 850, 865.

cpfile Specifies the name of the code page font file. Use:

- 4201.CPI for the IBM 4201 Proprinter family and IBM 4202 Proprinter XL
- 4208.CPI for the IBM 4207 Proprinter X24 and IBM 4208 Proprinter XL24
- 5202.CPI for the IBM 5202 Quietwriter III.

4. Enter the following to prepare the keyboard for code page switching:

```
KEYB xx,,C:\DOS\KEYBOARD.SYS /ID:zzz
```

Parameters:

xx Specifies your keyboard layout shown in the table on page 157.

/ID:zzz Specifies the keyboard ID code, which is only associated with enhanced keyboards such as those for France, Italy, and the United Kingdom. Because these countries have more than one enhanced keyboard, this ID code allows you to select the keyboard you want. See the table on page 157.

5. Enter the following to start the code page that you prepared for your display terminal and printer:

```
CHCP nnn
```

Parameters:

nnn Specifies your existing code page.

6. Press Ctrl+Z or F6 after you have typed in the previous statements; then press Enter.
7. Press Ctrl + Alt + Del to restart your system.
This installs the code page drivers and you will be able to use code page switching.

Note: Refer to the GRAFTABL command on page 141 if you are interested in allowing additional characters from a national language code page to be displayed when using the Color Graphics Adapter in graphics mode.

Appendix A. Creating and Editing Files Using EDLIN

This chapter describes how to use the text Line Editor, EDLIN. You can use EDLIN to create, change, and display text files.

Using EDLIN

Use this editor to:

- Create new files
- Update existing files and save both the updated and original files
- Delete, edit, insert, and display lines
- Search for, delete, or replace text within one or more lines.

The text of the files you create or edit using EDLIN is divided into lines of varying length, up to 253 characters per line.

EDLIN also generates line numbers when you edit a file, but they are not saved as part of the contents of any file. These numbers increase or decrease, depending on whether you insert or delete lines.

Summary of EDLIN Commands

The following table is provided for quick reference. Refer to the individual commands in this appendix for further information.

Syntax	Command
<i>n A</i>	A (Append Lines): Adds a specified number of lines from disk to the file being edited in storage.
<i>line,line,line,count C</i>	C (Copy Lines): Copies the lines in the specified range to the line number specified by the third <i>line</i> parameter. The <i>count</i> specifies the number of times you want to repeat the text.
<i>line,line D</i>	D (Delete Lines): Deletes the lines in the specified range, making the line following the deleted range the current line.
<i>line</i>	Edit Line: Edits the specified line of text.
E	E (End Edit): Ends EDLIN and saves the edited file.
<i>line I</i>	I (Insert Lines): Inserts the specified line of text.
<i>line,line L</i>	L (List Lines): Displays the specified range of lines, leaving the current line unchanged.
<i>line,line,line M</i>	M (Move Lines): Moves the lines in the specified range to the line number specified by the third <i>line</i> parameter.

Syntax	Command
<i>line,line P</i>	P (Page): Lists the specified range of lines, changing the current line.
Q	Q (Quit Edit): Quits the file you are editing without saving any changes that you might have entered.
<i>line,line ? R str Ctrl+Z str</i>	R (Replace Text): Replaces all occurrences of the first string (<i>str</i>), in the specified range of lines, with the second string (<i>str</i>). The ? requests a prompt "OK?" after each display of a changed line.
<i>line,line ? S str</i>	S (Search Text): Searches the specified range of lines to find the specified string (<i>str</i>)
<i>line T drive filename</i>	T (Transfer Lines): Transfers (merges) the contents of the specified file (<i>filename</i>) ahead of the line in the file you are currently editing.
<i>n W</i>	W (Write Lines): Writes the specified number of lines to disk from the lines being edited in storage.

Creating a New File

To start EDLIN and begin creating a new file, follow these steps:

1. At the command prompt, Enter:

```
EDLIN filename
```

The *filename* represents the filename.ext of a file specification (drive, path, and filename.ext).

Refer to "Naming Files and Directories" in Chapter 2 on page 22 for information on naming your file. Make sure that the file does not exist on the current drive.

The message "New file" appears with the EDLIN prompt (*).

2. Enter the I (Insert Lines) command when the prompt (*) appears.

```
I
```

If you want to insert text on a specific line, type in the line number, followed by the I (Insert Lines) command.

See page 179 for further information.

3. Enter the lines of text you want to add next to the prompt (*).

End each line by pressing Enter.

4. Press the Ctrl+Break keys.

This ends the I (Insert Lines) command.

5. Enter the L (List Lines) command when the prompt (*) appears to view the text you entered:

```
L
```

This will display 11 lines before the current line, the current line, and 11 lines after the current line.

See the "L (List Lines)" command on page 180 for further information.

6. Enter the E (End Edit) command at the prompt (*).

```
E
```

This ends EDLIN and saves the new file with the filename and extension you specified.

Editing an Existing File

To edit an existing file with EDLIN, follow these steps:

1. At the command prompt, enter the *filename.ext* of the file existing on the designated or default drive.

```
EDLIN filename.ext
```

The message "End of input file" appears with the EDLIN prompt (*) if EDLIN loaded the complete file.

2. Edit the file using the commands explained in this appendix.
3. At the prompt (*), enter the E (End Edit) command:

```
E
```

This ends EDLIN and saves your original file with a .BAK extension (backup).

See the "E (End Edit)" and "W (Write Lines)" commands for further information on the .BAK extension.

Notes:

1. The file is loaded into 64KB of storage until available storage is 75% full. If EDLIN cannot load the complete file, the EDLIN prompt (*) appears. You can then edit the portion of the file that is in storage.

To edit the remainder of the file, you must write some of the edited lines to disk. Into the freed storage you can load unedited lines from disk. Refer to the "A (Append Lines)" and "W (Write Lines)" commands in this appendix to review the procedure.

2. If you want to use EDLIN to edit a backup file (.BAK), you must first rename the file with another extension. You can then start EDLIN and specify the new filename.

Information about EDLIN

The following information applies to all EDLIN commands:

EDLIN prompt	<p>The EDLIN prompt is an asterisk (*).</p> <p>At the prompt, enter commands and string parameters in uppercase, lowercase, or a combination of both.</p>
current line	<p>This shows the location of the last change to the file, but it is not necessarily the last line EDLIN displayed.</p>
line parameters	<p>If you specify a line number greater than the number of lines in storage, the line is added after the last line.</p> <p>Use a minus (-) sign and a number to show a line before the current line.</p> <p>Use a plus (+) sign and a number to show a line after the current line.</p>
keys	<p>The editing keys, described in "Using Your Keyboard" on page 12, are useful for editing within a line.</p> <p>Press Enter to process the command.</p> <p>Press Ctrl+Break to stop commands.</p> <p>Press Ctrl+Num Lock to pause the screen.</p> <p>Press any other character to restart the display.</p>

control characters

These characters can be inserted into the text, or can be used in the strings for the Search and Replace Text commands. To enter a control character, press Ctrl+V, and enter the desired control character in uppercase. For example, the sequence Ctrl+V, followed by Z generates the control character Ctrl+Z, which serves as an end-of-file mark.

delimiters

You can separate commands and parameters with spaces or commas to make reading easier; however, EDLIN only requires a delimiter between two adjoining line numbers.

multiple commands

If you want to enter multiple commands on one command line, you must use a semicolon to separate the commands on the line. For Search or Replace commands, the *string* parameter can be ended by Ctrl+Z (F6) instead of the Enter key; otherwise, one command can follow another without any special delimiting characters. For example:

```
15;-5,+5L
```

edits line 15 and then shows lines 10 through 20 on the screen.

Reading the Command Diagram

The command diagram, called the "syntax" diagram, shows you how to enter a command so that it can be interpreted by the "command processor," a program run to carry out an operation specified by a command. When you use the diagrams showing EDLIN commands, the following items help you become familiar with how to read the command's syntax:

- The command name and the items required to make the command work appear on the baseline. Items appearing below the baseline are considered optional.
- A vertical bar at the end of a baseline marks the end of the command syntax.
- Variables are shown in lowercase *italicized* letters.
- Keywords, such as command names, are shown in capitalized letters.
- Include all commas shown in the diagrams.
- In command examples, spaces are used for readability.
- The variable parameter *filename* represents the filename.ext of a file specification (drive, path, and filename.ext).

Purpose

Adds a specified number of lines from disk to the file being edited in storage.

Syntax



Parameters

n Specifies the number of lines that you want to write to a disk or load from a disk.

Remarks

- You should use this command only if the file being edited is too large to fit in storage.
- As many lines as possible are read into storage for editing when you start EDLIN. If you do not specify the number of lines, lines are appended to storage until available storage is 75% full. No action is taken if storage is already 75% full.
- To edit the remainder of the file that does not fit into storage, you must write edited lines in storage to disk by using the Write Lines command, explained on page 192. You can then load additional unedited lines from disk into storage by using the Append Lines command.
- EDLIN displays a message when the Append Lines command has read the last line of the file into storage.

C

(Copy Lines)

Purpose

Copies lines of text.

Syntax

line, *line*, *line* *count* C

Parameters

line Specifies a line number. Use this parameter by entering a decimal integer from 1–65529, a # to specify the line after the last line in storage, or a period (.) to specify the current line.

count Specifies the number of times you want the lines copied. The default is 1.

Remarks

- This command copies the lines in the specified range (the first and second *line* parameters) to the line number specified by the third *line* parameter.
- If you want to repeat text, specify the number of times the operation is to be carried out in *count*. If you do not specify a range, the default is the current line. This then copies the current line to the line you specified. The first of the copied lines becomes the current line. You cannot use the - and + characters.
- Do not overlap line numbers or EDLIN reports an error.

Examples

The following copies lines 1 through 5 ahead of line 8:

```
1,5,8C
```

Line 8 becomes the current line.

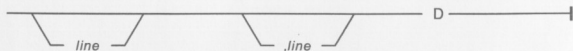
The following copies lines 1 through 4 ahead of line 9, repeating the lines twice:

```
1,4,9,2C
```

Purpose

Deletes lines of text.

Syntax



Parameters

line Specifies a line number. Use this parameter by entering a decimal integer from 1 – 65529, a # to specify the line after the last line in storage, or a period (.) to specify the current line.

Remark

The line following the deleted range becomes the current line, even if the deleted range includes the last line in storage.

Examples

If you want to delete lines 3 through 10, Enter:

```
3,10D
```

If you omit the first *line* parameter, as in:

```
,3D
```

EDLIN first deletes the current line and ends with line 3. The beginning comma shows the omitted first parameter.

If you omit the second *line* parameter, as in:

```
3D or 3,D
```

EDLIN only deletes line 3.

If you omit both parameters, as in:

```
D
```

EDLIN deletes only the current line, and the line that follows becomes the current line.

Edit Line

Purpose

Edits a line of text.

Syntax



line

Parameters

line Specifies a line number. Use this parameter by entering a decimal integer from 1 – 65529, a # to specify the line after the last line in storage, or a period (.) to specify the current line.

Remarks

- If you want to edit the line after the current line, press Enter. EDLIN displays the line number and its text, repeating the line number on the line below. When you press Enter, the edited line is placed in the file and becomes the current line.
- If you decide not to save the changed line, press Ctrl+Break or Esc followed by Enter. The original line does not change.
- If you press Enter with the cursor at the beginning of the line, it has the same effect as pressing Ctrl+Break or Esc followed by Enter.
- If the cursor is in any position other than the beginning or the end of a line, pressing Enter erases the rest of the line.
- The F2 key displays all the characters in a command up to the character you type after pressing this key.
- Pressing the “cursor right” arrow displays and skips over characters the user does not want to change.

Example

Assume that you want to edit line 6. The following appears on the screen:

```
*6
  6: This is a sample unedited line.
  6: _
```

The first line is your request to edit line 6, followed by the two-line display response.

If you want to move the cursor to the letter **u**, press F2 and Enter:

```
u
```

The result is:

```
*6
  6: This is a sample unedited line.
  6: This is a sample_
```

If you want to delete the next two characters and keep the remainder of the line, press Del twice; then press F3.

The result is:

```
*6
  6: This is a sample unedited line.
  6: This is a sample edited line._
```

Now you can take one of the following actions:

- Press Enter to save the changed line.
- Extend the changed line by typing more text. You are automatically in insert mode when the cursor is at the end of a line.
- Press Esc followed by Enter or Ctrl+Break to cancel the changes you made to the line. EDLIN preserves the original contents of the line.

E

(End Edit)

Purpose

Ends EDLIN and saves the edited file.

Syntax

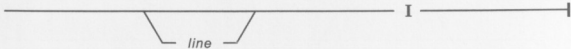
_____ E _____

Remarks

- EDLIN saves the edited file with the filename you specified when you started EDLIN and returns to the command prompt.
- If you updated an existing file, EDLIN gives the original file (the file you specified when you started EDLIN) a .BAK filename extension. EDLIN erases this original backup copy (.BAK) of the file when you issue the E (End Edit) command. If you created a new file instead of updating an old file, EDLIN does not create a .BAK file.
- Make sure your disk has enough free space to save the complete file. If your disk does not have enough free space, EDLIN only saves a portion of the file. The portion in storage that is not written to disk is lost. Here, your original file is not renamed to .BAK, and the portion of data that was written to disk has a filename extension of .\$\$\$.
- EDLIN appends a carriage return, line feed sequence to the end of the file, if it was not already present, to delimit the last line of text in the file. Also, a Ctrl+Z character is added as the last character in the saved file. This serves as an end-of-file mark.

Purpose

Inserts lines of text.

Syntax**Parameters**

line Specifies a line number. Use this parameter by entering a decimal integer from 1–65529, a # to specify the line after the last line in storage, or a period (.) to specify the current line.

Remarks

- When you create a new file, you must enter the Insert Lines command before you can insert text.
- If you do not specify a line, or if you specify a line as a period (.), the insert is made immediately before the current line.
- If the line number you specify is greater than the highest existing line number, or if you specify # as the line number, the insertion is made after the last line in storage.
- EDLIN displays the correct line number so that you can enter more lines. Press Enter to end each line.
- Press Ctrl+Break to stop inserting lines.
- The line that follows the inserted lines becomes the current line.

Example

The following inserts text before line 3:

```
3I
```

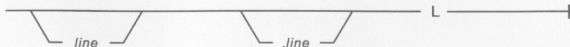
L

(List Lines)

Purpose

Displays lines of text.

Syntax



Parameters

line Specifies a line number. Use this parameter by entering a decimal integer from 1–65529, a # to specify the line after the last line in storage, or a period (.) to specify the current line.

Remarks

- This command displays a specified range of lines, leaving the current line unchanged.
- If the specified line is more than 11 lines before the current line, the display is the same as if you omitted both parameters.
- The examples in this section were written for systems with 25-line displays. Results differ using DOS 4.00 on variable length display terminals.
- If you display lines of text over the amount of lines on your display, EDLIN asks you if you want to continue with the listing. Enter a Y to continue or enter an N to end the listing.

Examples

If you want to display a range of lines from 3 through 9, Enter:

```
3,9L
```

If you omit the first parameter, as in:

,15L

the display starts 11 lines before the current line and ends with line 15. The beginning comma is required to show the omitted first parameter.

If you omit the second parameter, as in:

3L or 3,L

EDLIN displays 24 lines of the file, starting with line 3.

If you omit both parameters, as in:

L

EDLIN displays a total of 24 lines (11 lines before the current line, the current line, and 12 lines after the current line). If 11 lines do not exist before the current line, EDLIN displays extra lines after the current line to make a total of 24 lines.

M

(Move Lines)

Purpose

Moves lines of text.

Syntax

_____ *line*, _____ *line*, _____ *line M* _____ |

Parameters

line Specifies a line number. Use this parameter by entering a decimal integer from 1 – 65529, a # to specify the line after the last line in storage, or a period (.) to specify the current line.

Remarks

- Use this command to move a block of data from one location in the file to another.
- This command moves the lines in the specified range to the line number specified by the third *line* parameter.
- If you do not specify a range (the first and second *line* parameters), the default is the current line.
- The first of the moved lines becomes the current line.
- You can use the - and + characters.
- If you overlap the *line* parameters, EDLIN displays an entry error.

Example

The following example moves data from the current line plus 25 lines to line 100:

```
,+25,100M
```

Purpose

Lists a specified block of lines.

Syntax

```
_____ P _____  
  \   /      \   /  
   line      ,line
```

Parameters

line Specifies a line number. Use this parameter by entering a decimal integer from 1 – 65529, a # to specify the line after the last line in storage, or a period (.) to specify the current line.

Remarks

- This command pages through a file displaying 24 lines at a time. It differs from the List Lines command because it changes the current line.
- If you omit the first *line* parameter, it defaults to the current line plus one.
- If you omit the second *line* parameter, 24 lines are listed. The new current line becomes the last line displayed by the Page command and is marked with an asterisk.
- If you display blocks of text over the amount of lines on your display, EDLIN asks you if you want to continue with the listing. Enter a Y to continue or enter an N to end the listing.

Q (Quit Edit)

Purpose

Quits the file you are editing without saving any changes that you might have entered.

Syntax

_____ Q _____|

Remarks

- EDLIN prompts you with the message "Abort edit (Y/N)?" to make sure that you do not want to save any changes.
- Enter a Y if you want to quit the editing session. No editing changes are saved and no .BAK file is created. Refer to the End Edit command for information about the .BAK file.
- Enter an N, or any other character, if you want to continue the editing session.

Examples

When you type the letter Q, the following is displayed:

```
Q
Abort edit (Y/N)?
```

Purpose

Replaces words or lines of text.

Syntax

line *,line* *?* R *string* *Ctrl+Z string*

Parameters

line Specifies a line number. Use this parameter by entering a decimal integer from 1–65529, a # to specify the line after the last line in storage, or a period (.) to specify the current line.

? Requests a prompt “O.K.?” after each display of a changed line. Enter a Y or press Enter to keep the change; press any other character if you don’t want to keep the change. In either case, the search continues for further occurrences of the first string within the range of lines, including multiple occurrences within the same line.

string Specifies when to enter one or more characters to represent text to be replaced, deleted, or to replace other text.

CTRL+Z The first string begins with the character in the position immediately following the R command, and continues until you press Ctrl+Z or the F6 key (or Enter if the second string is omitted). The second string begins immediately after you press Ctrl+Z or F6 and continues until you press Enter.

Remarks

- Replaces all occurrences of the first string, in the specified range of lines, with the second string.
- EDLIN displays the changed lines each time they are changed. The last line changed becomes the current line.

R

(Replace Text)

- If you omit the second string, Replace Text deletes all occurrences of the first string within the specified range of lines. If you omit both strings, EDLIN re-uses the search string entered with the most recent (previous) S (Search Text) or R (Replace Text) command, and the Replace Text string entered with the last R (Replace Text) command.
- This command uses the F6 key as normally set up by DOS. If you have changed the meaning of the F6 key, press Ctrl+Z where F6 is referenced to in the following examples.
- Defaults occur if either one or both *line* parameters are missing.
- If you omit the first *line*, the search begins with the line after the current line. If you omit the second *line*, the search ends with the last line in storage. If you omit both *line* parameters, the system searches from the line following the current line to the last line in storage. Strings that are the same as the first string are looked for; that is, if the first string is a combination of uppercase and lowercase letters, only strings with the same characters are replaced.

Examples

Assume that you want to edit the following file. Line 7 is the current line.

```
1: This is a sample file
2: used to demonstrate
3: the Replace and Search Text commands.
4: This includes the
5: optional parameter ?
6: and required string
7:*parameter.
```

To replace all occurrences of **and** with **or** in the lines in storage, proceed with the following:

Type **1,7 Rand**, press Ctrl+Z, type **or**, and press Enter.

R (Replace Text)

The result is:

```
3: the Replace or Search Text commands.  
3: the Replace or Search Text commors.  
6: or required string
```

Line 6 becomes the current line in the file because line 6 was the last line changed. Notice that lines 1, 2, 4, 5, and 7 are not displayed because they were not changed.

Greater selectivity can be achieved by requesting a prompt (by using the ? parameter) after each display of a changed line. If you request a prompt, the display looks like this:

```
*1,7 ? Rand (Press F6, type or, and press Enter)  
3: the Replace or Search Text commands  
O.K.? Y  
3: the Replace or Search Text commors  
O.K.? N  
6: or required string  
O.K.? Y  
*
```

Lines 3 and 6 are displayed like this:

```
3: the Replace or Search Text commands.  
6: or required string
```

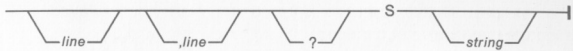
S

(Search Text)

Purpose

Searches a specified range of lines to find a specified string.

Syntax



Parameters

- line* Specifies a line number. Use this parameter by entering a decimal integer from 1 – 65529, a # to specify the line after the last line in storage, or a period (.) to specify the current line.
- ?* Specify the optional parameter ? if you would like a prompt (O. K.?) after each display of a line containing the specified string.
- string* Specifies when you must enter one or more characters to represent text to be replaced, deleted, or to replace other text.

Remarks

- The first line to contain the specified string is displayed and the search ends (unless you use the ? parameter). The first line found that contains the specified string becomes the current line.
- The Search command always searches for the exact same character in text. That is, it searches for uppercase if you enter uppercase, and lowercase if you enter lowercase.

