The Complete

Student Disk

Computer Repair
Textbook

2004 Edition

Cheryl A. Schmidt

Table of Contents

Appendix A

Appendix B

Appendix C

Appendix D

Appendix E

A

Appendix A:
Introduction to DOS

OBJECTIVES

After completing this chapter you will

- Execute and understand basic DOS commands.
- Understand and be able to use the DOS file structure and its limitations.
- Understand the purpose of the AUTOEXEC.BAT and CONFIG.SYS files.
- Be able to create a file using a text editor.
- Be able to copy and delete commands.
- Be able to set and unset attributes on files and directories.

KEY TERMS

archive attribute	directory	operating system
ATTRIB	DOSKEY	PATH
AUTOEXEC.BAT	ECHO OFF	pipe symbol
batch file	EDIT	PROMPT
boot	executable files	read-only attribute
CD	extension	root directory
command interpreter	external command	subdirectory
command prompt	filename	switch
COMMAND.COM	FORMAT	SYS
CONFIG.SYS	hidden attribute	system attribute
COPY	internal command	TYPE
COPY CON	IO.SYS	wildcard
device driver	MS-DOS	XCOPY
DIR	MSDOS.SYS	

A+ Certification Exam Objectives
covered in this chapter (and corresponding page numbers)

OS: *Demonstrate the ability to use command-line functions and utilities (such as DIR, ATTRIB, VER, MD/CD/RD, COMMAND/CMD, FORMAT, ECHO, TYPE, EDIT, COPY, XCOPY, and DELETE/RENAME) to manage the operating system, including the proper syntax and switches.*

A-4 to A-42

OS: *Identify basic concepts and procedures for creating, viewing, and managing disks, directories and files including procedures for changing file attributes and the ramifications of those changes.*

A-4, A-26 to A-42

OS: *Identify the major operating system utilities including ATTRIB, their purpose, location, and available switches.*

A-27 to A-28, A-37 to A-42

OS: *Recognize and interpret the meaning of common error codes and startup messages from the boot sequence, and identify steps to correct the problems.*

A-4, A-14 to A-19,
A-22 to A-23

DOS OVERVIEW

Microcomputers require software to operate. An **operating system** is software that coordinates the interaction between hardware and any software applications running, as well as the interaction between a user and the computer. An operating system contains commands that both the user and the computer understand. For example, the word *hop* is not a command. If you typed the word *hop*, the computer does not know what to do. If you type the letters *DIR*, the computer recognizes the command and displays a directory or a listing of files. Operating systems also handle file and disk management. Examples of operating systems for today's microcomputers are OS/2, UNIX, Windows 9x, NT Workstation, Windows 2000, and Windows XP.

Quite a few computer problems are software-related and many hardware installations have software programs that allow the hardware to work. Running diagnostic software is something a technician also performs from time to time. Even with the advent of newer and more powerful operating systems, a technician still must enter basic commands into the computer while troubleshooting. DOS skills are still very important for a technician. When an operating system does not work, the technician must be able to input commands from a prompt.

DOS COMMANDS

In the past, many manufacturers created their own DOS version, but Microsoft controls the operating system market today. Microsoft's DOS is known as **MS-DOS**. Three DOS files enable a machine to **boot** or come up to a usable point. Two of the files are hidden. Microsoft DOS hidden system files are **MSDOS.SYS** and **IO.SYS**. The third file is **COMMAND.COM**, also known as the **command interpreter**, which is responsible for processing every command typed into the computer. These three files load from a disk, or reside and load from the hard drive. Most commands with a particular manufacturer's DOS version will not work on other machines unless the other computer has the same version of DOS. These commands are still used with today's operating systems, but they have a different purpose.

DOS has two types of commands, internal and external. **Internal commands** are not visible when viewing files on a disk or hard drive, but after you enter the commands, they will execute. Internal commands are built into the COMMAND.COM file and execute much faster than external commands. An example of an internal command is DIR. **External commands** can be seen when viewing files on a disk or a hard drive. External commands execute slower than internal commands because the external commands must retrieve data from the disk or hard drive. One example of an external command is XCOPY.