S (Search Text)

- If you do not enter a string, the S command uses the last search string entered on a Replace or Search command. If the specified string is not found, the search ends and the message "Not found" is displayed. The current line remains unchanged. If you enter Y or press Enter, the line that matches the specified string becomes the current line and the search ends. Enter any other character to continue the search until another string is found, or until all lines within the range are searched. Once all the lines within the range are searched, the "Not found" message is displayed.
- The system provides default values if you omit the first, second, or both line parameters. If you omit the first line parameter, the system defaults to the line following the current line. If you omit the second line parameter, the system defaults to the last line in storage. If you omit both line parameters, the system searches from the line following the current line to the last line in storage.
- The string begins with the character in the position immediately following the S and continues until you end the string by pressing Enter.
- If you wish to place more than one command on a line containing a Search Text command, the Search Text command should end in a Ctrl+Z (F6), and the next command should begin in the following character position.

Examples

Assume that you want to edit the following file. Line 7 is the current line.

```
1: This is a sample file
2: used to demonstrate
3: the Search Text command.
4: This includes the
5: optional parameter ?
6: and required string
7:*parameter.
```

S

(Search Text)

If you want to search for the first occurrence of **and** in the file, Enter:

```
1,7 Sand
   or
1, Sand
   or
1Sand
```

The result is:

```
3:* the Search Text command.
*
```

The **and** is part of the word **command**. Notice that line 3 becomes the current line in the file.

Perhaps this is not the **and** you were looking for. To continue the search, enter the letter S and press Enter. The search continues with the line following the current line (the line just found).

The display looks like this:

```
*1,7 Sand
   3: the Search Text command.
*S
   6: and required string
*
```

Line 6 now becomes the current line in the file.

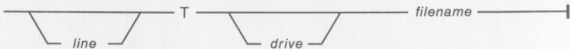
You can also search for strings by requesting a prompt (with the ? parameter) after each display of a matching line. Here, the display looks like this:

```
*1,7 ? Sand
   3: the Search Text command.
O.K.? N
   6: and required string
O.K.? Y
*
```

Purpose

Transfers (merges) the contents of a specified file into the file currently being edited.

Syntax



Parameters

line Specifies a line number. Use this parameter by entering a decimal integer from 1 – 65529, a # to specify the line after the last line in storage, or a period (.) to specify the current line.

Remarks

- The *filename* contents are inserted ahead of the *line* in the file being edited. If *line* is omitted, the current line is used.
- The file being merged is read from the current directory of the specified or default drive. If a path was specified when you issued the EDLIN command, that path becomes the current directory for that drive for the duration of the EDLIN session, and any Transfer Lines commands for that drive must be satisfied from the same directory.

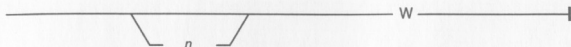
W

(Write Lines)

Purpose

Writes a specified number of lines to disk from the lines being edited in storage. Lines are written beginning with line number 1.

Syntax



Parameters

n Specifies the number of lines that you want to write to a disk or load from a disk.

Remarks

- This command is only significant if the file you are editing is too large to fit in storage. When you start EDLIN, it reads lines into storage until storage is 75% full.
- EDLIN erases the original backup copy (.BAK) of the file if the disk space is required during the editing session to satisfy a Write Lines (W) command.
- To edit the remainder of the file not in storage, you must write edited lines in storage to disk. You can then load additional unedited lines from disk into storage by using the Append Lines command.
- If you do not specify the number of lines, they are written until 25% of available storage is used. No action is taken if available storage is already less than 25% used. All lines are renumbered so that the first remaining line becomes number 1.

Appendix B. Accented Characters

This appendix shows you the accented characters obtainable with each keyboard and code page combination for the countries supported by DOS.

Non-escaping Key Combinations

You can get accented characters with the use of non-escaping key combinations ("dead keys"); that is, keys that do not produce characters unless they are used in combination with another key. To "build" an accented character, press and release the accent key and then press the appropriate letter key. To use the accent character by itself, press the accent key; then press the spacebar.

The following is a listing by country of allowable non-escaping key combinations. Italy, the United Kingdom, and the United States do not have accented characters available from the keyboard.

France (AT and Enhanced Keyboards)

437: `áâëïóüÿ æéò`
850: `áâëÿíóüÿ äÅïòü`

Germany (AT and Enhanced Keyboards)

437: `äéíóü æèìð`
850: `áâëÿíóü äÅëÿíòðü`

Spain (AT and Enhanced Keyboards)

850: `áâëÿíóü äÅëÿíòðü äÅëÿíòüÿ äÅëÿíòü ñÑãÃõ`

Belgium (AT Keyboards: See France)

Belgium (Enhanced Keyboard)

850: `áâëÿíóü äÅëÿíòðü äÅëÿíòüÿ äÅëÿíòü ñÑãÃõ`

Norway and Denmark (AT Keyboard)

865: `áéíóü æèìð äÅëíòüÿ æéò`
850: `áâëÿíóüÿ äÅëÿíòðü äÅëÿíòüÿ äÅëÿíòü`

Norway and Denmark (Enhanced Keyboard)

865: Same combinations as AT keyboard plus ñÑ

850: Same combinations as AT keyboard plus ñÑãÃõÕ

Finland and Sweden (AT Keyboard)

437: äéÉíóú æëïðü åÄëÿöüÿý æëïðü

850: äÄéÉííóóóóýý äÄëËÿÿööüü äÄëËÿÿööüü äÄëËÿÿööüü

Finland and Sweden (Enhanced Keyboard)

437: Same combinations as AT keyboard plus ñÑ

850: Same combinations as AT keyboard plus ñÑ

Portugal (AT keyboard: Uses U.S. AT Keyboard)

Portugal (Enhanced Keyboard)

860: äÄéÉííóóóóüü äÄëËÿÿööüü üÜ äÄëËöÖ äÄöÖñÑ

850: äÄéÉííóóóóýý äÄëËÿÿööüü äÄëËÿÿööüü äÄëËÿÿööüü äÄöÖñÑ

Canadian French (AT and Enhanced Keyboards)

863: éÉóó äÄëËüÜ æËÿÿüÜ äÄëËÿÿööüü çÇ

850: äÄéÉííóóóóýý äÄëËÿÿööüü äÄëËÿÿööüü äÄëËÿÿööüü çÇ

Swiss French and Swiss German (AT and Enhanced Keyboards)

437: äéÉíóú æëïðü åÄëÿöüÿý æëïðü ñÑ

850: äÄéÉííóóóóýý äÄëËÿÿööüü äÄëËÿÿööüü äÄöÖñÑ

Latin America (AT keyboard: See Spain)

Latin America (Enhanced Keyboard)

437: äéÉíóú æëïðü åÄëÿöüÿý æëïðü

850: äÄéÉííóóóóýý äÄëËÿÿööüü äÄëËÿÿööüü äÄëËÿÿööüü

Netherlands (AT keyboard: Uses U.S. AT Keyboard)

Netherlands (Enhanced Keyboard)

437: äéÉíóú æëïðü åÄÿöüÿý æëïðü ñÑ çÇ

850: äÄéÉííóóóóýý äÄëËÿÿööüü äÄëËÿÿööüü äÄëËÿÿööüü äÄöÖñÑ çÇ

Appendix C. System Code Pages

The alphanumeric, graphic, and control characters contained in the system code pages supported by DOS are shown on the following pages. If your system has been set up for code page switching, you can switch to an alternate code page. For an explanation of code page switching, refer to "Using Code Page Switching" on page 153.

Note: The following tables express the hexadecimal number of the characters in each code page. If you position the code page so that you can properly read the table, the top row of numbers shows the first digit of the hexadecimal number; the side column of numbers shows the second digit of the number. For example, to find the character 4D in code page 863 (Canadian-French), look for "4-" in the top row and "-D" in the side column. The box where they meet is the character; in this case, an "M."

Code Page 437

1- 2- ↓	0-	1-	2-	3-	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
	☺	◀	ı	0	@	P	'	p	Ç	É	á	⋮	┌	⌌	α	≡
-0		▶		1	A	Q	a	q	Ü	È	â	⋱	└	⌍	β	±
-1	☹	▶	ı	2	B	R	b	r	é	Æ	ó	⋲	┘	⌎	Γ	≥
-2	☹	↑	"	3	C	S	c	s	â	ô	ù	|	┐	⌏	π	≤
-3	♥	||	#	4	D	T	d	t	â	ö	ñ	┌	└	⌐	Σ	f
-4	♦	¶	\$	5	E	U	e	u	à	ó	Ñ	└	┐	⌑	σ	∫
-5	♣	§	%	6	F	V	f	v	á	ù	ã	└	┐	⌒	μ	÷
-6	♠	—	&	7	G	W	g	w	ç	ú	¿	└	┐	⌓	τ	≈
-7	•	↕	'	8	H	X	h	x	ê	ÿ	¿	└	┐	⌔	Φ	◦
-8	■	↑	(	9	I	Y	i	y	ë	ÿ	¿	└	┐	⌕	Θ	•
-9	○	↓	)		J	Z	j	z	è	Û	┌	┐	└	⌖	Ω	•
-A	◉	→	*		K	[	k	{	é	Ü	┌	┐	└	⌗	∞	√
-B	♂	←	+		L	\	l	|	í	ú	┌	┐	└	⌘	∅	²
-C	♀	└	,		M	|	m	}	î	£	┌	┐	└	⌙	∅	²
-D	♫	↔	-		N	^	n	~	ï	¥	┌	┐	└	⌚	ε	■
-E	♫	▲	.		O	_	o	△	ä	ƒ	┌	┐	└	⌛	ε	■
-F	☀	▼	/						Å	f	┌	┐	└	⌜	∅	■

Code Page 850 (Multilingual)

1 →	0-	1-	2-	3-	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
2 ↓		▶	◀	0	@	P	'	p	Ç	É	á	▤	└	ø	ó	.
	☺	◀	ı	1	A	Q	a	q	Ç	É	á	▤	└		ó	.
-1	☺	▶	"	2	B	R	b	r	é	Æ	í	▤	└	ê	ß	±
-2	☹	↕	#	3	C	S	c	s	â	ø	ó	▤	└	ê	ô	=
-3	♥	!!	\$	4	D	T	d	t	ä	ö	ú	▤	└		ô	¼
-4	♦	¶	%	5	E	U	e	u	à	ò	ñ	└	└	È	ö	¶
-5	♣	§	&	6	F	V	f	v	â	û	Ñ	└	└	É	ö	§
-6	♠	—	'	7	G	W	g	w	ç	ù	¿	À	└	Í	µ	÷
-7	•	↕	(	8	H	X	h	x	ê	ÿ	¿	À	└	Í	µ	÷
-8	◼	↑	)	9	I	Y	i	y	ë	ÿ	¿	À	└	Í	µ	÷
-9	○	↓	)	9	I	Y	i	y	ë	ÿ	¿	À	└	Í	µ	÷
-A	◉	→	*	:	J	Z	j	z	è	ÿ	¿	À	└	Í	µ	÷
-B	♂	←	+	;	K	[	k	{	ì	ÿ	¿	À	└	Í	µ	÷
-C	♀	└	,	<	L	\	l	|	í	ÿ	¿	À	└	Í	µ	÷
-D	♫	↔	.	=	M	^	m	}	î	ÿ	¿	À	└	Í	µ	÷
-E	♫	▲	.	>	N	~	n	~	ï	ÿ	¿	À	└	Í	µ	÷
-F	☀	▼	/	?	O	_	o	△	Ä	f	»	└	▣	'		

Code Page 860 (Portuguese)

1 2 ↓	0-	1-	2-	3-	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
☺	▶	◀	0	@	P	'	p	Ç	É	Á	à	▤	▥	▦	α	≡
☹	◀	▶	1	A	Q	a	q	ü	Ê	À	í	▧	▨	▩	β	±
☹	↕	↕	2	B	R	b	r	é	Ê	ô	ó	▫	▬	▭	Γ	≥
♥	!!	!!	3	C	S	c	s	ã	â	õ	ñ	▮	▯	▰	π	≤
♦	¶	¶	4	D	T	d	t	ä	ô	ö	ñ	▱	▲	△	Σ	ƒ
♣	§	§	5	E	U	e	u	á	ó	õ	Ñ	▴	▵	▶	σ	∫
♠	—	—	6	F	V	f	v	Á	Ú	ú	̄	▷	▸	▹	μ	÷
•	↕	↕	7	G	W	g	w	ç	ù	ú	̇	▸	▹	►	τ	≈
■	↑	↑	8	H	X	h	x	ê	î	ï	¿	▹	►	▻	Φ	°
○	↑	↑	9	I	Y	i	y	Ê	Ï	Ö	Û	▻	▼	▽	Θ	•
◐	→	→	:	J	Z	j	z	é	Ü	Ü	̄	▽	▾	▿	Ω	•
♂	←	←	;	K	[	k	{	î	Í	í	½	▾	▿	▹	∂	√
♀	└	└	<	L	\	l	|	Ô	£	£	¼	▿	▹	►	∞	∞
♫	↔	↔	=	M	^	m	}	ï	Û	Û	½	▹	►	▻	φ	²
♫	▶	▶	>	N	~	n	~	Ã	Pt	Pt	»	▹	►	▻	ε	■
☀	▼	▼	?	O	_	o	△	Â	Ó	Ó	»	▹	►	▻	η	

Code Page 863 (Canadian-French)

1 →	0-	1-	2-	3-	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
2 ↓					@	P	'	p	Ç	É	Í	▤	└	┘	α	≡
↓	☺	▶	ı	0	A	Q	a	q	ü	È	ı	▥	┌	═	β	±
-0	☹	↕	"	1	B	R	b	r	é	Ê	ó	▧	└	≡	Γ	±
-1	♠	ııı	#	2	C	S	c	s	â	Ë	ú	|	└	≡	π	≤
-2	♣	¶	\$	3	D	T	d	t	â	Ě	»	└	└	≡	Σ	ƒ
-3	♠	§	%	4	E	U	e	u	à	ı	»	└	└	≡	σ	÷
-4	♣	—	&	5	F	V	f	v	á	ı	»	└	└	≡	μ	ƒ
-5	♠	ıı	'	6	G	W	g	w	ç	ı	»	└	└	≡	τ	≈
-6	♣	↕	(	7	H	X	h	x	ê	ı	»	└	└	≡	Φ	°
-7	♠	↕	)	8	I	Y	i	y	ë	ı	»	└	└	≡	⊕	•
-8	♣	↕	*	9	J	Z	j	z	é	ı	»	└	└	≡	Ω	•
-9	♠	↕	+		K	[	k	{	è	ı	»	└	└	≡	δ	√
-A	♣	↕	,		L	\	l	|	ı	ı	»	└	└	≡	∞	√
-B	♠	↕	<		M	^	m	}	=	ı	»	└	└	≡	∅	√
-C	♣	↕	=		N	~	n	~	À	ı	»	└	└	≡	ε	√
-D	♠	↕	>		O	—	o	—	Á	ı	»	└	└	≡	η	√
-E	☺	▶	?						Š	ı	»	└	└	≡	η	■
-F	☹	▶								ı	»	└	└	≡		

Code Page 865 (Nordic)

1 [↑] 2 [↓]	0-	1-	2-	3-	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
	☺	◀	!	0	@	P	'	p	Ç	Ê	á	⋮	┌	≡	α	≡
-1	☹	▶	"	1	A	Q	a	q	ü	æ	í	⋮	└	≠	β	±
-2	☹	↕	#	2	B	R	b	r	é	Æ	ó	⋮	┘	≡	Γ	≥
-3	♥	!!	\$	3	C	S	c	s	â	ô	ù	┘	└	≡	π	≤
-4	♦	¶	§	4	D	T	d	t	ä	ö	ñ	┘	└	≡	Σ	ƒ
-5	♣	§	%	5	E	U	e	u	à	ò	Ñ	┘	└	≡	σ	ƒ
-6	♠	—	&	6	F	V	f	v	â	û	ë	┘	└	≡	μ	÷
-7	•	↕	'	7	G	W	g	w	ç	ù	¿	┘	└	≡	τ	≈
-8	■	↑	(	8	H	X	h	x	ê	ÿ	¿	┘	└	≡	Φ	°
-9	○	↓	)	9	I	Y	i	y	ë	ÿ	¿	┘	└	≡	Θ	•
-A	☉	→	*	:	J	Z	j	z	è	Û	¿	┘	└	≡	Ω	•
-B	♂	←	+	;	K	[	k	{	ï	ø	½	┘	└	≡	δ	√
-C	♀	└	,	<	L	\	l	|	î	£	¼	┘	└	≡	∞	√
-D	♯	↔	-	=	M	|	m	}	ï	∅	¼	┘	└	≡	φ	2
-E	♯	▲	.	>	N	^	n	~	Ä	Pt	¼	┘	└	≡	ε	■
-F	☼	▼	/	?	O	_	o	△	Å	f	¼	┘	└	≡	η	■

Appendix D. Messages

This appendix contains an alphabetic listing of all the messages associated with DOS. **Bold** type indicates the message and the cause and action statements follow the message.

The first word in the cause of each message is the name of the program or command that generated the message. Sometimes, the message is generated by several different programs or commands. In this case, the first word is "COMMAND." When an internal DOS command generates the message, the first word is "DOS."

If the first part of the message contains a network number, NET###, refer to the *IBM PC Network Program* or the *IBM PC Local Area Network Program* for the cause and action of the message.

Responses

When DOS displays any device error messages, the system waits for you to select a response. Depending on the type of error, not all these choices appear. If you know what caused the problem, take corrective action before choosing a response. The system waits until you make one of the following responses.

To recover from an error condition, make the responses in the following order:

- R** **Retry** the operation because the error may not occur again. The system tries the read or write operation again. We strongly recommend that you use this response first.
- A** **Abort** the program. The system ends the program that requested the read or write operation.
- F** **Fall** the current DOS system call and continue processing the program. Be careful when choosing this response if there is risk of damage to data.
- I** **Ignore** the error condition and continue the program. (Be careful when choosing this response because you may lose data.) The system is unable to determine if the condition is unsafe.

When DOS detects an error during reading or writing to any of the devices (disk drives, printer, and so on) on your system, it displays a message in the following format:

```
<type> error reading <device>  
Abort, Retry, Ignore, Fail?
```

or

```
<type> error writing <device>  
Abort, Retry, Ignore, Fail?
```

In these messages, *<device>* is the name of the device in error, such as PRN or B:, and *<type>* is one of the types listed on the following pages. The options (Abort, Retry, Ignore, or Fail) are related to a specific error message displayed. A diskette error may display the following message: "Abort, Retry, Fail?." The "Ignore" option is not displayed.

Extended and Parse Errors

If you install DOS on a fixed disk (drive C) using the default values of SELECT, the SHELL command in your CONFIG.SYS file should look like this:

```
SHELL=C:\DOS\COMMAND.COM /P /E:256
```

The /MSG parameter is recommended on diskette-drive-only systems. The SHELL command in your CONFIG.SYS file should look like this:

```
SHELL=C:\DOS\COMMAND.COM /MSG /P /E:256
```

The /MSG parameter causes the system to retain the text for all DOS parse and extended error messages in memory. DOS allows this /MSG parameter only if the /P parameter is also present. If you do not specify /MSG, DOS reads these messages from your disk each time they are displayed.

If COMMAND.COM cannot be read (COMSPEC = not set correctly or diskette missing from drive), DOS displays one of the following messages:

Extended Error *x*

or

Parse Error *x*

x representing the number that corresponds to the error message.

You can find the cause and action of these messages in alphabetic order on the following pages. If you decide not to select the /MSG parameter for the SHELL command, the following is the list of the extended error messages with their corresponding numbers:

- 1 - Invalid Function
- 2 - File not found
- 3 - Path not found
- 4 - Too many open files
- 5 - Access denied
- 6 - Invalid handle
- 7 - Memory control blocks destroyed
- 8 - Insufficient memory
- 9 - Invalid memory block address
- 10 - Invalid Environment
- 11 - Invalid format
- 12 - Invalid function parameter
- 13 - Invalid data
- 15 - Invalid drive specification
- 16 - Attempt to remove current directory
- 17 - Not same device
- 18 - No more files
- 19 - Write protect error
- 20 - Invalid unit
- 21 - Not ready
- 22 - Invalid device request
- 23 - Data error
- 24 - Invalid device request parameters
- 25 - Seek error

- 26 - Invalid media type
- 27 - Sector not found
- 28 - Printer out of paper error
- 29 - Write fault error
- 30 - Read fault error
- 31 - General failure
- 32 - Sharing violation
- 33 - Lock violation
- 34 - Invalid disk change
- 35 - FCB unavailable
- 36 - System resource exhausted
- 38 - Out of input
- 39 - Insufficient disk space
- 80 - File exists
- 82 - Cannot make directory entry
- 83 - Fail on INT 24
- 84 - Too many redirections
- 85 - Duplicate redirection
- 86 - Invalid password
- 87 - Invalid parameter
- 88 - Network data fault
- 90 - Required system component not installed

If you decide not to select the /MSG parameter for the SHELL command, the following is the list of the parse error messages with their corresponding numbers:

- 1 - Too many parameters
- 2 - Required parameter missing
- 3 - Invalid switch
- 4 - Invalid keyword
- 6 - Parameter value not in allowed range
- 7 - Parameter value not allowed
- 8 - Parameter value not allowed
- 9 - Parameter format not correct
- 10 - Invalid parameter
- 11 - Invalid parameter combination

A

Abort edit (Y/N)?

Cause: EDLIN. You specified the Q command to quit the edit.

Action: Enter a Y to end the edit, or enter an N to continue editing the file.

Access denied

Cause: COMMANDS. Processing the requested command violates the access mode of the file, subdirectory, or device.

For example:

- You attempted to write to a file marked read-only, or read a file that is write-only.
- You attempted to open a subdirectory as a file.

Action: Use a different filename or, if the file is read-only and you need to use that file, change its attribute with the ATTRIB command.

Active code page: xxx

Cause: CHCP. Information message. This is the code page that DOS is using. It may not be the same code page currently being used by all attached devices.

Action: No action required.

Active code page for device ddd is nnn

Cause: MODE. Information message.

Where:

ddd = device name

nnn = numeric ID of the active code page

In response to a MODE command code page status request, the indicated device has been started to use the indicated code page.

Action: No action required. If the desired code page is not the active one, you can use the MODE SELECT function to change the specification, if the new code page has been defined for the device by an appropriate MODE PREPARE command.

Active code page not available from CON device

Cause: KEYB. Information message. The KEYB status function was requested, but KEYB could not determine the loaded CON code page. Either the code page switching CON driver has not been installed, or there is no currently loaded CON code page.

Action: No action required.

Adapter error:

Expanded Memory Manager has NOT been installed

Cause: XMA2EMS.SYS. During the diagnostics for the EMS-capable hardware adapter, a hardware error occurred that DOS cannot repair. The XMA2EMS.SYS device driver has not been installed.

Action: Contact your authorized IBM representative.

Add filename (Y/N)?

Cause: REPLACE. Because you specified the /P parameter, DOS prompts you before it adds each file.

Action: Enter a Y or an N at the command prompt.

Adding filename

Cause: REPLACE. Information message indicating which file REPLACE is currently adding.

Action: No action required.

All available space in the Extended DOS Partition is assigned to logical drives.

Cause: FDISK. All the space in the extended partition has been assigned to drives.

Action: Remove or reduce the size of the existing logical drives and run FDISK again to create a logical drive.

All files canceled by operator

Cause: PRINT. Information message indicating that you used the PRINT command with the /T parameter to cancel the printing of all queued files. This message appears on the printer.

Action: No action required.

All files in directory will be deleted!

Are you sure (Y/N)?

Cause: ERASE. You have tried erasing all files in a directory.

Action: Enter a Y to erase all files in the directory or enter an N if you do not want to erase the files.

All logical drives deleted in the Extended DOS Partition.

Cause: FDISK. There are no more logical drives defined in the extended DOS partition.

Action: Delete the extended DOS partition if you no longer need it on the fixed disk.

All specified file(s) are contiguous

Cause: CHKDSK. Information message. The file or files you named are all written sequentially on the disk.

Action: No action required.

Allocation error, size adjusted

Cause: CHKDSK. A filename precedes this message. The file size as indicated by the directory is different from the file size indicated by the number of clusters allocated to the file. The directory file size can either be too small or too large.

Action: If you specified the /F parameter, the new file size is changed to the number of clusters in the file times the number of bytes per cluster. To correct the file size, Enter:

CHKDSK /F

xxxx allocation units available on disk

xxxx bytes in each allocation unit

Cause: FORMAT. Information message indicating how many units are left to allocate for disk space and how many bytes are in each allocation unit.

Action: No action required.

ANSI.SYS must be installed to perform requested function

Cause: MODE. The requested screen function requires the extended support of ANSI.SYS.

Action: Add DEVICE=ANSI.SYS to your CONFIG.SYS file and restart DOS.

APPEND already installed

Cause: APPEND. You invoked the external version of APPEND more than once. Once APPEND is resident, you can only use the internal version.

Action: Load APPEND without a leading drive or directory specification so that the internal version processes.

APPEND / ASSIGN Conflict

Cause: APPEND. You have loaded the ASSIGN command before you loaded APPEND. You must load APPEND first if you wish to load both APPEND and ASSIGN.

Action: Change your startup procedure to load APPEND first.

APPEND / TopView Conflict

Cause: APPEND. You did not load TopView and APPEND in the correct order.

Action: Exit TopView, reload APPEND, and re-enter TopView.

Attempt to remove current directory

Cause: COMMANDS. You attempted to remove a directory that is the current directory on one of the drives you are using. You cannot remove a directory while it is the current directory.

Action: You must get out of the directory and erase the contents before you can remove the directory. Make sure that the directory is not JOINed or SUBSTed.

Attempting to recover allocation unit x

Cause: FORMAT. This information message lets you know that FORMAT is trying to recover bad clusters. It is displayed during the format process directly over the "x percent of disk formatted" message.

Action: No action required. Once FORMAT has resolved all bad sectors for a track, the "x percent of disk formatted" message is displayed once again.

B

/B invalid with a black and white printer

Cause: GRAPHICS. You tried to print background color on a black and white printer. You cannot use the /B parameter.

Action: No action required.

***** Backing up files to drive d *****

Cause: BACKUP. Information message indicating the drive where the backup files are located.

Action: No action required.

Bad command or filename

Cause: COMMANDS. The command you entered is not a valid DOS command.

Action:

- Check the spelling of the command and re-enter it.
- If you spelled the command name correctly, make sure that the default drive contains the external command or batch file you are trying to process.

Bad command or parameters

Cause: IBMBIO. As DOS read and interpreted the commands within the CONFIG.SYS file, it identified a bad command or parameter.

Action: Edit the CONFIG.SYS file and correct the statement where the error occurred.

Bad or missing Command Interpreter

Cause: DOS. This message suggests one of the following:

- The disk that you are starting DOS from does not contain a copy of COMMAND.COM, or an error occurred while DOS was loading the disk.
- COMMAND.COM has been removed from the directory it was in originally when you started DOS.
- The COMSPEC= parameter in the environment points to a directory not containing COMMAND.COM, and DOS is trying to reload the command processor.
- The value used to set the environment did not fall within the specified range of 160 through 32768.

- The SHELL command in the CONFIG.SYS file contains a syntax error.

Action: Select the correct value to set the environment size, check the syntax of the SHELL command, or restart DOS (press and hold the Ctrl + Alt keys; then press the Del key). If the system reset fails to solve the problem, start DOS with your backup DOS diskette, and copy COMMAND.COM from the backup diskette to the root directory of the disk that failed.

Bad or missing Keyboard Definition File

Cause: KEYB. The KEYBOARD.SYS file could not be found, contained invalid data, or is in the wrong subdirectory.

Action: Make sure that the specified KEYBOARD.SYS file exists and is in the appropriate subdirectory. If the file exists, get a new KEYBOARD.SYS file from the original DOS diskette.

Bad Partition Table

Cause: FORMAT. The partition table of the fixed disk does not have a DOS partition or the partition table is invalid.

Action: Load FDISK, set up a new DOS partition on the fixed disk, and retry the FORMAT command.

Batch file missing

Cause: DOS. DOS cannot find the batch file it was processing. The file may have been erased or renamed by one of the steps within it or the current drive may have been changed within the batch file, and the batch processor can no longer find the .BAT file used by your PATH. Batch processing stops and the command prompt appears.

Action:

- If the filename was changed, correct the command that changed the name.
- If the file was erased, use your backup copy. If you used EDLIN to create the file or make changes, rename the .BAK file to .BAT. Correct the command that deleted the file.
- Include the drive letters in the PATH.

Baud rate required

Cause: MODE. You tried to start a COM port without entering a baud rate. For example:

```
MODE COM1 PARITY=n DATA=8
```

Action: Re-enter the appropriate format specifying a baud rate.

BREAK is on|off

Cause: BREAK. This message shows the status of BREAK, either ON or OFF.

Action: Enter the command you want. For example, if the screen shows "Break is off" and you want "Break is on," enter the command:

```
BREAK ON
```

Buffer size adjusted

Cause: VDISK. Information message. VDISK found it necessary to adjust the buffer size value in the DEVICE=VDISK.SYS in the CONFIG.SYS command.

Action: No action required.

Buffer size:

Sector size:

Directory entries:

Transfer size:

Cause: VDISK. Information message. VDISK has successfully installed a virtual disk indicating the virtual disk size, the sector size, the number of directory entries in use, and the maximum transfer size for the virtual disk.

Action: No action required.

xxxxxxx bytes disk space freed

Cause: CHKDSK. Information message. The disk space marked as allocated was not associated with a file. If you used the /F parameter, the space was freed and made available.

Action: No action required.

xxxxxxx bytes disk space would be freed

Cause: CHKDSK. Information message. You didn't specify the /F parameter and answered N to the question, "Convert lost chains to files?"

Action: No action required.

xxxx bytes total disk space
xxxx bytes in bad sectors
xxxx bytes in x hidden files
xxxx bytes in x directories
xxxx bytes in x user files
xxxx bytes in x recovered files
xxxx bytes would be in x recovered files
xxxx bytes available on disk
xxxx bytes in each allocation unit
xxxx total allocation units on disk
xxxx available allocation units on disk

xxxx total bytes memory
xxxx bytes free

Cause: CHKDSK. Information message displaying how the memory in your system is used.

Action: No action required.

xxxxxxx bytes total extended memory
xxxxxxx bytes available extended memory

Cause: MEM. Information message. When a system has extended memory, this command reports the total and available amounts of extended memory on the system.

Action: No action required. You can now determine how much extended memory is being used by your system applications.

C

Cannot CHDIR to root

Cause: CHKDSK. Information message. During its scan of the disk, CHKDSK attempted to CHDIR to the root but failed. A damaged disk caused this failed attempt.

Action: See the documentation that came with your system. If you cannot solve the problem, contact your authorized IBM representative for service.

Cannot CHKDSK a network drive

Cause: CHKDSK. This message indicates one of the following three problems:

- You cannot run CHKDSK against a remote server drive.
- You cannot run CHKDSK against a local drive that you are sharing on the network.
- You cannot run CHKDSK against a local drive on which you are logging network messages.

Action: If the disk is a remote server, you cannot run CHKDSK against it. CHKDSK must be run on the server itself. If the disk is being shared, you must issue two commands: NET PAUSE SRV and NET PAUSE PRT. After these commands are issued, you can run CHKDSK. If the network messages are being logged to your disk, issue the command NET PAUSE RCV (or whatever configuration you started your machine as). Then run CHKDSK. If you wish to restart your network disk activities, issue the commands NET CONTINUE RCV (or whatever configuration you started your machine as), and NET CONTINUE PRT. These commands resume the possibility of any background disk activity.

Cannot CHKDSK a SUBSTed or ASSIGNed drive

Cause: CHKDSK. The SUBST and ASSIGN commands hide disk information which is necessary to CHKDSK.

Action: Remove the substitution and try again.

Cannot create Extended DOS Partition without Primary DOS Partition on disk 1.

Cause: FDISK. You cannot have an extended DOS partition on disk 1 unless a primary DOS partition also exists.

Action: Use FDISK to create a primary DOS partition on disk 1. Leave enough room on the disk to allow space for the extended DOS partition.

Cannot create a zero size partition.

Cause: FDISK. A partition must be a minimum of one cylinder.

Action: Specify a size for the partition of at least one cylinder.

Cannot create Logical DOS Drive without an Extended DOS Partition on the current drive.

Cause: FDISK. There is no extended DOS partition on this drive.

Action: Return to the FDISK Options menu and create an extended DOS partition.

Cannot delete Extended DOS Partition while logical drives exist.

Cause: FDISK. You cannot delete the extended DOS partition while there are logical DOS drives defined in that partition.

Action: Use FDISK to delete all the logical DOS drives in the extended DOS partition.

Cannot delete Primary DOS Partition on drive 1 when an Extended DOS Partition exists.

Cause: FDISK. An extended partition exists on drive 1. You cannot delete the primary DOS partition when there is an extended partition on the same drive.

Action: First delete the extended partition; then delete the primary DOS partition.

Cannot DISKCOMP to or from a network drive

Cause: DISKCOMP. You cannot use DISKCOMP to compare files on a network drive or on a drive that is on your system but is currently being shared on the network.

Action: Use COMP *.* instead of DISKCOMP. If the disk is being shared, you can PAUSE the server, do DISKCOMP, then CONTINUE the server.

Cannot DISKCOPY to or from a network drive

Cause: DISKCOPY. You cannot use DISKCOPY to copy files to or from a network drive or a drive that is on your system but is currently being shared on the network.

Action: Use XCOPY *.* instead of DISKCOPY. You can also use the COPY command to copy individual files instead of the complete diskette. Make sure that you format your diskette. If the disk is being shared, you can PAUSE the server, do DISKCOPY, then CONTINUE the server.

Cannot do binary reads from a device

Cause: COPY. You used the /B parameter with a device name while trying to copy from the device. The copy cannot be processed in binary mode because COPY must be able to detect the end-of-file from the device.

Action: Re-enter COPY and omit the /B parameter or use the /A parameter after the device name.

Cannot edit .BAK file--rename file

Cause: EDLIN. DOS considers files with the extension .BAK to be backup files. You usually do not edit .BAK files because more recent files exist.

Action: If it is necessary to edit the .BAK file, rename the file giving it an extension other than .BAK, copy the file, and give the copy a different filename extension.

Cannot execute BASICA.COM

Cause: BASIC. BASIC cannot find BASICA.COM.

Action: Make sure that BASICA.COM is in the current directory and try again.

Cannot execute x

Cause: COMMANDS. DOS was unable to process the command specified.

Action: Make sure that you do not have a damaged disk and that the file you are processing is a proper .COM or .EXE file.

Cannot FDISK with network loaded.

Cause: FDISK. You cannot format the fixed disk if you loaded the network.

Action: Restart the machine, and run FDISK before the network program is started.

Cannot find adapter:

Expanded Memory Manager has NOT been installed

Cause: XMA2EMS.SYS. During diagnostics, the XMA2EMS.SYS device driver could not locate the IBM hardware adapter capable of EMS.

Action: Make sure that you have one of the following installed on your system:

- IBM 2MB Expanded Memory Adapter
- IBM Personal System/2 80286 Expanded Memory Adapter/A
- IBM Personal System/2 80286 Memory Expansion Option
- Model 80 or other 80386-based systems with the XMAEM.SYS device driver loaded.

Refer to "XMA2EMS.SYS" on page 90 for further information.

Cannot find FORMAT.COM

Cause: BACKUP. Cannot find FORMAT in the current directory or via the path in the environment, or there is not enough memory to load FORMAT.

Action: Insert a formatted diskette and press a key. To restart the backup procedure, abort the current backup procedure. Make sure that the FORMAT command is accessible and reissue the BACKUP command.

Cannot find XMA Emulator device driver: Expanded Memory Manager has NOT been installed

Cause: XMA2EMS.SYS. You are trying to install the XMA2EMS.SYS device driver on your system but you are running it on a 386-based system like the IBM Personal System/2 Model 80.

Action: Specify the XMAEM.SYS device driver before XMA2EMS.SYS in your CONFIG.SYS file. Refer to XMAEM.SYS on page 88 for further information.

Cannot find GRAPHICS profile

Cause: GRAPHICS. DOS cannot find the GRAPHICS.PRO file.

Action: Specify the path to the GRAPHICS.PRO file or DOS looks in the current directory.

Cannot find System Files

Cause: COMMANDS. Hidden files IBMBIO.COM and/or IBMDOS.COM were not found on the current drive.

Action: Change the current drive to one that has the system files in the root and try again.

Cannot FORMAT a network drive

Cause: FORMAT. You cannot use the FORMAT command to format a network drive or a drive on your system being shared on the network.

Action: If the drive is being shared, you can PAUSE the server, do FORMAT, then CONTINUE the server.

Cannot format an ASSIGNED or SUBSTed drive.

Cause: FORMAT. You ran an ASSIGN or SUBST command before you used FORMAT.

Action: Process ASSIGN to restore the original drive letter assignment; then proceed with the FORMAT command.

Cannot FORMAT nonremovable drive *d*

Cause: BACKUP. You specified the /F parameter and the target is a fixed disk or network drive.

Action: If you must back up to a fixed disk, you must prepare it before issuing the BACKUP command.

Cannot JOIN a network drive

Cause: JOIN. Information message. You cannot use the JOIN command to join a local drive to a network drive or to join a network drive to a local drive.

Action: No action required.

Cannot LABEL a network drive

Cause: LABEL. Information message. You cannot create a new volume label or change an existing one on a redirected block device.

Action: No action required.

Cannot LABEL a SUBSTed or ASSIGNED drive

Cause: LABEL. Information message. You cannot label a drive that has run an ASSIGN or SUBST command.

Action: No action required.

Cannot load COMMAND, system halted

Cause: DOS. DOS attempted to reload the command processor, but one of the following occurred:

- The area that DOS keeps track of available memory in was destroyed.
- DOS did not find the command processor in the path specified by the COMSPEC parameter.
- There is not enough memory to load the command processor.

Action: Restart DOS on your system and make sure that COMSPEC= is set correctly. After restarting DOS, reducing the number of BUFFERS, device drivers, and resident programs can alleviate this problem.

Cannot make directory entry

Cause: DOS and COMMANDS. The DOS directory is full or an error condition exists.

Action: Delete or move a file from the directory or run CHKDSK to examine the disk.

Cannot perform a cyclic copy

Cause: XCOPY. The function requested causes the destination to be part of the source. The /S parameter was probably specified with XCOPY. The destination is a subdirectory, but the source is a directory above the destination.

Action: Evaluate the tree structure of the source and the destination and use a temporary file or disk to avoid the endless cycle.

Cannot read file allocation table

Cause: RECOVER. Recover cannot read the FAT from the disk. The part of the disk where the FAT is held has been damaged irretrievably. This is caused by physical damage to the disk.

Action: If this message appears twice for FATs 1 and 2, format the disk to make it usable again. If FORMAT fails, the disk is probably unusable.

Cannot RECOVER a network drive

Cause: RECOVER. You cannot use the RECOVER command to recover files from a network drive or from a drive on your system that is being shared on the network.

Action: If the drive is being shared, you can PAUSE the server, do RECOVER, then CONTINUE the server.

Cannot RECOVER an ASSIGNED or SUBSTed drive

Cause: RECOVER. You ran an ASSIGN, SUBST, or JOIN command before you used CHKDSK.

Action: Execute ASSIGN to restore the original drive letter assignment; then execute CHKDSK.

Cannot recover .. entry

Cause: CHKDSK. Information message. You specified the /F parameter but you cannot create or recover the (.) or (..) entry.

Action: No action required.

Cannot recover .. entry, processing continued

Cause: CHKDSK. Information message. You specified the /F parameter but you cannot create or recover the (.) or (..) entry.

Action: No action required. Processing continues.

Cannot setup expanded memory

Cause: FASTOPEN. The expanded memory card is not functioning properly in your system.

Action: If you cannot solve the problem, contact your authorized IBM representative.

Cannot specify default drive

Cause: SYS. Cannot specify the disk drive that you want to transfer the operating system files to.

Action:

- You must leave two unused entries in the root directory of the drive that you want to transfer the operating system files to.
- You must leave enough space on the disk for SYS to install the system files.

Cannot start COMMAND, exiting

Cause: DOS. While DOS was attempting to reload a secondary command processor, either the FILES command in the configuration file contained too small a value, there was no longer enough available memory to load the command processor, or the command processor was not found in the path specified by the COMSPEC parameter.

Action:

- Make sure that COMSPEC= is set correctly.
- If necessary, increase the value of FILES in CONFIG.SYS. and restart DOS.

Cannot SUBST a network drive

Cause: SUBST. Information message. You cannot use the SUBST command to substitute a drive for a network path or substitute a network drive for a local path.

Action: No action required.

Cannot SYS to a network drive

Cause: SYS. You cannot use SYS to transfer system files to a network drive or to a drive on your system that is currently being shared on the network.

Action: If the drive is being shared, you can PAUSE the server, do SYS, then CONTINUE the server.

Cannot SYS an ASSIGNED or SUBSTed drive

Cause: SYS. You ran an ASSIGN or SUBST command before you used SYS.

Action: Execute ASSIGN to restore the original drive letter assignment; then execute SYS.

Cannot use FASTOPEN for drive *d*

Cause: FASTOPEN. A JOINed, SUBSTed, or ASSIGNED diskette drive or network drive was specified. FASTOPEN can only be used on fixed disk drives.

Action: Remove the drive reassignment and specify the true drive letter, or specify only fixed disk drive letters.

Cannot use PRINT – use NET PRINT

Cause: PRINT. You cannot use the PRINT command on a network server system.

Action: Use NET PRINT to print the files.

Cannot XCOPY from a reserved device

Cause: XCOPY. The source specified is a character device, such as a printer or an asynchronous communication port, or is NUL.

Action: Put the source data into a file and enter XCOPY again, using the file as the source.

Cannot XCOPY to a reserved device

Cause: XCOPY. The destination specified is a character device, such as a printer or an asynchronous communication port, or is NUL.

Action: Specify a file or block device other than NUL as the destination and enter XCOPY again.

CHDIR . . failed, trying alternate method

Cause: CHKDSK. CHKDSK found an unrecoverable error while reading or writing to a subdirectory.

Action: Restart DOS and CHKDSK again.

x code page driver cannot be initialized

Cause: DISPLAY.SYS or PRINTER.SYS. You entered an invalid *type* in the CONFIG.SYS DEVICE statement.

Action: Re-enter the statement in the CONFIG.SYS file using the correct options to select from. See Chapter 4 for further information on DISPLAY.SYS and PRINTER.SYS.

Code page not prepared

Cause: MODE. MODE failed during a SELECT operation for one of the following reasons:

- The indicated code page had never been defined to the device.
- The prepared code page does not have the correct font to support the current video mode.

Action: Use MODE PREPARE to pass the code page definition to the device; then reissue the MODE SELECT operation to the device. If the error still occurs, increase the number of subfonts (*m*) in the DEVICE=DISPLAY.SYS command in CONFIG.SYS, and restart DOS.