Drive letters are assigned to hardware devices when a computer boots. For example, the first floppy drive gets the drive letter A:. The colon is part of the device's drive letter. The first hard drive in a system gets the drive letter C:. The devices detected by the operating system can use drive letters A: through Z:.

All communication with DOS begins at the **command prompt**, or simply a prompt. A command prompt might look like A:\> or C:\> or C:\DOS>. It can be changed to provide different information such as the drive letter, the date, or the time. The exercise that follows this section demonstrates how to change the command prompt. Commands are typed using a keyboard. Capitalization does not matter when using DOS, but DOS commands *must* be typed in a specific format and in a specific order. Practicing DOS commands is the best way to become proficient.

DOS FILE STRUCTURE

DOS files can be organized like chapters in a book. However, DOS files are grouped into **directories**. The starting point for all directories is the **root directory**. From the root directory, other directories can be made. The root directory is limited as to how many files it can hold.

The floppy drive's root directory can hold a maximum of 128 files or directories. The hard drive's root directories can hold up to 512 files or directories. A hard drive will send an "out of space" error message if there are more than 512 files in the root directory. The hard drive may have many gigabytes of available space and still give the error just because the root directory is filled. Creating directories is a good way for organizing files and keeping the root directory uncluttered.

The DOS file structure is called a tree because of how the directories are structured with limbs (directories) extending outward. Reference DOS Figure #1 for an example of how a hard disk's file structure might be organized.

DOS Figure 1: Sample DOS File Structure
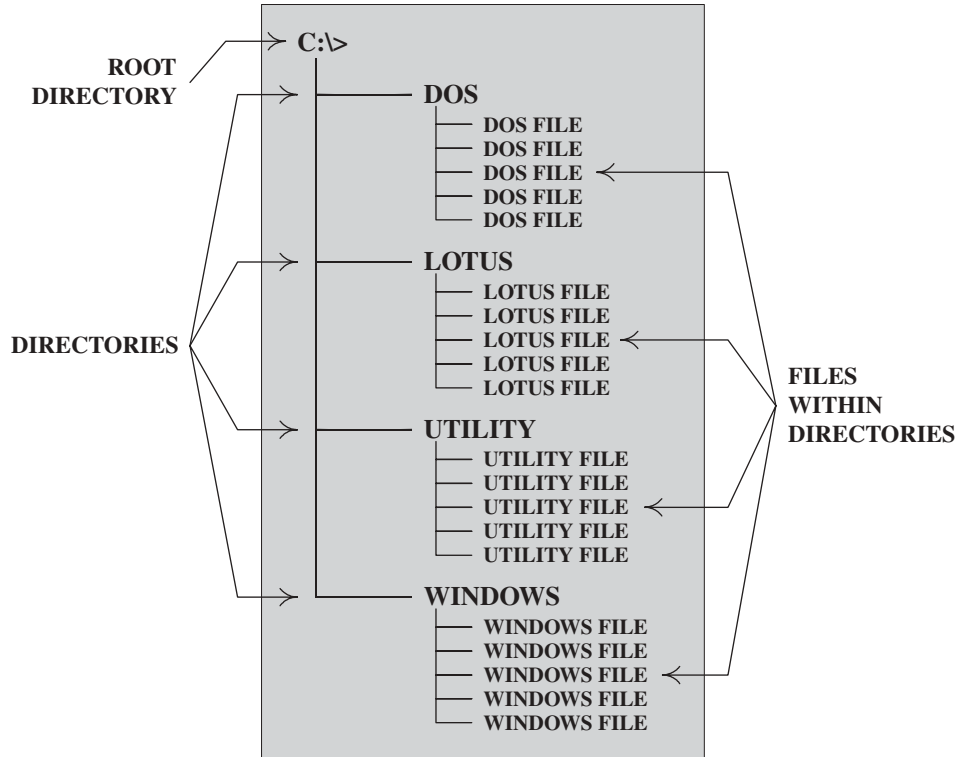
Notice in DOS Figure #1 how each directory has a unique name. An infinite number of files can exist under each directory. Each **filename** within a directory must be unique, but other directories can contain the same file. For example, let us assume that the CHERYL.TXT file exists in the DOS directory. A different CHERYL.TXT file (or the same one) can exist in the WINDOWS, LOTUS, or UTILITY directory (or all three directories for that matter). However, a second CHERYL.TXT file cannot exist in the DOS directory.