Code page xxx not prepared for all devices

Cause: CHCP. CHCP was unable to select the code page for one of the following reasons:

- A device was not prepared for the requested code page.
- A device I/O error occurred.
- The device does not support code page switching.

Action: Use the MODE command to prepare all devices for code page switching. Refer to "Installing Code Page Switching." Make sure that the printer is online and not currently printing. Retry the CHCP command.

Code page xxx not prepared for system

Cause: CHCP. CHCP was unable to select the specified code page because no devices have been prepared with the MODE command.

Action: Make sure that all devices have been prepared for the code page using the MODE command. Refer to "Installing Code Page Switching" and retry the command.

Code page operation not supported on this device

Cause: MODE. In an attempt to use MODE to PREPARE or SELECT a code page for a device, the specified "device" may have been a filename (not really a device), or it is not a device that supports code pages. The CONFIG.SYS file may not contain the DEVICE command to properly load the code page switching device driver. If the definition on the device is incorrect, the device cannot be properly initialized.

Action: Make sure that the device statement has no spelling errors. The specified "device" cannot be a filename. Change the CONFIG.SYS file, restart, and try the MODE command again.

Code page requested xxx is not valid for given keyboard code

Cause: KEYB. KEYB attempted to start a keyboard code page that is not valid for that keyboard. The xxx displays the requested code page.

Action: Using the MODE command, change the selected code page to one valid for the new keyboard, or specify a code page parameter in the KEYB command.

Code page specified has not been prepared

Cause: KEYB. You have a CON device driver loaded that supports code page switching. The code page specified has not been prepared for CON.

Action: Use the MODE command to prepare CON with the desired code page.

Code page specified is inconsistent with the selected code page

Cause: KEYB. The code page specified has been prepared for the CON device but is not the current CON code page. The specified code page is now the active keyboard code page. It is important to note that the selected CON code page is not changed. This means that your display and keyboard are operating in different code pages. The characters you type may be displayed incorrectly while your display and keyboard are operating in different code pages.

Action: Use the MODE command to change the selected code page for the display.

Code page xxx

Cause: MODE. In response to the MODE status request, the device is identified as having both a set of hardware and prepared code pages, as listed by a series of these messages immediately following the message, "hardware code pages:" or "prepared code pages:."

Action: Information message. If desired, use the MODE PREPARE command to pass the code page definitions to the device.

Color file missing or unreadable

Cause: DOSSHELL. The SHELL.CLR file is missing or damaged.

Action: Copy the SHELL.CLR file from the Shell Operating diskette into the directory containing the DOS Shell program. Then, restart the Shell program by typing the word DOSSHELL at the command prompt.

COMn: bbbb,p,d,s,t

Cause: MODE. Information message. The Asynchronous Communications Adapter is initialized. The values represent:

n	adapter (COM1, COM2, COM3, or COM4)
bbbb	baud rate
p	parity
d	data bits
s	stop bits (1 or 2)
t	type of retry

Action: No action required. The feedback message from MODE shows its interpretation of the MODE command and the parameters you entered.

Compare another diskette (Y/N)?

Cause: DISKCOMP. DOS has completed comparing diskettes and is now asking you if you want to compare another diskette.

Action: Enter a Y if you want to compare another diskette or enter an N to end the process.

Compare error at OFFSET x

File 1 = xx

File 2 = xx

Cause: COMP. Information message. The files COMP is comparing contain different values at the displayed offset (in hexadecimal) into the file. The differing values are also in hexadecimal.

Action: No action required.

Compare error on side n, track xx

Cause: DISKCOMP. One or more locations on the indicated track and side contain different information when the diskettes are compared.

Action: This message is to inform you that there is a difference between diskettes. If you want an exact copy of a diskette, use DISKCOPY.

Compare more files (Y/N)?

Cause: COMP. COMP has finished comparing files. You may compare more files without re-entering the COMP command.

Action:

- Enter a Y to compare the contents of two more files; COMP asks that you enter the names of the files to compare.
- Enter an N if you do not wish to compare more files.

Compare OK

Cause: DISKCOMP. Information message informing you that your diskettes compare.

Action: No action required.

Compare process ended

Cause: DISKCOMP. Information message. The DISKCOMP command finished comparing.

Action: No action required.

Comparing xx tracks, xx sectors per track, n side(s)

Cause: DISKCOMP. This is an information message shown at the start of the compare process, showing statistics that are from the first diskette.

Action: If x or n is not what you expected, let DISKCOMP finish comparing diskettes. Re-enter the DISKCOMP command with or without additional parameters.

Configuration too large for memory

Cause: IBMBIO. Occurs when the number specified for the /E parameter in the SHELL statement, the FILES statement, and/or the BUFFERS statement does not leave enough room for DOS to be loaded.

Action: Restart DOS with a different diskette and reduce the value specified for the SHELL command's /E parameter, the FILES command, and/or the BUFFERS command.

Contains xxx non-contiguous blocks

Cause: CHKDSK. Information message. The filename preceding this message means that the file is not written sequentially on the disk. It is written in xxx pieces on different areas of the disk.

Action: Because fragmented files take longer to read, you should consider copying badly fragmented files to another disk with the COPY command. This records the file sequentially, resulting in better system performance when the file is read.

Content of destination lost before copy

Cause: COPY. Information message. When copying and combining files, as each input file is found, COPY compares its name with the target filename. If the names are the same, COPY skips that one input file, and this message appears.

Action: No action required. Further copying proceeds normally.

Convert directory to file (Y/N)?

Cause: CHKDSK. The directory name preceding this message means the directory contains too much invalid information to be usable as a directory. This may be due either to a directory that has been distorted, or to a file that appears to be a directory (as indicated by its attribute byte).

Action: If you enter Y, CHKDSK converts the directory to a file so that you may examine it with DEBUG. Take this action if the directory was a file that was changed to a subdirectory, or if you believe the directory is severely distorted. If you enter N, the entry is not changed. Take this action if the directory is distorted and you have a tool with which to examine the directory directly.

Convert lost chains to files (Y/N)?

Cause: CHKDSK. Ctrl + Break was entered during a disk I/O operation. The program that was doing the I/O did not clean up the disk after meeting the Ctrl + Break.

Action:

- If you enter a Y, and you have used the /F parameter, CHKDSK recovers each chain into a separate file.
- If you enter an N, CHKDSK frees the blocks so that they can be allocated to new files.
- If you specified CHKDSK (no /F), the messages displayed afterward are information messages (no corrective action was taken).

Copy another diskette (Y/N)?

Cause: DISKCOPY. This message allows you to make exact images of additional diskettes without re-entering the DISKCOPY command.

Action:

- If you wish to copy another complete diskette, enter a Y. DISKCOPY asks you to insert the required diskettes.

- If you do not wish to make any more copies, enter an N.

Copy process ended

Cause: DISKCOPY. Information message indicating that DISKCOPY finished copying.

Action: No action required.

**Copying xx tracks,
xx Sectors/Track, n Side(s)**

Cause: DISKCOPY. Information message, where xx tracks is 40 or 80 tracks. The xx Sectors/Track is 8, 9, or 15 sectors/track. The n Sides is 1 or 2 sides.

If the diskette has been formatted double-sided and subsequently formatted single-sided, DISKCOPY says it is copying two side(s). In this situation, use DISKCOPY/1.

If the diskette was formatted with FORMAT /8, DISKCOPY says "Copying 9 sectors." This is because FORMAT formats the disk with nine sectors, but initializes eight. DISKCOPY mimics FORMAT since it says, "Copying 9 sectors," but the target diskette ends with eight sectors per track.

Action: No action required.

Current CON code page: xxx

Cause: KEYB. Information message indicating the CON code page.

Action: No action required.

Current date is x

Cause: DATE. Information message when you start DOS on your system.

Action: No action required. Refer to the DATE command for the procedure to follow if the date is incorrect.

Current drive is no longer valid

Cause: DOS. While attempting to get the current directory for the command prompt (\$P), COMMAND.COM found that the disk could not be accessed. This can occur if your current drive is a network drive, or if the current drive is a diskette drive and there is no diskette in it.

Action: If your current drive is a diskette drive, make sure that there is a diskette in the drive and the drive door is closed; otherwise, change your current drive to a valid drive.

Current keyboard code: xx

Cause: KEYB. Information message indicating the specified code of the keyboard.

Action: No action required.

Current keyboard does not support this code page

Cause: MODE. While attempting to carry out a MODE PREPARE or MODE SELECT code page function, the device has detected a discrepancy between the currently defined keyboard code and the specified code page.

Action: Adjust the KEYB specification to reference the desired code page definitions and reissue the MODE PREPARE code page function.

Current keyboard ID: xxx code page: xxx

Cause: KEYB. Information message indicating the specified ID and code page of the keyboard.

Action: No action required.

Current time is x

Cause: TIME. Information message when you start DOS on your system.

Action: No action required. Refer to the TIME command for the procedure to follow if the date is incorrect.

D

Data error

Cause: DOS. DOS was unable to read or write the data correctly (usually means that a disk has developed a defective spot).

Action: Refer to "Responses" at the beginning of this appendix.

Data must be relocated on the target disk to make room for the system

Continue Y/N [N]

Cause: SYS. SYS needs to write to the disk, and DOS issued this message as a precautionary measure.

Action: If you want to continue, make sure that you back up the disk. Enter Y to continue, or press any key to terminate the SYS command and return to DOS.

Delete (Y/N)?

Cause: ERASE or DEL. You have used the /P parameter and the system prompted you with this message.

Action: Enter a Y to erase the file or enter an N to advance to the next file.

Delete current volume label (Y/N)?

Cause: LABEL. You can avoid deleting the existing label by pressing Enter rather than typing a new volume label.

Action: Type an N to keep the current label.

Device error during Status

Device error during Prepare

Device error during Select

Device error during Refresh

Device error during write of font file to device

Cause: MODE. During the indicated operation of the MODE code page function, the device returned a device error. The device may not support code page functions, the device is not defined to contain enough code pages to meet the request, or the device detected certain types of invalidities within the font file contents. The CONFIG.SYS file may not contain the DEVICE command to properly load the device.

Action: Make sure that you specified the proper device name. Change the CONFIG.SYS file, restart, and try the MODE command again.

Device or code page missing from font file

Cause: MODE. After transmitting the specified font file to the device handler during a PREPARE operation, DOS responded with an error indicating that the font file does not contain a definition of the indicated code page for the specified device. For the IBM 5202 Quietwriter III, a hardware code page (*hwcp*) may also generate this error, if the *hwcp* is not defined in the font file.

Action: Respecify the MODE command indicating a different code page that is supported by the device. Check the description of the various font files to verify the device and code page combinations supported. For the IBM 5202 Quietwriter III, if the *hwcp*

value is creating the error, correct the DEVICE command in the CONFIG.SYS file for the printer, and restart DOS.

Note: The error causes the existing code pages to be undefined. All specified code pages must be prepared again.

Device *ddd* not prepared

Cause: MODE.

Where:

ddd = device name

In response to a MODE code page status request, the indicated device has not received any code page definitions through a MODE PREPARE command. This operation is required before carrying out the MODE SELECT operation.

Action: Information message. If desired, use the MODE PREPARE command to pass the code page definitions to the device.

Diagnostics completed xKB OK

Cause: XMA2EMS.SYS. Information message showing that DOS completed the diagnostics.

Action: No action required.

Directory already exists

Cause: MKDIR. You have tried to make a directory where one already exists by that name.

Action: Retry the MD command using another name.

Directory entries adjusted

Cause: VDISK. Information message. VDISK found it necessary to adjust the number of directory entries in the DEVICE=VDISK.SYS in the CONFIG.SYS command.

Action: No action required.

Directory is joined, tree past this point not processed

Cause: CHKDSK. Information message. Joining a drive to another tree extends the tree. The allocation on the joined device is completely separate, and there is no reason to CHKDSK across devices. CHKDSK is skipping over the joined device.

Action: No action required.

**Directory is totally empty, no . or ..,
tree past this point not processed**

Cause: CHKDSK. A subdirectory was found that did not properly contain a . or .. entry. This usually happens when DOS is not given a chance to update the disk properly. During the updating process, the system may have shut down, or you may have reloaded the system before DOS finished the update.

Action: Use the RECOVER command to try to recover files on the damaged disk.

Directory not empty

Cause: JOIN. The directory you want to join to is not empty.

Action: Re-enter command with empty directory name or new directory.

Directory of D:\xxxxxxx

Cause: DIR. Information message indicating the drive and path of the directory or file you specified.

Action: No action required.

Directory PATH listing

Cause: TREE. Information message displayed at the beginning of the TREE command's output. The device being displayed does not have a volume label.

Action: No action required.

Directory PATH listing for Volume xxxxxx

Cause: TREE. Information message telling you the volume label of the disk.

Action: No action required.

Directory x

Cause: CHKDSK. Information message. You specified the /V parameter to display all files and their paths on the default or specified drive.

Action: No action required.

Disk error reading FAT x

Cause: CHKDSK. The file allocation table indicated is invalid. A power failure while a file is open can cause this.

Action: If this message appears twice for FATs 1 and 2, format the disk to make it usable again. If FORMAT fails, the disk is probably unusable.

Disk error writing FAT x

Cause: CHKDSK. A disk error was met while CHKDSK was attempting to update the file allocation table (FAT) on the specified drive. The variable, x, is 1 or 2, depending on which of the two copies of the file allocation table could not be written.

Action: If this message appears twice for FATs 1 and 2, format the disk to make it usable again. If FORMAT fails, discard the disk because it is probably unusable.

Disk full. Edits lost.

Cause: EDLIN. An End Edit command ended abnormally because the disk is full (not enough free space to save the complete file). Any editing done to the file is lost.

Action: Get a new diskette, copy the file onto the new diskette, and start editing again.

Disk full error writing to BACKUP Log File

Press any key to continue ...

Cause: BACKUP. The disk where the log file is being written to has become full.

Action: Press any key to continue or press Ctrl+Break to restart.

Disk unsuitable for system disk

Cause: FORMAT. A defective track was detected where the DOS files were to reside.

Action: The diskette can be used only for data. Use another disk if you wish to copy DOS files.

Diskette: x

Cause: RESTORE. Information message telling the diskette sequence number being restored from.

Action: No action required.

Diskette Number: x

Cause: BACKUP. Information message telling the diskette sequence number.

Action: No action required.

Display in graphics not successful

Cause: DOSSHELL. The system's hardware cannot run in the graphics mode.

Action: Replace the /CO1, /CO2, or /CO3 startup option in the DOSSHELL.BAT file with the (text mode) /TEXT startup option. After making the necessary correction to the file, restart the DOS Shell by typing the word DOSSHELL at the command prompt.

Divide overflow

Cause: DOS. A program tried to divide a number by 0, or a logic error caused an internal malfunction. The program ends and you return to DOS.

Action: Correct the programming error and continue. If this is a purchased program, take it back to your authorized representative.

Do not specify filename(s)

Command format: DISKCOMP d: d: [/1]/[8]

Cause: DISKCOMP. An invalid parameter or filename was typed.

Action: Check the command format, and re-enter the command.

Do not specify filename(s)

Command Format: DISKCOPY d: d: [/1]

Cause: DISKCOPY. An invalid parameter or filename was typed.

Action: Check the command format, and re-enter the command.

Do you see the leftmost 0? (Y/N)

Cause: MODE. The ,R,T parameter was specified.

Action: Enter a Y or an N. This prompt is repeated until you enter a Y.

Do you see the rightmost 9? (Y/N)

Cause: MODE. The ,L,T parameter was specified.

Action: Enter a Y or an N. This prompt is repeated until you enter a Y.

Do you wish to use the maximum available size for a Primary DOS Partition and make the partition active (Y/N).....[]

Cause: FDISK. Displayed when the "Create Primary DOS Partition" option is selected. The prompt is displayed only when you select the FDISK 1 option.

Action: If you select the Y option, a primary DOS partition is created in the largest available free space on the disk. The partition is marked active.

Does x specify a file name or directory name on the target (F = file, D = directory)?

Cause: XCOPY. This is a warning that XCOPY did not find a directory named <pathname> on the target. If you answer "D," XCOPY attempts to create a directory called <pathname> on the target.

Action: If you are copying more than one file you most likely want to answer with a D. Evaluate what is really intended, and select appropriately.

Does not exist

Cause: CHKDSK. If you specify the /V parameter, CHKDSK attempts to display every action during its processing. This message indicates that the . or .. sub-directory entry previously displayed could not be found. This means that the entire directory could be invalid. It may also mean that only a single byte on the disk is invalid.

Action: Run CHKDSK again with the /F parameter. CHKDSK will attempt to correct the problem and return the directory to its normal state.

DOS command line parameters supported:

/STA - Request Status only

? - Display this summary of parameters

Code Pages available:

437 - USA Graphic Character Set

850 - Multi-lingual Graphic Character Set

860 - Portuguese Graphic Character Set

863 - Canadian French Graphic Character Set

865 - Nordic Graphic Character Set

Cause: GRAFTABL. Information message. You have typed in the ? parameter to display the number of the code page currently being used and a list of the code page options.

Action: No action required.

Drive d: already deleted.

Cause: FDISK. The drive you selected to delete has already been deleted.

Action: Type in a different drive letter or press Esc to return to the FDISK Options menu.

Drive deleted

Cause: FDISK. Information message. The logical DOS drive indicated in the extended DOS partition has been deleted.

Action: No action required.

Drive letters have been changed or deleted

Cause: FDISK. One or more logical DOS drives have been deleted from the extended DOS partition. The drive letter assignments for any remaining logical drives may have changed, because DOS assigns drive letters to logical DOS drives based on the physical location of these drives in the extended DOS partition.

Action: Note the new drive letter assignments on the FDISK option for the new drive letter assignments.

Drive types or diskette types not compatible

Cause: DISKCOMP or DISKCOPY. The source and target diskettes or drives are not compatible.

Action: Refer to the DISKCOMP or DISKCOPY commands for the allowable combinations.

Duplicate file name or file not found

Cause: RENAME. You tried to rename a file to a filename that already exists on the diskette, or the file to be renamed could not be found on the specified (or default) drive. RENAME is warning you that you are using the same name for two files, or it cannot find the file you are trying to rename.

Action: Make sure that you typed the filename correctly. Re-enter the RENAME command.

Duplicate parameters not allowed

Cause: GRAPHICS. You specified a parameter twice.

Action: Re-enter the command using the correct format.

Duplicate redirection

See the documentation on your network for details.

E

ECHO is on|off

Cause: ECHO. This message shows the status of ECHO, either ON or OFF.

Action: Enter the command you want. For example if the screen shows "Echo is off" and you want "Echo is on," enter the command:

```
ECHO ON
```

EGA or VGA with 256KB memory required

Cause: DOSSHELL. The DOSSHELL.BAT file contains /CO1, /CO2, or /CO3 as a startup option, but the necessary adapters are not installed in your system.

Action: Determine what hardware is installed in your system, and change the startup options in the DOSSHELL.BAT file. After making the necessary corrections to the file, restart the system by typing the word DOSSHELL at the command prompt.

Enter current volume label for drive d:

Cause: FORMAT. FORMAT requires a volume label to prevent you from inadvertently formatting your fixed disk.

Action: Follow the instructions on the screen.

Enter new date (mm-dd-yy):

Cause: DATE. This message is displayed to let you enter or change the date known to your system.

Action:

- To leave the date as is, press Enter.
- Refer to the DATE command for the correct procedure to follow.

Enter new time:

Cause: TIME. This message is displayed to let you enter or change the time known to your system.

Action:

- To leave the time as is, press Enter.
- Refer to the TIME command for the correct procedure to follow.

Enter primary filename

Cause: COMP. DOS prompts you for primary filename.

Action: Enter the filespec of the first of two files to be compared.

Enter 2nd filename or drive id

Cause: COMP. DOS asks you for the filespec of the second of the two files you want compared.

Action: Enter the filespec of the second of two files to be compared, or enter the drive letter if the filename is the same as the primary filename.

Enter the number of the partition you want to make active.....: []

Cause: FDISK. The "Change Active Partition" option requests that you enter the number of the partition you want to make active.

Action: Type the number of the partition that you want to make active on the current fixed disk; then press Enter.

Entry error

Cause: EDLIN. EDLIN has detected a syntax error.

Action: Correct the syntax error on the last command.

**Entry has a bad attribute
(or size or link)**

Cause: CHKDSK. This message may begin with one or two periods, indicating which entry in the subdirectory was in error. One period shows that the current directory is in error. Two periods mean that the parent directory is in error. If you did not enter the /F parameter, no corrective action is taken.

Action: Enter:

```
CHKDSK /F
```

CHKDSK tries to correct the error.

EOF mark not found

Cause: COMP. COMP could not find the end of valid data in the last block of the files being compared. This message usually occurs when comparing non-text files; it should not occur when comparing text files.

Action: For more details, see the COMP command in Chapter 2.

Error during read of font file

Cause: MODE. While attempting to carry out a MODE PREPARE code page function, the record from the specified code page font file had an unrecoverable I/O error. The code page definition sent to the device is incomplete.

Action: Try to determine the readability problem and restore the file from a master copy, or direct MODE to an alternate device to access a copy of the file.

Error executing FORMAT

Cause: BACKUP. The BACKUP command is trying to format a diskette but cannot process the FORMAT command. A likely cause is that you may have insufficient memory.

Action: Change the BUFFERS parameter in the CONFIG.SYS file to a smaller value. Restart the system and try BACKUP again. If the message still appears, your system does not have enough memory to process the FORMAT command.

Error in CONFIG.SYS line x

Cause: IBMBIO. An error occurred during startup when DOS reads the CONFIG.SYS file and interprets the commands within the file. The x variable shows you where the error occurred.

This message may also be shown when a device driver attempts to install but is not needed by the system.

Action: Edit the CONFIG.SYS file and re-enter the correct format of the command.

Error in COUNTRY command

Cause: DOS. The code page was missing from the COUNTRY command and the default was not requested or the country information file:

- Is not in correct format
- Contains invalid information.

Action: Make sure that the country information is correct, or correct the COUNTRY command in the CONFIG.SYS file and restart.

Error in EXE file

Cause: DOS. An error was detected in the relocation information placed in the file by the LINK program. This may be because of a change to the file.

Action:

- If you are using a purchased program, rerun the program, using your backup copy.
- If you are using a program you wrote yourself, go through the LINK procedure again.

Error loading operating system

Cause: FDISK. A disk error occurred while attempting to load your operating system from fixed disk.

Action: Restart the system. If the error persists after several tries, restart the system (you should start DOS from your DOS diskette), and use the SYS command to transfer a new copy of DOS to your fixed disk.

Error opening logfile

Cause: BACKUP. You specified the /L option requesting a log file, and an error was met opening or creating the log file. Some of the errors that may have occurred are:

- Invalid drive
- Invalid path
- File sharing conflict
- No more directory entries available in the root.

Action: If you specified a log file, make sure that the drive and path specified for the log file are valid and try again. If you did not specify a log filename, an error occurred opening or creating the log file on the source.

Error reading directory

Cause: FORMAT. There are bad sectors within the directory or file allocation table (FAT) structure. An error occurred when accessing the directory.

Action: If you are trying to format your fixed disk, try formatting the disk to make it usable again. If you still cannot solve the problem, contact your authorized IBM representative.

Error reading fixed disk

Cause: FDISK. The FDISK program was unable to read the startup record of the current fixed disk after five tries.

Action: Try the FDISK program again. If, after several tries, you get the same error, consult the documentation that came with your system. If you still cannot solve the problem, contact your authorized IBM representative.

Error reading GRAPHICS profile

Cause: GRAPHICS. DOS cannot read the GRAPHICS profile.

Action: Make sure that your diskette drive door is closed.

Error reading partition table

Cause: FORMAT. An error (probably hardware) occurred while reading the partition table.

Action: Run FDISK on the drive and try again.

Error writing directory

Cause: FORMAT. There are bad sectors within the directory or file allocation table (FAT) structure. This is a write problem.

Action: Try formatting the disk to make it usable again. If you still cannot solve the problem, contact your authorized IBM representative.

Error writing FAT

Cause: FORMAT. A disk error was met while FORMAT was attempting to update the file allocation table (FAT) on the specified drive.

Action: If this message appears twice for FATs 1 and 2, format the disk to make it usable again. If you still cannot solve the problem, contact your authorized IBM representative.

Error writing fixed disk

Cause: FDISK. The FDISK program was unable to write the startup record of the current fixed disk after five tries.

Action: Try the FDISK program again. If, after several tries, you get the same error, consult the documentation that came with your system. If you still cannot solve the problem, contact your authorized IBM representative.

Error writing partition table

Cause: FORMAT. An error (probably hardware) occurred while reading the partition table.

Action: Run FDISK on the drive and try again.

Error writing to device

Cause: COMMANDS. DOS met an I/O error when writing output to a device. The device is unable to handle the number of bytes requested.

Action: Change the amount of data in the file and retry the command.

**Errors found, F parameter not specified
Corrections will not be written to disk**

Cause: CHKDSK. Information message. An error was found and you have not used the /F parameter. CHKDSK carries out its analysis as though it were going to correct any errors detected, so that you can see the results of its analysis, but it does not write the corrections on the disk.

Action: No action required.

**Errors on list device indicate that it
may be off-line. Please check it.**

Cause: PRINT. The device being used for background printing is off-line. This message only appears when the device is off-line and you enter a new PRINT command.

Action: Make sure that the printing device is connected and switched on.

Expanded memory not available

Cause: COMMANDS. Information message. You have specified the /E parameter but you do not have an expanded memory card installed in your system.

Action: No action required.

Extended DOS Partition already exists.

Cause: FDISK. An extended partition for DOS has already been set up.

Action: Return to the FDISK Options menu and select a different option.

Extended DOS Partition created

Cause: FDISK. Information message. An extended DOS partition was created on the fixed disk. No drive letter is assigned to this partition. This only reserves space for you to create logical DOS drive letters in this partition.

Action: To use this space, you should create one or more logical DOS drives in this partition using FDISK. You must format the drive created with the FORMAT command before you can use it.

Extended DOS Partition deleted

Cause: FDISK. Information message. The extended DOS partition and its contents have been deleted from the fixed disk.

Action: No action required.

Extender Card switches

do not match system memory size

Cause: VDISK. The extender card switch settings do not reflect the total amount of memory in the system unit. Although the extender card switch settings may be set correctly for your system, VDISK does not support memory in an expansion unit.

Action: Check the settings on the extender card.

F

Fail on INT 24

See the documentation on your network for details.

Failure to access code page font file

Cause: MODE. During a PREPARE, the try to access the indicated code page font file failed.

Action: Make sure that the font filename is spelled correctly. Verify the presence of the specified font file. Reissue the MODE command with the proper specification of the font filename.

Failure to access device: *ddd*

Cause: MODE. During a code page operation, the opening of the specified DEVICE failed.

Action: Make sure that the DEVICE name is spelled correctly and reissue the MODE command with the proper spelling. If that fails to correct the situation, make sure that the specified DEVICE was loaded by the CONFIG.SYS DEVICE command, or that the DEVICE is a standard device always present. If the CONFIG.SYS is incorrectly specified, edit that file to the proper specification and restart before retrying the MODE command.

FASTOPEN already installed

Cause: FASTOPEN. FASTOPEN has already been loaded and can be loaded only once.

Action: No action required.

FASTOPEN EMS entry count exceeded. Use fewer entries

Cause: FASTOPEN. You have tried to set up FASTOPEN in EMS, but there was not enough space in EMS.

Action: If you want to set up FASTOPEN in EMS, enable FASTOPEN with a reduced size of file/directory entries and extent entries.

FASTOPEN installed

Cause: FASTOPEN. Information message. FASTOPEN has been successfully loaded.

Action: No action required.

FCB unavailable

Cause: COMMANDS. With file sharing loaded, you tried to concurrently open more file control blocks than were specified by the FCBS configuration command.

Action: Refer to "Responses" at the beginning of this appendix. Select "Abort" as your response. Then, increase the value of the FCBS configuration command.

File allocation table bad, drive d

Cause: DOS and COMMANDS. You tried to read absolute sectors on a network drive, which cannot be done or the disk has been destroyed.

Action: If possible, use the Loader Write filespec option of the DEBUG command.

If this error persists, the disk is unusable and should be formatted again.

File canceled by operator

Cause: PRINT. Information message. This message appears on the printer after you cancel the printing of a file to serve as a reminder that the printout is incomplete.

Action: No action required.

File cannot be copied onto itself

Cause: COPY, XCOPY, or REPLACE. You tried to COPY a file and place the copy (with the same name as the original) in the same directory and on the same disk as the original file.

Action: Change the name given to the copy, or put it in a different directory, or put it on another disk.

File creation error

Cause: DOS and COMMANDS. An unsuccessful try was made to replace a file that was already there or to add a new filename to the directory.

Action: Proceed with one of the following:

- If the file was already there, make sure that the file is marked "read only" and cannot be replaced.
- If you are not able to add a new filename to the directory, the maximum number of directory entries to be copied to the root directory might have been reached. Try removing a file(s), subdirectory, or the volume label from the root directory.
- Run CHKDSK to determine if some other condition caused the error.

File exists

Cause: COMMANDS. You tried to add a file to your system, but the filename you specified already exists.

Action: Select another directory or filename.

File is READ-ONLY

Cause: EDLIN. The file you specified is read-only.

Action: Use the ATTRIB command to change the attribute of the file to read-write.

File name must be specified

Cause: EDLIN. You typed EDLIN without specifying the file that you wanted to edit.

Action: Type the filename on the command line when you use EDLIN.

File not found - *filename*

Cause: DOS and COMMANDS. A filename in a command or command parameter does not exist in the directory on the specified (or default) drive.

Action: Retry the command, using the correct filename.

File not in PRINT queue

Cause: PRINT. Information message. The file you want to cancel is not in the print queue.

Action: No action required.

xxx file(s) added

Cause: REPLACE. Information message indicating how many files on the source were added to the target subdirectory.

Action: No action required.

Files are different sizes

Cause: COMP. Information message. The two files being compared are different sizes. The COMP command does not compare different sized files.

Action: No action required.

xxxxx Files xxxxxxxxxx bytes free

Cause: DIR. Information message stating how many files and directories are in the directory and the amount of free space left on the disk.

Action: No action required.

Files compare OK

Cause: COMP. Information message. The two files compared contain the same information.

Action: No action required.

xxx File(s) copied

Cause: XCOPY and COPY. Information message stating that XCOPY or COPY has completed. The xxx displays the number of files that were successfully copied.

Action: No action required.

xxx file(s) replaced

Cause: REPLACE. Information message indicating how many files on the source were replaced on the target subdirectory.

Action: No action required.

***** Files were backed up xx/xx/xxxx *****

Cause: RESTORE. Information message. The files on the backup diskette were backed up on the date indicated.

Action: No action required.

First cluster number is invalid, entry truncated

Cause: CHKDSK. Information message. The file whose name precedes this message contains an invalid pointer to the data area. If you specify the /F parameter, the file is truncated to a zero-length file.

Action: No action required.

FIRST diskette bad or incompatible

Cause: DISKCOMP. The errors occurred while reading the diskette. The error may have been caused by bad sectors or the diskette in the source drive may not be compatible with the source drive type (a high-capacity diskette in a 320/360KB diskette drive, for example).

Action: Check your diskette.

Fixed backup device d: is full

Cause: BACKUP. Information message. The fixed disk media target is full. Therefore, no more files can be backed up on that device.

Action: No action required.

Font file contents invalid

Cause: MODE. After transmitting the specified font file to the device driver during a PREPARE operation, DOS responded with an error indicating that the font file is not in the proper format. The file indicated may not be a font file, or the font file has been damaged, altered, or truncated.

Action: Make sure that you specified the correct name of the font file, and repeat the MODE command with the proper spelling of the font file. Compare the font file with the master copy to see if it has been altered, and replace it with a new copy from the DOS diskette.

Note: The error causes the existing code pages to be undefined. All specified code pages need to be prepared again. Refer to the MODE command.

FOR cannot be nested

Cause: Batch file. More than one FOR subcommand was found on one command line in the batch file.

Action: Use only one FOR subcommand per command line; then retry the command.

Format another (Y/N)?

Cause: FORMAT. You have successfully formatted a disk and you are asked whether you would like to format another disk or end processing.

Action: To format another diskette, enter a Y or enter an N to end processing.

Format complete

Cause: FORMAT. Information message indicating that you have successfully formatted your disk.

Action: No action required.

FORMAT not supported on drive d:

Cause: FORMAT. The disk device driver does not support or incorrectly handles generic IOCTL calls (function call 44 AL=0DH) for Get device parameters, Set device parameters, and/or Format/Verify/Read/Write Track. Virtual drives (VDISK) are set up pre-formatted and cannot be reformatted.

Action: If you have replaced the default disk device driver at setup time, remove that DEVICE command from your CONFIG.SYS file and try again. If you are using only the default disk device drivers, reinstall DOS on the disk you restart from and try again.

Format terminated

Cause: FORMAT. A disk error was met while creating the target disk.

Action: The disk is unusable. Use another disk and retry the command.

Formatting while copying

Cause: DISKCOPY. Information message. The target diskette was found to contain unformatted tracks. DISKCOPY formats the remainder of the target diskette as it copies data.

Action: No action required.

Note: If this message is followed by the message "Incompatible drive types," you tried to copy a double-sided diskette to a drive that does not have double-sided capability. This

cannot be done. Processing ends and the target diskette contains no useful data.

Function not supported on this computer - x

Cause: MODE. Your system does not have the appropriate adapter or device for the requested function.

Action: No action required. Make sure that the EGA switch settings are in the enhanced color mode.

G

General failure

Cause: COMMANDS. A disk or device error has occurred, common causes of this error are:

- Diskette type and drive type do not match (for example, a 1.2MB high-capacity diskette in a 320/360KB drive).
- The diskette is not completely inserted in the drive and/or the drive door is open.
- The diskette is not properly formatted.

Action: Refer to "Responses" at the beginning of this appendix. Select "Retry" first, then select "Abort" if this problem requires further investigation by a programmer.

If you are using a purchased program, contact the representative you purchased it from.

H

Has invalid cluster, file truncated

Cause: CHKDSK. The filename preceding this message means that the file contains an invalid pointer to the data area.

Action: Use the /F parameter to truncate the file at the last valid data block. No corrective action occurs if CHKDSK is processed without the /F parameter.

Help file missing or unreadable

Cause: DOSSHELL. The SHELL.HLP file is missing or damaged.

Action: Copy the SHELL.HLP file from the Shell Operating diskette into the directory containing the DOS Shell program. After copying the file to the directory, type the word DOSSHELL at the command prompt to start the Shell.

ID code specified is inconsistent with the selected keyboard code

Cause: KEYB. You entered a valid keyboard ID code but it is not compatible with the country.

Action: Refer to page 157 for a listing of the keyboard ID code for your particular country.

Illegal device name

Cause: MODE. The specified printer must be LPT1, LPT2 or LPT3. The specified Asynchronous Communications Adapter must exist and must be COM1, COM2, COM3, or COM4.

Action: Use the correct device name and retry the command.

Incompatible system size

Cause: SYS. The target diskette contained a copy of DOS that is smaller than the one being copied. The system transfer does not take place.

Action: Format a blank diskette (use the `FORMAT /S` command) and copy any files to the new diskette.

Incorrect APPEND version

Cause: APPEND. You are using a version of APPEND that does not match the version you initially loaded. You may be using the version that comes with the IBM Local Area Network Program.

Action: Determine why you are accessing the wrong version (often the result of your PATH setting) and change your set up to find the DOS version of APPEND.

Incorrect DOS version

Cause: The command you attempted to use is not intended to be used with the version of DOS now on your system.

Action: If you setup with DOS 4.00, make sure that the DOS commands you use are from the DOS 4.00 diskettes. Network users accessing DOS commands across the network should edit the PATH statement in the NETPATH.BAT file, replacing the "d:\APPS\DOS" reference with a local reference to DOS; for example, A:\ or C:\DOS.

Incorrect number of parameters

Cause: COMMANDS. You entered a different number of parameters than is valid for the command.

Action: Correct the command parameters and try again.

Incorrect parameter

Cause: DOS or COMMANDS. A parameter was specified that was not recognized. The contents of any code page table that may have been previously loaded is not changed. This message is followed by the HELP screen.

Action: Check the parameters and try again.

Incorrect startup option

Cause: DOSSHELL. There is an invalid or misspelled startup option in the DOSSHELL.BAT file.

Action: Check the spelling of the options in the file against the following list. Depending upon your type of system, you may not have some of these options.

```
/MOS:PCIBMDRV.MOS /MOS:PCMSDRV.MOS /PROMPT  
/MOS:PCMSPDRV.MOS /MEU:SHELL.MEU /MAINT  
/CLR:SHELL.CLR /COLOR /TRAN /DOS /MENU  
/MUL /SND /EXIT /SWAP /DATE /B /COM2
```

After making the necessary corrections to the file, restart the system by pressing the Ctrl+Alt+Del keys or just enter, DOSSHELL, to restart.

Incorrect version of the XMAEM.SYS:

Expanded Memory Manager has NOT been installed

Cause: XMA2EMS.SYS. You have an XMA emulator loaded, but it is the incorrect version to use for the Expanded Memory Manager.

Action: Reinstall the XMAEM.SYS device driver on your system.

Infinite retry not supported on network printer

Cause: MODE. Infinite retry was requested by specifying P or RETRY=. Printer errors cannot be sensed through the network interface.

Action: Do not specify P or RETRY= or use a non-redirected printer.

Infinite retry on parallel printer time-out

Cause: MODE. P or RETRY= was specified, requesting continuous retry on time-out errors.

Action: No action required.

Insert backup diskette *x* in drive *d*:

Press any key when ready ...

Cause: COMMANDS. Information message prompting you to insert the backup diskette.

Action: Insert the backup diskette(s) in sequence by the prompt. Press any key and the command continues.

Insert backup source diskette in drive *d*

Press any key when ready ...

Cause: BACKUP. Information message prompting you to insert the backup source diskette.

Action: Insert the source in drive *d* and press any key.

Insert disk with batch file

Press any key to continue ...

Cause: DOS. The diskette that contained the batch file being processed was removed. The batch processor is trying to find the next command in the file.

Action: Insert the diskette in the appropriate drive and press any key to continue processing.

Insert disk with \COMMAND.COM in drive *d*

Press any key to continue ...

Cause: DOS. DOS is attempting to reload the command processor, but COMMAND.COM is not in the drive that DOS was started from or, if SET COMSPEC has been specified, not in the location indicated by the SET COMSPEC command.

Action: Insert the diskette that has COMMAND.COM in the indicated drive and press any key.

Insert diskette for drive *d*:

Press Enter to continue.

Cause: DOS. In a system with logical drives, a drive that is not the current default drive is being referenced, and DOS is asking for the diskette corresponding to that drive.

Action: If the diskette for *d* is different from the one currently in the drive, insert the appropriate diskette and press Enter when ready.

Insert DOS disk in drive *d*
Press any key when ready ...

Cause: FORMAT. FORMAT is trying to load the DOS files, but the indicated drive *d* does not contain the DOS diskette; for example, formatting a disk using a one-diskette drive system.

Action: Follow the prompt and insert the DOS diskette. Press any key to continue processing.

Insert DOS Install diskette in drive A:
Press any key when ready . . .

Cause: FDISK. You have successfully created the DOS partition on the current fixed disk.

Action: Insert the DOS diskette into drive A and press any key. This restarts your system. The current fixed disk is assigned a fixed disk letter and you can now FORMAT the fixed disk.

Insert FIRST diskette in drive *d*

Cause: DISKCOMP. Information message prompting you to insert the FIRST diskette.

Action: Insert the first of the two diskettes to be compared into the indicated drive. This message is followed by the message "Press any key when ready." Press a key and the comparison starts.

Insert last backup diskette in drive *d*
Press any key when ready ...

Cause: BACKUP. The /A parameter was specified.

Action: Insert the last backup target used in the previous backup.

Insert new diskette for drive *d*
Press Enter to continue.

Cause: FORMAT. Prompt asking you to insert the diskette you want to format.

Action: Insert the diskette you want to format and press Enter.

Insert restore target *x* in drive *d*
Press any key when ready ...

Cause: RESTORE. Information message. This prompt is for diskettes only.

Action: Insert the target in the indicated drive and press any key.

Insert SECOND diskette in drive d

Cause: DISKCOMP. Information message prompting you to insert the SECOND diskette.

Action: Insert the second of the two diskettes to be compared into the indicated drive. This message is followed by the message **Press any key when ready**. Press a key and the comparison starts.

Insert SOURCE diskette in drive d

Cause: DISKCOPY. Information message prompting you to insert the source diskette.

Action: Insert the appropriate diskette into the indicated drive, and press any key when prompted. The copying process starts.

Insert system disk in drive d

Press any key when ready ...

Cause: SYS. SYS is trying to load the DOS files, but the indicated drive does not contain the DOS diskette.

Action: Follow the prompt and insert the DOS diskette. Press any key to continue processing.

Insert target disk in drive d

Press any key when ready ...

Cause: COMMANDS. Information message telling you to insert the target disk in the indicated drive.

Action: Insert the appropriate diskette into the indicated drive, and press any key when prompted. The copying process starts. A target disk or drive can refer to the "backup," "new," "blank," or "second" disk or drive you are writing information to.

Insert TARGET diskette in drive d

Cause: DISKCOPY. Information message prompting you to insert the target diskette in the indicated drive.

Action: Insert the appropriate diskette into the indicated drive, and press any key when prompted. The copying process starts.

Insufficient disk space

Cause: DOS and COMMANDS. The disk does not contain enough free space to contain the file being written.

Action: Refer to "Responses" at the beginning of this appendix. If you suspect this condition is invalid, run CHKDSK to determine the status of the disk. Otherwise, use another disk and retry the command.

Insufficient memory

Cause: COMMANDS. The amount of available memory is too small to allow these commands to function.

Action: You need to increase the amount of available memory in your system. You may do this in several ways including:

- Change the BUFFERS parameter in the CONFIG.SYS file to a smaller value.
- Remove terminate and stay resident programs.

If you are using the DOS SHELL, make sure the /TRAN parameter is added to the DOSSHELL.BAT file.

Restart the system and try the command again. If the message still appears, your system does not have enough memory to process the command.

Insufficient memory for COUNTRY.SYS file

Cause: IBMBIO. There is not enough memory on the disk for COUNTRY.SYS.

Action: No action required.

Insufficient room in root directory

Move files from root directory and repeat CHKDSK.

Cause: CHKDSK. You instructed CHKDSK to create files from the "lost" data blocks it has found, but the root directory is full, and all the lost chains could not be recovered into files.

Action:

1. Copy some of the recovered files to another disk for further examination.
2. Delete the recovered files from the disk you are checking.
3. Run CHKDSK again to recover the remainder of the lost data.

Intermediate file error during pipe

Cause: DOS. DOS is unable to create one or both of its intermediate files because the default drive's root directory was full. DOS is unable to find the piping files, or the disk does not have enough space to hold the data being piped.

Action: Erase some files from the default drive's root directory, and reissue the command that failed. If you get the same message, one of the programs in the command line has erased one or both piping files. Correct the program and reissue the command line.

Internal stack overflow

System halted

Cause: DOS. The available stack resources were exceeded. This is caused by a rapid succession of recursive hardware interrupts.

Action: Increase the stack resources by adding a STACKS command to the CONFIG.SYS file. Refer to the STACKS command for further details.

Invalid baud rate specified

Cause: MODE. You specified an invalid baud rate.

Action: Specify the baud rate as 110, 150, 300, 600, 1200, 2400, 4800, 9600, or 19200 (you need specify only the first two characters of the number).

Invalid characters in volume label

Cause: FORMAT or LABEL. One or more of the characters you entered in the volume label is not a valid filename character, or the name contained a period (volume labels contain 1 through 11 valid characters without a period).

Action: Enter valid characters and retry.

Invalid code page

Cause: DOS and COMMANDS. The code page specified on the command line may not be used with the requested language.

Action: Correct and retry the operation.

Invalid combination of parameters

Cause: COMMANDS. One or more of the parameters entered have been placed in the wrong order.

Action: Review the syntax for the command and enter the command again.

Invalid COMMAND.COM

Cause: DOS. When DOS tried to reload the command processor, the copy of COMMAND.COM on the disk was found to be an incorrect version.

Action: Insert the correct DOS diskette and press any key to continue.

Invalid configuration

Cause: IFSFUNC. The statements in your CONFIG.SYS file do not support this command. A common cause of this problem is that CONFIG.SYS is missing the IFS=REDIR.SYS statement.

Action: Refer to the manual that instructed you to install IFSFUNC.EXE for details on how to correct this error.

Invalid country code or code page

Cause: IBMBIO. The three-digit country code or code page specified in the COUNTRY command in the CONFIG.SYS file is invalid or the requested code page is not available for the specified country code.

Action: See Chapter 4 for the correct country code and code page. When installing DOS 4.00, select the proper number to identify the desired set of country-dependent information. It may be that the COUNTRY.SYS file was altered before the processing of SELECT.

Invalid current directory

Cause: CHKDSK. CHKDSK attempted to read the current directory and found an unrecoverable error on the disk.

Action: No action required.

Invalid data

Cause: COMMANDS. The information you are using is invalid for DOS.

Action: Retry the command using valid data.

Invalid date

Cause: DOS and COMMANDS. You entered an invalid date or delimiter. The only valid delimiters in a date entry are hyphens (-), slashes (/), and periods (.).

Action: Re-enter a valid date.

Invalid device

Cause: CTTY. DOS does not recognize the device name specified.

Action: Retry the command, using a valid device name.

Invalid device parameters from device driver

Cause: FORMAT. The number of hidden sectors (relative sectors) is not an exact multiple of the number of sectors per track. The DOS partition does not start on a track boundary.

Action: Load FDISK and set up a new DOS partition on the fixed disk. Retry FORMAT.

Invalid device request

Cause: COMMANDS. A device driver has issued an invalid command to `<device>`.

Action: Refer to "Responses" at the beginning of this appendix.

- Review your device interface specification and DOS driver implementation to make sure that everything you are trying to do is supported.
- Check your program to see if you have a coding problem that needs debugging.

Invalid device request parameters

Cause: COMMANDS. A device driver was passed an incorrect length request header.

Action: Refer to "Responses" at the beginning of this appendix.

- Use DEBUG.
- Review your programming specifications. Patch and reassemble.
- If you are using a purchased program, contact the representative you purchased the device driver from.

Invalid directory

Cause: DOS and COMMANDS. One of the directories in the specified path does not exist.

Action: Retry the command, using a valid directory.

Invalid disk change

Cause: DOS. The diskette in the drive was changed while files were still open on the diskette.

Action: Reinsert the correct diskette.

Invalid drive in search path

Cause: DOS. An invalid drive specifier was found in one of the paths specified in the PATH command. This message appears when DOS attempts to find a command or batch file rather than at the time the incorrect PATH command was issued.

Action:

1. Enter PATH. This displays the paths previously defined.
2. Find the invalid specifier.
3. Re-enter the PATH command with the valid drive specifier and the desired paths.

Invalid drive or file name

Cause: DOS or COMMANDS. The drive or filename specified is invalid.

Action: No action required.

Invalid drive specification

Cause: COMMANDS. An invalid or non-existent drive specification was just entered in the command or in one of its parameters, or the source and target drive are the same.

Action: Re-enter the command, using a valid drive specifier.

Invalid drive specification

Specified drive does not exist, or is non-removable

Cause: DOS or COMMANDS. An invalid drive specification was just entered in a command or in one of its parameters.

Action: Re-enter the command, using a valid drive specifier.

Invalid entry, please enter x.

Cause: FDISK. The value entered was not within acceptable range.

Action: Re-enter your choice.

Invalid entry, please press Enter.

Cause: FDISK. The percent sign you entered is the last character. You cannot enter additional characters after you have entered the percent sign.

Action: Press Enter or Backspace to change your entry and press Enter.

Invalid Environment

Cause: COMMANDS. This message is issued when:

- The specified environment size contains non-numeric characters.
- The specified environment size is out of range.

Action: Enter the correct parameters within the specified range and retry the operation.

Invalid extent entry

Cause: FASTOPEN. You have specified an extent entry that is not within the appropriate range. The minimum number is 1 and the maximum value is 999.

Action: Review and re-enter an appropriate value from 1 through 999.

Invalid filename or file not found

Cause: RENAME or TYPE. You tried to rename a file that was either invalid or not found in the specified directory. TYPE does not allow global filename characters.

Action: Enter the correct filename.

Invalid file/directory entry

Cause: FASTOPEN. You have specified an invalid value for the directory or file entry. The minimum number is 10 and the maximum is 999. If no value is provided, the default is 34.

Action: Review and re-enter a value from 10 through 999.

Invalid format

Cause: COMMANDS. An attempt was made to load a program with an invalid format.

Action: Check your typing and correct it if necessary. Refer to the command format to correct the command, and retry your request.

Invalid Function

Cause: COMMANDS. Caused by an application error, this message states that the DOS function is not supported.

Action: Exit the application program.

Invalid function parameter

Cause: COMMANDS. You issued an open function but the mode access is incorrect.

Action: Exit the application program.

Invalid handle

Cause: COMMANDS. You tried to access a file using an invalid internal file identifier (handle).

Action: Exit the application program. If this is a purchased program, return it to your authorized IBM representative.

Invalid keyboard code specified

Cause: KEYB. The keyboard code specified on the command line is not valid.

Action: Correct and retry the operation.

Invalid keyboard ID specified

Cause: KEYB. The keyboard ID specified on the command line is not valid.

Action: Correct and retry the operation.

Invalid keyword

Cause: COMMANDS. You have entered an invalid keyword; for example, entering DELA = instead of DELAY = for the MODE command.

Action: Check your typing and correct it if necessary. If your typing is correct, check the syntax for the appropriate keyword. Retry your request.

Invalid media or Track 0 bad – disk unusable

Cause: FORMAT. FORMAT was unable to format track 0 on the specified media. This error occurs if:

- Track 0 is unusable. Track 0 is where the boot record, file allocation table, and directory must reside. If track 0 is bad, the disk is unusable.
- The diskette type and drive type are incompatible. You tried to format a double-sided, 320/360KB diskette in a high-capacity, 1.2MB drive; or a high-capacity, 1.2MB diskette in a double-sided, 320/360KB drive.

Action: For the first case, get another disk and retry the FORMAT command. For the second case, retry the FORMAT command specifying the /4 parameter.

Invalid media type

Cause: COMMANDS. You have encountered media on your disk not compatible with DOS.

Action: If you want to use the disk with DOS, reformat the disk unless it is write-protected.

Invalid memory block address

Cause: COMMANDS. An application program issued the wrong memory address.

Action: Exit the application program.

Invalid number of parameters

Cause: COMMANDS. You have specified too few or too many parameters for the command you issued.

Action: Check the syntax of the command and re-enter the command.

Invalid parameter - x

Cause: DOS and COMMANDS. One or more of the parameters entered for these commands are not valid or have been placed in the wrong order.

Action: If the program expects a drive specifier, enter a colon (:) following the drive letter. In other cases, make sure that the character following the slash (/) is valid for the program being run. For JOIN and SUBST, see the command formats in Chapter 6 for valid parameters.

Invalid parameter combination

Cause: COMMANDS and REPLACE. One or more of the parameters entered are not valid when entered in this combination.

Action: Review the syntax for this command and enter the command again.

Invalid parameters

Cause: MODE. Parameters are unrecognizable or are in the wrong order.

- The first parameter was other than 40, 80, BW40, BW80, CO40, CO80, MONO, L, or R.
- The adapter that the parameter refers to is not present in the system.

Action: Check the preceding list and correct the command.

Invalid partition table

Cause: FDISK. While attempting to start DOS from your fixed disk, the startup procedures detected invalid information in the disk's partition information.

Action: Do the following:

1. Start DOS from the diskette.
2. Use the FDISK command to examine and correct the fixed disk partition information.

Invalid password

Cause: COMMANDS. The password you specified is not correct.

Action: Check your typing. If your typing is correct, the password was changed.

Invalid path

Cause: COMMANDS. The path contained invalid characters or an invalid path name. The path is greater than 63 characters.

Action: Check for invalid filename characters and format.

Invalid path, not directory or directory not empty

Cause: RMDIR. This message is caused by one of the following:

- The specified directory was not removed because one of the names you specified in the path was not a valid directory name.
- The directory you specified still contains entries for files or other subdirectories (except for the . and .. entries).

Action: Try one of the following:

- Correct the invalid directory name in the path.
- Delete any files or remove any subdirectories in the directory.

Invalid path or file name

Cause: COPY and RENAME. You specified a directory or filename that does not exist.

Action: Use the correct name. Retry the command after checking for the following:

- Correct spelling of names
- Valid directory names
- Existence of the file in the subdirectory specified.

Invalid path or file not found

Cause: ATTRIB. You specified a directory or filename that does not exist.

Action: Use the correct name. Retry the command after checking for the following:

- Correct spelling of names
- Valid directory names
- Existence of the file in the subdirectory specified.

Invalid profile statement on line x

Cause: GRAPHICS. You have typed an invalid word in the profile statement on the given line x.

Action: Review and correct the profile statement.

Invalid STACK parameters

Cause: IBMBIO. Invalid combination of either the number of stacks or the stack size specified.

Action: Correct the STACKS command in CONFIG.SYS and restart.

Invalid subdirectory entry

Cause: CHKDSK. Invalid information was detected in the subdirectory whose name precedes this message.

Action: CHKDSK attempts to correct the error if you have used the /F parameter. For more specific information about the error, run CHKDSK with the /V parameter.

Invalid switch - x

Cause: DOS and COMMANDS. One or more of the switches entered for the command is not valid, is in the wrong order, or is duplicated. This message may also occur if the command does not use a switch.

Action: Make sure that the character following the slash (/) is valid for the program being run.

Invalid switch character

Cause: VDISK. VDISK met a forward slash (/) in the DEVICE = VDISK.SYS command followed by a switch letter not supported by the command.

Action: Make sure that the character following the slash (/) is valid for the program being run.

Invalid switch type

Cause: FASTOPEN. One or more of the switches entered for the FASTOPEN command is not valid, is in the wrong order, or is duplicated.

Action: Make sure that the character following the slash (/) is valid for the FASTOPEN program being run.

Invalid syntax on DISPLAY.SYS code page driver

Cause: DISPLAY.SYS. The syntax of the DEVICE = DISPLAY.SYS command in the CONFIG.SYS file is incorrect.

Action: Make sure that the parameters are correct, edit the CONFIG.SYS file and restart DOS 4.00.

Invalid syntax on PRINTER.SYS code page driver

Cause: PRINTER.SYS. The syntax of the DEVICE = PRINTER.SYS command in the CONFIG.SYS file is incorrect.

Action: Make sure that the parameters are correct, edit the CONFIG.SYS file, and restart DOS 4.00.

Invalid time

Cause: DOS and COMMANDS. An invalid time or delimiter was entered.

Action: Re-enter the correct time. The only valid delimiters are:

- A colon (:) or period (.) between the hours and minutes.
- A colon (:) or period (.) between the minutes and seconds.
- A period (.) or comma (,) between the seconds and hundredths of a second.

Invalid unit

Cause: COMMANDS. A device driver has been passed an invalid sub-unit number.

Action: Refer to "Responses" at the beginning of this appendix. If you are using a purchased program, contact the representative where you purchased the device driver.

Invalid Volume ID

Cause: FORMAT. The volume label entered does not match the volume label on the disk to be formatted.

Action: Issue the VOL command to determine the correct volume label and try again.

Is cross linked on cluster xx

Cause: CHKDSK. This message appears twice for each cross-linked cluster number, naming the two files in error. The same data block is allocated to both files. Note that some copy-protected software deliberately cross-links its own files and no action should be taken for such files.

Action: No corrective action is taken automatically. Correct the problem by proceeding with the following:

1. Make copies of both files (the COPY command).
2. Delete the original files (the ERASE command).
3. Review the files for validity and edit as necessary.

x is currently being printed

x is in queue

Cause: PRINT. Information message. These messages appear together when you issue a PRINT command with no parameters. They occur individually when you queue the first or a later file for printing.

Action: No action required.

x is not a choice. Please enter (x-x)

Cause: FDISK. You entered x, which is not a choice for this question.

Action: Enter a valid choice x from the drives already set up on your system.

K

KEYB has not been installed

Cause: KEYB. The KEYB query function was requested before installing KEYB.

Action: Refer to the KEYB command and install.

L

Label not found

Cause: Batch file. Information message. A GOTO command named a label that does not exist in the batch file. This caused the system to read to the end of the batch file, ending batch processing.

Action: If you do not want the GOTO to leave the batch file, edit the batch file and put the label in the desired location.

Last backup diskette not inserted

Cause: BACKUP. The /A parameter was specified, but the removable target was not the last in the backup sequence.

Action: No action required.

***** Last file not backed up *****

Cause: BACKUP. The fixed target failed while the file was being backed up. There is no room for the complete file, or there was a sharing error on a particular file.

Action: No action required.

Line too long

Cause: EDLIN. On replacing a string, the replacement caused the line to expand beyond the 253-character limit. The REPLACE text command is ended abnormally.

Action: Split the long line into shorter lines; then issue the REPLACE text command again.

List output is not assigned to a device

Cause: PRINT or PSPRINT. The list device specified is not a valid print device or no /D parameter was specified.

Action: Enter PRINT again and specify a valid list device.

Loaded External Disk Driver for Drive d

Cause: DRIVER.SYS. Information message indicating the drive that was loaded.

Action: No action required.

Lock violation

Cause: COMMANDS. A source file has part or all of it locked against reading.

Action: Wait a short time and try again. See "Responses" at the beginning of this appendix.

Logging to file x

Cause: BACKUP. You specified the /L option. This is an information message indicating the file where the backup log is being placed.

Action: No action required.

Logical DOS Drive created, drive letters changed or added

Cause: FDISK. A logical DOS drive has been created in the extended DOS partition on the fixed disk, and a drive letter of the specified size has been assigned on the fixed disk. DOS assigns drive letters in the order that logical drives reside in the extended DOS partition. A newly created drive may be either added to the end of the drive letter list, or it may cause some or all of the logical drives in the extended DOS partition to be assigned new drive letters.

Action: Format the created drive letter using the FORMAT command before using the logical drive.

xxx lost clusters found in yyy chains.

Convert lost chains to files (Y/N)?

Cause: CHKDSK. Ctrl+Break was entered during a disk I/O operation. CHKDSK did not clean up the disk after meeting the Ctrl+Break.

Action: If you enter a Y and you have used the /F parameter, CHKDSK recovers each chain into a separate file; otherwise, if you enter an N, CHKDSK frees the blocks so that they can be allocated to new files. If CHKDSK was specified (no /F), messages displayed afterwards are informational (no corrective action required).

LPT#: not rerouted

Cause: MODE. Information message. The parallel printer will now receive its own output, even if this printer's output had previously been rerouted to a serial device.

This message is for your information and shows cancellation of any previous redirection that may have been in effect because you set the printer width or vertical spacing.

Action: No action required.

LPT#: rerouted to COMn:

Cause: MODE. This is an information message showing that any request that would normally have gone to the parallel printer LPT# (# = 1, 2, or 3) is sent instead to the serial device COMn (n = 1, 2, 3 or 4).

Action: No action required.

LPT#: set for 80

Cause: MODE. Information message. You set the printer for 80 characters per line by requesting standard type format. If the try was unsuccessful, an error message follows this message on the screen.

Action: No action required.

LPT#: set for 132

Cause: MODE. Information message. You tried to set the printer for 132 characters per line by requesting compressed type format.

If the try is unsuccessful, an error message follows this message on the screen.

Action: No action required.

M

Make sure that a diskette is inserted into the drive and the door is closed

Cause: DISKCOMP or DISKCOPY. The drive is empty or the drive door is left open.

Action: Insert a diskette or close the drive door.

Maximum space available for partition is xxxx Mbytes

Cause: FDISK. Information message. The "Create DOS Partition" option displays the largest available space on the current fixed disk. These numbers are also used as the defaults for the two prompts that will follow.

Action: No action required.

Maximum number of Logical DOS Drives installed.

Cause: FDISK. DOS supports only drive letters A through Z. You have created the maximum number of logical drives (24).

Action: If you need to define a new logical drive, you must first delete an existing logical drive to free a drive letter.

**Memory allocation error
Cannot load COMMAND, system halted**

Cause: DOS. A program destroyed the area in which DOS keeps track of available memory or, there is no longer enough memory to load the command processor.

Action: Restart DOS on your system. Reducing the number of buffers, device drivers, and resident programs on your system may alleviate this error.

Memory control blocks destroyed

Cause: COMMANDS. An application program altered memory, destroying the structure of your system.

Action: The system cannot recover. Try restarting your system.

Menu file missing or unreadable

Cause: DOSSHELL. The SHELL.MEU file is missing or damaged.

Action: Copy the SHELL.MEU file from the Shell Operating diskette into the directory containing the DOS Shell program. Restart the Shell program by typing the word DOSSHELL at the command prompt.

Missing operating system

Cause: FDISK. When you tried to start DOS from a fixed disk, the startup procedures determined that the DOS partition was marked "startable," but that the disk doesn't contain a copy of DOS.

Action: Start DOS from a diskette and use FORMAT with the /S parameter to place a copy of DOS on the fixed disk. Back up your files before doing the FORMAT or they will be lost.

MODE *fff* code page function completed

Cause: MODE.

Where:

fff = Status, Prepare, Select, or Refresh

Information message. The final message from MODE indicating the end of its action regarding the indicated function.

Action: No action required.

--More--

Cause: MORE. The screen is full and there is more data waiting to be shown.

Action: Press any character to see the next full screen.

Mouse file missing or unreadable

Cause: DOSSHELL. The mouse is specified in the startup options in the DOSSHELL.BAT file but the driver to operate the mouse is missing or damaged.

Action: Copy the mouse driver into the directory containing the DOS Shell or remove the /MOS:PCIBMDRV.MOS startup option from the DOSSHELL.BAT file.

After making the necessary corrections, restart the DOS Shell by typing the word DOSSHELL at the command prompt.

Must enter both /T and /N parameters

Cause: FORMAT. You have entered either the /T or /N parameter by itself.

Action: Because these parameters must be entered together, re-enter the correct format using both parameters.

Must specify COM1, COM2, COM3 or COM4

Cause: MODE. You incorrectly entered MODE option 4.

Action: Retry using correct option.

Must specify destination line number

Cause: EDLIN. A Move or Copy command was entered without a destination line number.

Action: Re-enter the command with a valid destination line number.

Must specify ON or OFF

Cause: BREAK, VERIFY, and ECHO. You entered something other than ON or OFF.

Action: Enter ON or OFF and try again.

N**Name of list device [PRN]:**

Cause: PRINT. This message appears the first time you start print after DOS has been restarted.

Action: Reply with the reserved device name that is to receive the printed output, or press Enter if the first parallel printer [PRN] is to be used.

Network data fault

See the documentation on your network for details.

NLSFUNC already installed

Cause: NLSFUNC. Resident portion of NLSFUNC has already been loaded, and it can only be loaded once.

Action: No action required.

NLSFUNC not installed

Cause: CHCP. NLSFUNC must be installed before running the CHCP command.

Action: Start NLSFUNC. Prepare devices using the MODE command. Retry the CHCP command.

No Append

Cause: APPEND. No directories are currently being searched by APPEND requests. APPEND was previously invoked with only ";" as the append path.

Action: No action required.

No code page has been selected

Cause: MODE. In the MODE STATUS code page operation, the device reports that no code page is selected for that device.

Action: No action required. If desired, use MODE to SELECT a code page from the list of prepared code pages that immediately follow this message.

No Drive Specified

Cause: DRIVER.SYS. You did not specify the physical drive number in the DEVICE statement in the CONFIG.SYS file.

Action: See the section under DRIVER.SYS in Chapter 4 for the correct format to follow.

No Extended DOS Partition to delete.

Cause: FDISK. You selected the "Delete extended DOS partition" option, but there is no extended DOS partition on the current fixed disk.

Action: Return to the FDISK Options menu and select "Display Partition Data" to review.

No files added

Cause: REPLACE. The /A parameter was specified but all the files on the source already exist in the target directory.

Action: No action required.

No files found - x

Cause: REPLACE. No files described by the source path and filename were found on the source.

Action: No action required.

No files replaced

Cause: REPLACE. All files found on the target were not replaced because you answered N to all "REPLACE <filename>" prompts, or no source files existed on the target.

Action: No action required.

No fixed disks present

Cause: FDISK. The FDISK program was run on an IBM Personal Computer that:

- Does not have a fixed disk, or
- Has a fixed disk in the expansion unit and the expansion unit is not powered on, or
- Has a fixed disk that is not properly installed.

Action: From the preceding list, determine what caused the problem and act appropriately. Make sure that the expansion unit is powered on first.

No free file handles

Cause: DOS. An attempt to load the command processor failed because there are too many files open.

Action: Increase the number in the FILES command in the configuration file (CONFIG.SYS) and restart DOS.

No Logical DOS Drives to delete.

Cause: FDISK. Information message. There are no logical DOS drives in this partition.

Action: Press Esc to return to the previous screen.

No logical drives defined

Cause: FDISK. There are no logical DOS drives defined in the extended DOS partition.

Action: To use the space on the disk reserved for the extended DOS partition, create one or more logical DOS drives using FDISK and format the created drive letters, using the FORMAT command.

No more files

Cause: COMMANDS. An application program attempted to open more files than specified in the FILES statement in the CONFIG.SYS file.

Action: Increase the value specified in the FILES statement (the maximum number of files allowed for the complete system).

No page addresses specified

Cause: XMA2EMS.SYS. You tried to install the XMA2EMS.SYS device driver but did not specify any page addresses.

Action: Refer to "Resolving EMS Conflicts" in Chapter 4 for further information on what action to take.

No paper

Cause: The indicated printer is either out of paper or not turned on.

Action: Turn the printer on, press the "online" switch, or add paper and retry. See the MODE command description of continuous retry in Chapter 6.

Refer to "Responses" at the beginning of this appendix.

No partitions defined

Cause: FDISK. There are no partitions defined on the fixed disk at the time.

Action: If you wish to use the fixed disk for a DOS disk, create a primary DOS partition using FDISK, and format the created drive letter using the FORMAT command.

No partitions to delete.

Cause: FDISK. You selected the "Delete DOS partition or logical DOS drive" option and there are no partitions created on this fixed disk.

Action: Return to the FDISK Options menu and select a different option.

No partitions to make active.

Cause: FDISK. You selected the "Set active partition" option, but there were no partitions on the current fixed disk to be made active.

Action: Return to the FDISK Options menu and select the "Create DOS partition or logical DOS drive" option to create a partition, then the "Set active partition" option to make it the active partition.

No Path

Cause: PATH. Information message. An alternate path for DOS to search for commands and batch files is not specified.

Action: This is an information message unless you want to define a set of paths. If so, enter PATH and the set of paths you want; then press Enter.

No Primary DOS Partition to delete.

Cause: FDISK. You selected the "Delete primary DOS partition" option, but there is no DOS partition on the current fixed disk.

Action: Return to the FDISK Options menu and select "Display Partition Data" to review.

No retry on parallel printer time-out

Cause: MODE. P was not specified in Option 1, requesting no retry on time-out errors.

Action: No action required.

No room for system on destination disk

Cause: SYS. The destination diskette does not contain the required reserved space for DOS; therefore, the system cannot be transferred.

Action: Format a blank diskette (use the FORMAT /S command) and copy any other files to the new diskette.

No room in directory for file

Cause: EDLIN. The directory on the specified disk is full. Your editing changes are lost.

Action: Make sure that your disk has available directory entries and run EDLIN again.

No source drive specified

Cause: COMMANDS. You did not specify the source drive.

Action: Try again, specifying both the source and target drives.

No space to create a DOS partition

Cause: FDISK. You selected the "Create DOS Partition" option on the current fixed disk. There is no space on the current fixed disk to create a DOS partition.

Action: Remove or reduce the size of the existing partition. Run FDISK again to create the DOS partition(s).

No subdirectories exist

Cause: TREE. Information message. The specified drive contains only a root directory; therefore, there is no directory path to display.

Action: No action required.

No system on default drive

Cause: SYS. The system files to be transferred were not found on the disk or the diskette in the default drive.

Action: Select a disk or a diskette with the system files on it (DOS diskette) and try again.

No target drive specified

Cause: COMMANDS. You did not specify the target drive.

Action: Try again, specifying both the source and target drives.

Non-System disk or disk error

Replace and press any key when ready

Cause: IBMBIO. No entry exists for IBMBIO.COM or IBMDOS.COM in the directory; or a disk read error occurred when you started up the system.

Action: Insert a DOS diskette in drive A and restart your system.

***** Not able to backup file *****

Cause: BACKUP. The files cannot be backed up because of a file sharing conflict.

Action: Retry the request at a later time by specifying the same backup command, but include the /M parameter.

***** Not able to restore file *****

Cause: RESTORE. The file you want to restore cannot be opened because of a sharing conflict.

Action: Try again at a later time.

Not enough memory to continue

Cause: DOSSHELL. The DOS Shell is installed on your system but there is not enough free memory to load it. The Shell requires 256KB of memory.

Action: Select from the following:

- Remove some of the resident device drivers.
- Exit some of the running programs.
- Decrease the value of the /B Startup option in the DOSSHELL.BAT file.
- Install more memory on the system.

Not enough room to merge the entire file

Cause: EDLIN. Information message. A Transfer command was unable to merge the complete contents of the specified file because of insufficient memory. Only part of the file was merged.

Action: Either reduce the size of one of the files being merged, or install more memory.

Not found

Cause: EDLIN. Information message. EDLIN could not find the string specified by the REPLACE text or SEARCH text commands within the specified range of lines. Or, if a search is resumed by replying with an N to the "OK?" prompt, no further occurrences of the string were found.

Action: Make sure that you properly use uppercase and lowercase letters for the string to be searched.

Not ready

Cause: An error occurred while attempting to read or write to the indicated drive. Common causes of this error are as follows:

- The drive door is not closed.
- The diskette is not properly formatted.
- The printer is not on or online.
- The printer does not have enough paper or is busy.

Action: Correct the error and try again. If your default drive is a diskette drive, try typing F to return to the command prompt.

Not same device

Cause: COMMANDS. You attempted to specify a drive and path in the second filename when renaming a file.

Action: Do not specify a drive and path in the second filename of the RENAME or REN command.

O

xxxxxx of xxxxxx bytes recovered

Cause: RECOVER. This is an information message indicating the number of bytes of the specified file that were recovered.

Action: No action required.

One or more CON code pages invalid for given keyboard code

Cause: KEYB. You attempted to change your keyboard with a code page combination inconsistent with the CON device code page combinations; the code pages prepared by MODE and the code page supported directly by your hardware. The current CON device code page combination is invalid for the given keyboard code.

Action: Warning message only. The keyboard is loaded, but only the valid code pages are available for the keyboard.

Only non-startable partitions exist

Cause: FDISK. You asked FDISK to change the active partition, but none of the defined partitions can successfully start from the fixed disk.

Action: Create a startable partition, such as the primary DOS partition.

Only partitions on Drive 1 can be made active.

Cause: FDISK. The system can only start from the first fixed disk, so there is no reason to mark a partition on drive 2 as active.

Action: Use FDISK to mark a partition on disk 1 as active to start from the fixed disk.

Out of environment space

Cause: DOS. This is an information message caused by one of the following:

- DOS was unable to accept the SET command you just issued because it was unable to expand the area that the environment information is kept in. This normally occurs when you try to add to the environment after loading a program that makes itself resident (PRINT, MODE, or GRAPHICS, for example).
- You tried to expand the environment while in a batch file.

Action: Edit the CONFIG.SYS file to include or increase the /E: parameter in the SHELL statement or remove unnecessary strings from the environment. Restart the system.

Out of input

Cause: COMMANDS. Information message. You were reading a file and reached the end of the file.

Action: No action required.

P

Pages available for expanded memoryx

Cause: XMA2EMS.SYS. Information message showing the number of 16KB pages that are available for EMS mapping.

Action: No action required. Refer to "XMA2EMS.SYS" on page 90 for further information.

Parameter format not correct

Cause: DOS and COMMANDS. One or more of the parameters entered for the command is not valid, is in the wrong order, or is duplicated.

Action: Make sure that the character following the slash (/) is valid for the program being run.

Parameter syntax or value error

Cause: XMA2EMS.SYS. The syntax of the DEVICE=XMA2EMS.SYS command in the CONFIG.SYS file is incorrect.

Action: Edit the CONFIG.SYS file and make sure that the parameters and their values are correct and in the allowed ranges. Refer to XMA2EMS.SYS in Chapter 6 for further information.

Parameter value not allowed

Cause: DOS and COMMANDS. One or more of the parameters entered for the command is not valid.

Action: Make sure that the value following the slash (/) is valid for the program being run.

Parameter value not in allowed range

Cause: DOS and COMMANDS. One or more of the parameter values entered is too high or too low.

Action: Check your typing to see if you misspelled a parameter.

Parameters not compatible

Cause: FORMAT. You attempted to use two parameters that are not compatible with each other (/B and /V, for example); the parameters specified do not apply to the drive or media.

Action: Review the FORMAT command. Correct the parameters and re-enter the command.

Parameters not supported

Cause: FORMAT. You tried to format a disk using the /N or /T parameters separately.

Action: Because the /N and /T parameters are used together, retry following the correct format.

Parameters not supported by drive d

Cause: FORMAT. This message occurs during initialization. An invalid parameter that cannot be supported on a specific type of hardware was entered.

Action: Review the FORMAT command parameters for further information.

Partition selected (#) is not startable, active partition not changed.

Cause: FDISK. The partition that you selected to be marked active is not a startable partition. The active partition was not changed.

Action: Select another partition to be marked active.

Partition x made active

Cause: FDISK. Information message. Partition x is now marked as startable.

Action: No action required.

Path not found

Cause: DOS and COMMANDS. A file or path named in a command or command parameter does not exist in the directory of the specified (or default) drive.

Action: Retry the command, using the correct path and filename.

Path too long

Cause: COMMANDS. The path specified as a parameter was greater than 63 characters.

Action: Correct the path and try again.

Pathname too long

Cause: PRINT. The path for the file you specified is longer than 63 characters.

Action: No action required.

x percent of disk formatted

Cause: FORMAT. Information message telling you the percentage of the disk that has already been formatted.

Action: No action required.

Performing XMA diagnostics:

Cause: XMA2EMS.SYS. Information message indicating that the diagnostics are being performed on your system.

Action: No action required. When the diagnostics have completed, you receive the message, "Diagnostics completed xKB OK."

Please insert volume xxxxxxxx serial xxxx-yyyy

Cause: COMMANDS. The diskette in the drive was changed while files were still open on the diskette.

Action: Reinsert the correct diskette.

Press any key to begin copying file(s)

Cause: XCOPY. Pause to allow you to change diskettes before copying begins.

Action: Change diskettes as needed and press any key.

Press any key to begin recovery of the file(s) on drive d

Cause: RECOVER.

Action: Insert the diskette to be recovered in the indicated drive and press any character key.

Press any key to continue ...

Cause: DOS. You have entered an option or a command.

Action: Press any key on the keyboard to continue processing.

Previous Code Page: xxx

Cause: GRAFTABL.

Where:

nnn = 437
nnn = 850
nnn = 860
nnn = 863
nnn = 865

- Status message indicating that GRAFTABL was previously used to load a code character table, and that table is still recognized as the specified table. If a new table is loaded by GRAFTABL, it overlays the standard table already in place, with no further loss of user RAM space.
- If "Previous Code Page: None" is shown, the Graftabl command has not been used to load in a resident code page table yet.
- If "Previous Code Page: Non-Standard" is shown, the GRAFTABL has already loaded a code page, but the table has been altered or the 1FH vector pointing to the table has been altered.

Action: No action required.

Previously prepared code page replaced

Cause: MODE. Because the space reserved for a new font definition is already filled, a previously defined code page is replaced by the new specified code page. This is not necessarily an error, because the replacement may have been intentional.

Action: Use the MODE code page status function to get the current list of code pages currently defined for the device. Use another PREPARE function of MODE to change the list if it is not correctly defined.

Primary DOS partition already exists.

Cause: FDISK. A primary partition for DOS has already been set up.

Action: Return to the FDISK Options menu and select a different option.

Primary DOS Partition created.

Cause: FDISK. The primary DOS partition was created on the fixed disk, and a drive letter was assigned to the partition.

Action: The drive letter assigned when the partition was created must be formatted, using the FORMAT command, before it can be used.

Primary DOS Partition deleted

Cause: FDISK. Information message. The primary DOS partition and its contents have been deleted from the fixed disk.

Action: No action required.

PRINT queue is empty

Cause: PRINT. Information message. There are currently no files being processed by PRINT.

Action: No action required.

PRINT queue is full

Cause: PRINT. You tried to add more than the limit of 10 files to the print queue; 10 files is the default. You can set the limit to 32 files. See the PRINT command.

Action: Wait until a file is printed before you add another file to the print queue.

Printbox ID not in GRAPHICS profile

Cause: GRAPHICS. At the command prompt, you specified a PRINTBOX ID that was not defined in the GRAPHICS profile.

Action: The ID specifies a print box size and should match the first operand of a PRINTBOX statement in the GRAPHICS profile.

Printer error

Cause: MODE. The MODE command (option 1) was unable to set the printer mode because:

- An I/O error occurred.
- The printer is out of paper (or switch is off).
- The printer timed out (is not ready).
- The printer is off-line.

Action: Determine which of the previous conditions caused the error message and correct.

Printer lines per inch set

Cause: MODE. Information message. You tried to set the printer vertical spacing to the specified 6 or 8 lines per inch.

Action: If the try was unsuccessful, an error message follows this message on the screen.

Printer out of paper error

Cause: The indicated printer is either out of paper or not turned on.

Action: Turn the printer on, press the "Online" switch, or add paper and retry. See the MODE command description of continuous retry in Chapter 6.

Refer to "Responses" at the beginning of this appendix.

Printer type not in GRAPHICS profile

Cause: GRAPHICS. At the command line, you specified a certain printer type that is not defined in the GRAPHICS profile.

Action: See Chapter 6 for further information on the printer types to select from.

Probable non-DOS disk

Continue (Y/N)?

Cause: CHKDSK. The file allocation table identification byte contains invalid information. Either the disk was not formatted by DOS or has become badly damaged.

Action: If you did not use the /F parameter, and you replied with a Y, CHKDSK shows its possible corrective actions without really changing the disk. We recommend doing this first, before you consider using the /F switch and replying with a Y.

Processing cannot continue

Cause: CHKDSK. Information message. This message is followed by another message that explains why CHKDSK cannot continue. This message is normally issued when there is not enough memory.

Action: No action required.

Profile statement out of sequence on line x

Cause: GRAPHICS. A profile statement is out of the correct sequence on line x.

Action: Review and correct the sequence of the statement.

Program Menu and DOS Services not active

Cause: DOSSHELL. The /MENU and /DOS startup options are missing in the DOSSHELL.BAT file. The DOS Shell program cannot be run without these options.

Action: Include the /MENU and /DOS startup options in the DOSSHELL.BAT file; then type DOSSHELL at the command prompt to start the DOS Shell program.

Program too big to fit in memory

Cause: DOS. The file containing the external command cannot be loaded because it is larger than the available free memory.

Action: Reduce the number in the BUFFERS parameter in your CONFIG.SYS file (if you have specified BUFFERS), restart your system, and reissue the command.

If the message reappears, your system does not have enough memory to process the command.

PSPRINT is already installed

Cause: PSPRINT. Information message indicating that you tried to install PSPRINT for a second time.

Action: No action required.

PSPRINT/PRINT conflict

Cause: PSPRINT. You cannot start PRINT if PSPRINT is already started on your network.

Action: No action required.

R

RATE and DELAY must be specified together

Cause: MODE. The typematic rate and delay must both be set at the same time.

Action: Specify both rate and delay values when you want to change the setting of either.

Read error in:

x:\level 1\level 2.

Cause: EDLIN. An error occurred while reading file x:\xxxx\xxxx into memory.

Action: Copy the file or a backup of the file to a different disk and try again.

Read fault error

Cause: COMMANDS. DOS was unable to read the data from the device.

Action: Refer to "Responses" at the beginning of this appendix.

- Make sure that the diskette is properly inserted in the drive.
- If you get the same message, select Abort and rerun the command with a different disk.

Reading source file(s) ...

Cause: XCOPY. Information message that shows the transfer of the source file(s) is in progress.

Action: No action required.

Re-insert diskette for drive *d* and press Enter when ready

Cause: FORMAT. This message, which usually occurs after you enter FORMAT /S, means:

- DOS filled the memory with system files, but could not read all the files into memory because of insufficient memory size.
- After asking for the new diskette, FORMAT started formatting it and putting all the files in memory on the new diskette.
- FORMAT then asked that the DOS diskette be inserted so it could finish loading the rest of the DOS files into memory.

Action: FORMAT is now asking you to insert the new diskette again so that it can finish the task of writing the DOS files onto the new diskette.

Replace < *d:path\filename* > (Y/N)?

Cause: REPLACE. The /P parameter was specified; you are prompted before each file is replaced.

Action: Enter a Y or an N at the command prompt.

Replacing < *d:path\filename* >

Cause: REPLACE. Information message indicating which file is currently being replaced.

Action: No action required.

Requested logical drive size exceeds the maximum available space.

Cause: FDISK. The cylinder size entered for the logical drive is larger than the maximum available space in the extended DOS partition. FDISK displays the maximum available size for the partition as the default entry value.

Action: Enter a value that is less than or equal to the default size displayed.

Requested partition size exceeds the maximum available space.

Cause: FDISK. The cylinder size entered for the partition size is larger than the maximum available space on the fixed disk. FDISK displays the maximum available size for the partition as the default entry value.

Action: Enter a value that is less than or equal to the default size displayed.

Required font not loaded

Cause: MODE. The console device driver (DISPLAY.SYS) does not have the font size required to set the requested number of lines in the current code page.

Action: Set the maximum number of subfonts in the DEVICE=DISPLAY.SYS statement in the CONFIG.SYS file; restart DOS.

Required parameter missing

Cause: COMMANDS. You tried to enter a command and did not use a required parameter.

Action: Make sure that you did not misspell a parameter. If your typing is correct, you may have left out a parameter. Refer to the command format to correct the command, and re-enter it.

Required profile statement missing before line x

Cause: GRAPHICS. A profile statement has been left out of the sequence of statements before line x.

Action: Review GRAPHICS statements and add the missing statement before line x.

Required system component not installed

See the documentation on your network for details.

Resident part of PRINT installed

Cause: PRINT. Information message. The message appears the first time you use the PRINT command.

This message shows that a program has been loaded into memory to handle later PRINT commands. Available memory for your applications has been reduced by about 3200 bytes.

Action: No action required.

Resident portion of MODE loaded

Cause: MODE. Information message. This message shows that when MODE is entered for a non-screen-setting function, it is sometimes necessary to load a portion of code to be made permanently resident.

Action: No action required.

Restore file sequence error

Cause: RESTORE. The file was not restored because the diskettes were not inserted in sequential order.

Action: Retry the restore, inserting the diskettes in sequential order.

***** Restoring files from drive d *****

Cause: RESTORE. Information message. This message is followed by a list of files that were restored from the indicated diskette.

Action: No action required.

***** Restoring files from drive d *****

Source: x

Cause: RESTORE. This is an information message telling you that the files on the source drive are being restored.

Action: No action required.

Run-time error xxxx

Cause: COMMANDS. This message is produced when you have insufficient memory. The amount of available memory is too small to allow these commands to function.

Action: You need to increase the amount of available memory in your system. You may do this in several ways including:

- Change the BUFFERS parameter in the CONFIG.SYS file to a smaller value.
- Remove terminate and stay resident programs.

If you are using the DOS SHELL, make sure the /TRAN parameter is added to the DOSSHELL.BAT file.

Restart the system and try the command again. If the message still appears, your system does not have enough memory to process the command.

S

Same drive specified more than once

Cause: FASTOPEN. The same drive letter was specified more than once.

Action: Re-enter the command, specifying each drive letter only once.

Same parameter entered twice

Cause: FORMAT. Information message. You have entered one of the following parameters twice: /T, /N, /F, or /V.

Action: Re-enter the correct parameter.

SECOND diskette bad or incompatible

Cause: DISKCOMP. You tried to read to the wrong media in an incompatible drive.

Action: Check your diskette.

Sector not found

Cause: The sector containing the data could not be located on the disk.

Action: Refer to "Responses" at the beginning of this appendix.

If you get the same message, select Abort and rerun the command with a different disk.

Sector size adjusted

Cause: VDISK. VDISK found it necessary to adjust the sector size value in the DEVICE=VDISK.SYS in the CONFIG.SYS command.

Action: No action required.

Sector size too large in file

Cause: IBMBIO. The device driver named in <filename> specifies a device sector size larger than the devices previously defined to DOS.

Action: Reduce the sector size to conform with the sector size of DOS. If this is a purchased program, return it to your authorized IBM representative.

Seek error

Cause: The fixed disk or diskette drive was unable to find the proper track on the disk.

Action:

- Make sure that the diskette is properly inserted in the drive.
- Try a different drive.
- Run CHKDSK.

Refer to "Responses" at the beginning of this appendix.

SHARE already installed

Cause: SHARE. SHARE has already been loaded and can be loaded only once.

Action: No action required.

Sharing violation

Cause: COMMANDS. You tried to access a file using a sharing mode not allowed now. Normally, this occurs when someone else is accessing the file in compatibility mode for writing, or in a sharing mode that doesn't allow you to access the file at the same time. Another reason may be that you are attempting to use a fixed disk partition size greater than 32MB without having the SHARE command loaded.

Action: Proceed with one of the following:

- Wait a short time and try again. See "Responses" at the beginning of this appendix. Select "Retry" as your first response. If that fails, select Abort.
- Load SHARE if a fixed disk partition size greater than 32MB is used.

Source and target drives are the same

Cause: BACKUP or RESTORE. You have entered the same drive as the source and target.

Action: Specify a different drive letter for the source and target drives.

SOURCE diskette bad or incompatible

Cause: DISKCOPY. The errors occurred while reading the diskette. The error may have been caused by bad sectors or the diskette in the source drive may not be compatible with the source drive type (a high-capacity diskette in a 320/360KB diskette drive, for example).

Action: Check your diskette.

Source does not contain backup files

Cause: RESTORE. The source media does not contain files created by the BACKUP command.

Action: No action required.

Source path required

Cause: REPLACE. You did not specify a source path.

Action: Specify a source path and try again.

Specified COMMAND search directory bad

Cause: DOS. An invalid path name was specified.

Action: Specify a valid path name containing COMMAND.COM to be used for COMSPEC.

Specified COMMAND search directory bad access denied

Cause: DOS. The path name specified could not be accessed.

Action: Specify a valid path name that contains COMMAND.COM to be used for COMSPEC.

Specified drive does not exist, or is non-removable

Cause: DISKCOPY or DISKCOMP. The drive specified is a fixed disk drive or does not exist on your system.

Action: Check the drive specified and re-enter the command.

Specified page address conflicts with installed adapter at address xxxx

Possible 16KB page available at: xxxx

Cause: XMA2EMS.SYS. You did not supply an address or supplied a conflicting address in the DEVICE = XMA2EMS.SYS statement in your CONFIG.SYS file. The XMA2EMS.SYS device driver found a possible 16KB page available at the address shown.

Action: Refer to "Resolving EMS Conflicts" in Chapter 4 for further information on what action to take.

Specified page address conflicts with installed adapter at address xxxx

Possible 64KB frame available at: xxxx

Cause: XMA2EMS.SYS. You did not supply an address or supplied a conflicting address in the DEVICE=XMA2EMS.SYS statement in your CONFIG.SYS file. The XMA2EMS.SYS device driver found a possible 64KB frame available at the address shown.

Action: Refer to "Resolving EMS Conflicts" in Chapter 4 for further information on what action to take.

Status for device ddd:

Cause: MODE. This is the heading for the report of status for the specified device.

Action: No action required.

Syntax error

Cause: DOS and COMMANDS. The command format you typed is incorrect.

Action: Make sure that you have used the correct format for this command.

Syntax errors in GRAPHICS profile

Cause: GRAPHICS. You have entered an incorrect syntax in your statements in the GRAPHICS.PRO file. For example, words that are in reverse order.

Action: Review the statements and correct the syntax errors.

System resource exhausted

Cause: COMMANDS. The system is unable to obtain all needed resources to process this command. All available storage is currently in use.

Action: Try one of the following:

- Reduce the number of programs presently running on your system and retry the command.
- Edit the CONFIG.SYS file to reduce the value specified in the BUFFERS statement, or reduce the size allocated for a virtual disk in a DEVICE=VDISK.SYS statement. Restart the system and retry the command.

- Install another memory option in your system.
- Contact the supplier of the application.

System transferred

Cause: FORMAT or SYS. This message is displayed when you specify FORMAT /S. It is an information message telling you that the system files have been installed on the formatting disk.

Action: No action required.

T

Target cannot be used for backup

Cause: BACKUP. Your try to create files on the target disk failed.

Action: Replace the disk if it is removable. If not, BACKUP to a different device or restart the system and try again.

TARGET diskette bad or incompatible

Cause: DISKCOPY. You tried to write to the wrong media in an incompatible drive.

Action: Check your diskette.

Target diskette may be unusable

Cause: DISKCOPY. This message follows an unrecoverable read, write, or verify error message. The copy on the target diskette may be incomplete because of the unrecoverable I/O error.

Action:

- If an error is on the target diskette, get a different diskette for your target, and retry the DISKCOPY command.
- If the error is on the source diskette, copy all files from the source diskette to another diskette; then try to reformat the source diskette.

Target diskette unusable

Cause: DISKCOPY. Errors met during the copy show that the target diskette is dirty, damaged or of poor quality, or the drive is malfunctioning on some tracks.

Action: Change the target drive or the diskette and try again.

Terminate batch job (Y/N)?

Cause: DOS. This message appears when you press Ctrl+Break while DOS is processing a batch file.

Action: Enter a Y to stop processing the batch file. Entering an N only ends the command that was processing when Ctrl+Break was pressed; processing resumes with the next command in the batch file.

The last file was not restored

Cause: RESTORE. You stopped RESTORE before it completely restored the last file listed, or there was not enough room on the fixed disk, and RESTORE deleted the partially restored file.

Action: If RESTORE has ended, you can re-enter the RESTORE command with the filename of the file(s) not restored to continue from the point where RESTORE stopped.

If the problem occurred because you ran out of room on the fixed disk, you must evaluate which files to keep and which ones to delete. Continue processing RESTORE.

The only startable partition on Drive 1 is already set active.

Cause: FDISK. Only one partition exists on drive 1, and it is already marked as active.

Action: No action required.

Too many block devices

Cause: IBMBIO. You attempted to install more than the system limit of 26 block device units.

Action: Change the "DEVICE" value in the CONFIG.SYS file so that there are only 26 block device units (including those automatically installed by DOS for disk drives). See Chapter 4, "Changing the System Configuration," for more information.

Too many drive entries

Cause: FASTOPEN. Too many drive letters were specified.

Action: Re-enter the command with fewer drive letters.

Too many extent entries

Cause: FASTOPEN. You have specified too many extent entries in the FASTOPEN statement. All *m* parameters must not be greater than 999. This amount has been exceeded.

Action: Review your extent entries and make sure that the values provided are in the range of 1 through 999.

Too many file/directory entries

Cause: FASTOPEN. You have specified too many directory or file entries in the FASTOPEN statement. The total value of *n*'s must range from 10 through 999.

Action: Review your entries and make sure that the values given are in the range of 10 through 999.

Too many files open

Cause: EDLIN, COMP, or LABEL. You attempted to open the specified file, but were not able to.

Action: Increase the FILES value in the CONFIG.SYS file.

Too many open files

Cause: COMMANDS. The system configuration is such that there are not enough file handles available for the command to complete its task.

Action: Increase the FILES value in the CONFIG.SYS file if it is less than 20 now.

Too many parameters

Cause: COMMANDS. Too many positional parameters were entered on the command line.

Action: Review the command syntax and re-enter the command.

Too many redirections

See the documentation on your network for details.

Top level process aborted, cannot continue

Cause: During startup, COMMAND.COM or a command in general detected a disk error, and you selected to abort. The error is unrecoverable and COMMAND has no choice but to stop.

Action: Use another disk.

xxxx total allocation units on disk

Cause: CHKDSK. Information message indicating how many allocation units the complete disk has. It does not state how many allocation units are available (free).

Action: No action required.

Total disk space is xxxx Mbytes (1Mbyte = 1048576 bytes)

Cause: FDISK. Information message. This message shows the total space on the current fixed disk.

Action: No action required.

Transfer size adjusted

Cause: VDISK. The maximum number of sectors to transfer was not in the range 1 – 8. The value 8 is used by VDISK.

Action: No action required.

Tree past this point not processed

Cause: CHKDSK. Information message. CHKDSK is unable to continue processing past the directory path currently being examined because of the error displayed in the previous message.

Action: No action required.

U

Unable to access drive d.

Cause: FDISK. FDISK is unable to access the drive you specified.

Action: Power down your system and retry.

Unable to create directory

Cause: DOS and COMMANDS.

- The directory you want to create already exists.
- One of the directory path names you specified could not be found.
- You attempted to add a directory to the root directory and it is full.
- A file by that name already exists in that directory.
- The directory name you specified contains invalid characters or is a reserved device name.

Action: Proceed with the following:

- Check to see if a directory by that name exists in the parent directory (or current directory).
- Recheck all your directory names to make sure that they are valid.

- If you are not able to add a directory to the root directory, the maximum number of directory entries to be copied to the root directory might have been reached. Try removing a file(s), subdirectory, or the volume label from the root directory.

Unable to create KEYB table in resident memory

Cause: KEYB. The KEYB command was previously installed and allocated a specific amount of resident memory for the tables. The requested configuration exceeds that resident memory.

Action: Restart DOS and reinstall KEYB with a new configuration.

Unable to perform REFRESH operation

Cause: MODE. The printer device driver (PRINTER.SYS) does not have a copy of the code page in its Random Access Memory (RAM) to download to the specified printer.

Action: Prepare and select the desired code page. To allow refreshes in the future, make sure that the number of buffers ("n" in DEVICE=PRINTER.SYS) is 1 or greater.

Unable to reload with profile supplied

Cause: GRAPHICS. You already loaded GRAPHICS and want to load it a second time specifying a different profile. The memory allocated on the first load is too small.

Action: Restart your system.

Unable to shift screen left

Cause: MODE. Shifting the screen further to the left would exceed the allowable limit.

Action: No action required.

Unable to shift screen right

Cause: MODE. Shifting the screen further to the right would exceed the allowable limit.

Action: No action required.

Unable to write BOOT

Cause: FORMAT. The first track of the diskette or DOS partition is bad. The BOOT record could not be written on it. The diskette or DOS partition is not usable.

Action: Get another diskette and retry the FORMAT command.

Unrecognized command in CONFIG.SYS

Cause: IBMBIO. An invalid command was detected in the configuration file CONFIG.SYS.

Action: Edit the file, correct the invalid command, and restart DOS.

Unrecoverable error in directory

Cause: CHKDSK. CHKDSK met an error while checking the directory.

Action: No action required.

Unrecoverable read error on drive *d*, side *n*, track *xx*

Cause: DISKCOMP or DISKCOPY. Four attempts were made to read the data from the diskette in the specified drive. The data could not be read from the indicated track and side.

Action: If the error occurred on the target diskette (just created by DISKCOPY), get a different diskette and retry the DISKCOPY and DISKCOMP commands. Otherwise, copy all files from the damaged diskette to another diskette. Reformat the bad diskette or discard it.

Unrecoverable write error on drive *d* side *n*, track *xx*

Cause: DISKCOPY. Several attempts were made to write the data to the target diskette. DISKCOPY continues copying, but the copy may contain incomplete data.

Action: Get a different diskette and re-enter the DISKCOPY command. Use FORMAT on the bad diskette to see if can be reused. If it is a bad diskette, discard it.

V

VDISK not installed—insufficient memory

Cause: VDISK. This message occurs if:

- Less than 64KB of available memory would exist even after attempting to adjust the virtual disk size and number of directory entries.
- You have specified the /E parameter, and the system does not contain extended memory.

- The amount of available extended memory is too small to install the virtual disk, even after adjusting the parameters.

Action: No action required.

VDISK Version 4.00 virtual disk x

Cause: VDISK. This message is issued when VDISK receives control to install a virtual disk, and x tells you which drive letter is being assigned to the virtual disk.

Action: No action required.

VERIFY is on|off

Cause: VERIFY. This message shows the status of VERIFY, either ON or OFF.

Action: Enter the command you want. For example if the screen shows "Verify is off" and you want "Verify is on," enter the command:

VERIFY ON

Volume in drive d has no label

Cause: DOS and LABEL. Information message. The volume in the drive specified does not contain a volume label.

Action: No action required.

Volume in drive d is xxxxxxxxxxxx

Cause: DOS and LABEL. Information message displaying the volume label.

Action: No action required.

Volume label (11 characters, ENTER for none)?

Cause: FORMAT or LABEL. You are asked to enter a 1 through 11 character volume label that is written on the disk.

Action: Enter 1 through 11 valid filename characters.

Volume label does not match.

Cause: FDISK. The volume label you entered is different from the label assigned to this drive.

Action: Enter the correct volume label.

Volume Serial Number is xxxx-yyyy

Cause: COMMANDS. Information message displaying the volume serial number.

Action: No action required.

W

WARNING! ALL DATA ON NON-REMOVABLE DISK DRIVE d WILL BE LOST

Proceed with Format (Y/N)?

Cause: FORMAT. Prompt telling you that the fixed disk will be formatted.

Action: If you do not want to format the fixed disk, type in an N. If you want to format the fixed disk, type in a Y.

WARNING - directory full

Cause: RECOVER. There is insufficient directory space to recover more files.

Action: Copy some of the files to another disk, erase them from this disk, and run RECOVER again.

**WARNING! Diskette is out of sequence
Replace the diskette or continue if okay**

Cause: RESTORE. The backup diskette is not the next one in sequence.

Action: Replace the diskette unless you are sure no files on the diskette(s) you skipped would be restored. RESTORE continues when you press a key. This message is repeated if you try to skip a diskette that contains part of a file being restored.

**WARNING! File x
is a read-only file
Replace the file (Y/N)?**

Cause: RESTORE. The indicated file is read-only.

Action: Enter a Y if you want to replace it or enter an N if you do not. RESTORE continues after you press Enter. You see this message only if you specified the /P option.

**WARNING! File x
was changed after it was backed up
Replace the file (Y/N)?**

Cause: RESTORE. The indicated file on the target disk has a later date and time than the corresponding file on the backup diskette.

Action: Enter a Y if you want to replace it with the backed up version or enter an N if you do not. RESTORE continues after you press Enter. You see this message only if you specified the /P option.

**WARNING! Files in the target drive
d:\BACKUP directory will be erased
Press any key when ready**

Cause: BACKUP. This is a warning that the files in the \BACKUP directory will be erased.

Action: If you do not want to proceed, press Ctrl+Break. To continue, press any key.

**WARNING! Files in the target drive
d:\root directory will be erased
Press any key when ready**

Cause: BACKUP. This is a warning that the files in the root directory will be erased.

Action: If you do not want to proceed, press Ctrl+Break. To continue, press any key.

WARNING! No files were found to back up

Cause: BACKUP. Information message telling you that no files were found to back up.

Action: No action required.

WARNING! No files were found to restore

Cause: RESTORE. No backup files that matched the restore file specification were found.

Action: Make sure that the criteria you specified for BACKUP is what you want; otherwise, this is an information message.

**WARNING! No partitions are set active - disk 1 is not startable unless
a partition is set active**

Cause: FDISK. There are no active partitions set.

Action: Go to the FDISK Options menu and set a partition active.

WARNING! SHARE should be loaded for large media

Cause: IBMBIO. The application program you are running cannot handle more than the 32MB boundary. IBMBIO tried to load SHARE.EXE, but cannot find the file or the DOS 4.00 version.

Action: Make sure that you have the DOS 4.00 SHARE.EXE file loaded and that it is either in your root directory or in a PATH set up on your system. Unpredictable results may occur if you ignore this message.

WARNING! The partition set active is not startable.

Cause: FDISK. A try to start from the fixed disk causes unpredictable results.

Action: Use option 2 on the main FDISK screen (change active partition) to set the startable, active partition.

Write failure, diskette unusable

Cause: SYS. A DOS critical error has occurred when SYS was writing data to the disk.

Action: Rerun the SYS command with a different disk.

Write fault error

Cause: COMMANDS. DOS was unable to write the data to the device.

Action:

1. Make sure that the diskette is properly inserted in the drive.
2. If the diskette is not the problem, select Retry.
3. If you get the same message, select Abort and rerun the command with a different disk.

Refer to "Responses" at the beginning of this appendix.

Write protect error

Cause: A try was made to write on a write-protected diskette.

Action: Investigate carefully before you decide to write on a write-protected diskette.

Important: If you try to use a double-sided diskette in a single-sided drive, or if you try to use a 9-sector-per-track diskette on a version of DOS before Version 2.00, one of the preceding write messages appears. If any of the preceding mes-

sages appears for a diskette drive, do not change diskettes before responding with Abort, Retry, Ignore, or Fail.

X

All messages starting with a variable (alterable number x) are alphabetized on the first non-x word.

XMA2EMS: Expanded Memory Manager
(c) Copyright IBM Corporation 1988

Cause: XMA2EMS.SYS. Information message showing that the XMAEM.SYS device driver is currently installed on your system.

Action: No action required.

Messages Beginning with Numbers

10 Mismatches – ending compare

Cause: COMP. Information message. Ten mismatched locations were detected in the files being compared. COMP assumes that the files are so different that further comparisons would serve no purpose.

Action: No action required.

80386 XMA Emulator installed

Cause: XMAEM.SYS. Information message showing that the XMAEM.SYS device driver is currently installed on your system.

Action: No action required.

80386 XMA Emulator not installed

Insufficient memory for requested parameter value

Cause: XMAEM.SYS. There is not enough available memory for the parameter value you specified in the DEVICE = XMAEM.SYS statement located in the CONFIG.SYS file. The 80386 XMA emulator was not installed.

Action: Do not specify a size parameter for the DEVICE = XMAEM.SYS statement. For example:

DEVICE=C:\DOS\XMAEM.SYS

Refer to XMAEM.SYS in Chapter 4 for further information.

80386 XMA Emulator not installed**Parameter value must specify 64 pages or greater**

Cause: XMAEM.SYS. The parameter value specified in the DEVICE = XMAEM.SYS statement located in the CONFIG.SYS file is less than the minimum allowable value. The 80386 XMA emulator is not installed.

Action: Set the value of XMAEM.SYS from a minimum of 64 pages through the default value, which is the maximum total available memory in multiples of 16KB pages. Refer to XMAEM.SYS in Chapter 4 for further information.

80386 XMA Emulator not installed.**Protected mode already in use.**

Cause: XMAEM.SYS. You have OS/2 running on your system and you tried to start the XMAEM.SYS device driver in the DOS mode. The protect mode is already in use with OS/2 and the XMA Emulator cannot be installed.

Action: Use a system only installed with DOS.

80386 XMA Emulator not installed. This system unit is not supported. The 80386 XMA Emulator requires an IBM Personal System/2 Model 80.

Cause: XMAEM.SYS. Information message. You tried to install the XMAEM.SYS device driver on a system other than an 80386-based system like the IBM Personal System/2 Model 80.

Action: No action required.

80386 XMA Emulator Version 1.10**(C) Copyright IBM Corporation 1987, 1988 All rights reserved**

Cause: XMAEM.SYS. Information message. You have installed the XMAEM.SYS device driver in your CONFIG.SYS file.

Action: No action required.

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Service Statement

This Statement is complementary to the IBM Conditions of Use contained in this package.

Program Name: IBM Disk Operating System Version 4.00

Program Number: 5604-264

Service End Date: 31st October 1989

Part Number: 07F8714 (3.5 inch), 07F8725 (5.25 inch)

IBM will provide service for this program, as specified in the Programming Announcement, until the Service End Date given above.

Service will be provided by a designated IBM support group, with the intent of making the program perform according to its specifications or, if there are none, to its principles of operation. The group will respond to defect-related telephone queries by:

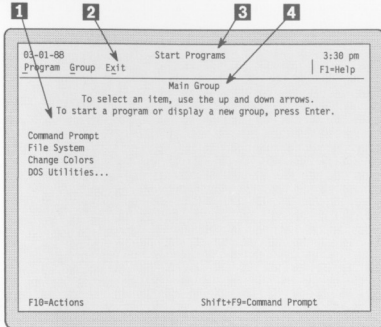
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The DOS Shell Reference Card

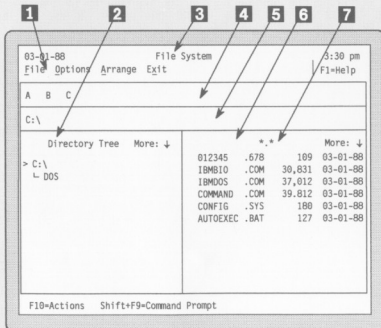
These two figures show the different parts of Start Programs and the File System.

Start Programs



- 1** Group Contents
- 2** Action Bar
- 3** Display Title
- 4** Group Title

File System



- 1** Action Bar
- 2** Directory Tree
- 3** Display Title
- 4** Drive Identifier
- 5** Path Area
- 6** File List
- 7** Filename Area

Shell Special Key Assignments

Some keys perform special tasks in the DOS Shell. This figure lists these assignments. (When a panel is displayed over Start Programs or the File System, not all these key assignments are active.)

Task	Key
Cancel	Esc
Enter	↵
Move the cursor	↑ or ↓ or → or ←
Switch panel area in File System	Tab
Single file select and deselect	Spacebar
Scroll information	PgUp or PgDn
Help	F1
In Start Programs, save information and complete copy	F2
Exit the Shell from Start Programs	F3
Exit the Shell from File System if there is no Start Programs	F3
Return to Start Programs from File System	F3
Cancel copy in Start Programs	F3
Create separator mark in PSC	F4
View files in ASCII or Hex	F9
Keys when in Help	F9
Switch to and from action bar	F10
Index when in Help	F11 (Alt+F1)
Switch to Shell command prompt	Shift+F9