Files are kept in directories or in the root directory. A **subdirectory** can be created beneath another directory. For example, if a DOS directory has the name BOOK, below the directory can be subdirectories titled CHAP1 and CHAP2, CHAP3, and so forth. In DOS, a filename *cannot* contain the following characters:

|		
. (period)	; (semicolon)	/ (forward slash)
, (comma)	" (quotation marks)	\ (backslash)
| (vertical bar)	? (question mark)	[left bracket
: (colon)	= (equal sign)	] (right bracket)
* (asterisk)	(space)	

In addition to naming a file, in DOS you frequently have to add an extension to the name. An **extension** is an addition to the filename and it can be up to three characters in length. The filename and the extension are separated by a period. An example of a filename with an extension is BOOK.DOC where BOOK is the name of the file and DOC is the extension. In today's operating systems, extensions are automatically added by the application that creates the document. Reference DOS Figure #2 for this structure.

DOS Figure 2: Sample DOS Tree Structure
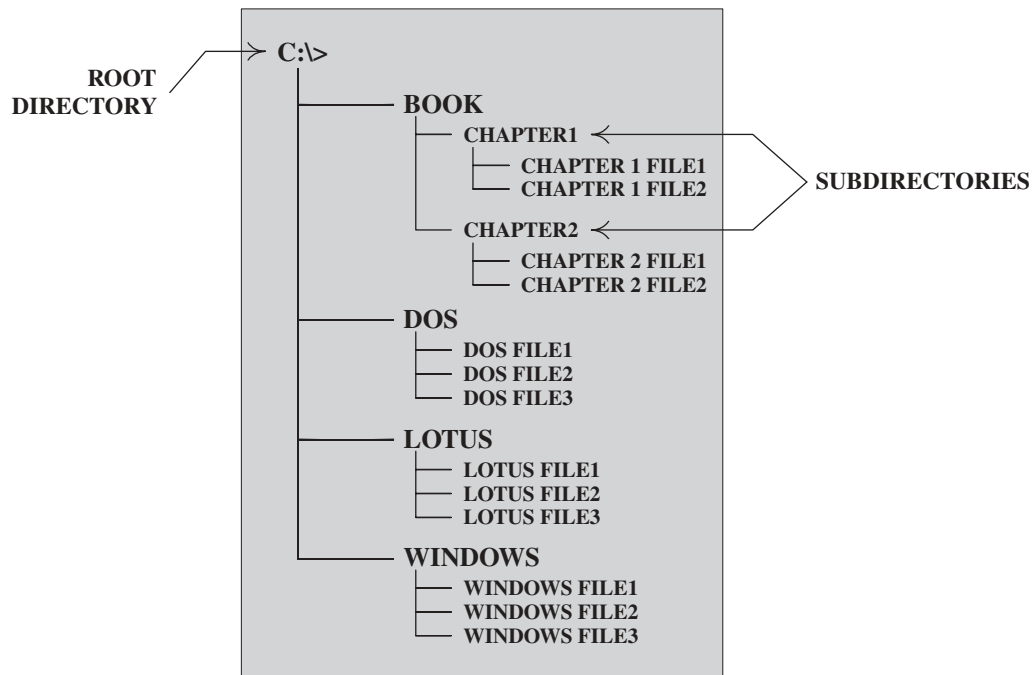
Notice in DOS Figure #2 that the BOOK directory has more than one subdirectory. Many more subdirectories can be added to the BOOK directory as well. Each subdirectory's name must be unique; however, the same subdirectory name can be used under other directories. For example, the LOTUS directory could contain a CHAPTER1 and a CHAPTER2 subdirectory just like the book directory does.

The best way to become proficient with DOS is to use it. The following exercise illustrates basic commands.
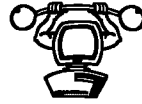
Name _____

BASIC DOS COMMANDS

Objective: To execute basic DOS commands

Parts: A computer with a Windows operating system loaded
A disk with DOS files
A blank disk

Note: **For each step requiring a typed command the Enter key must be pressed to execute the DOS command. This instruction will *not* be given with each step.**

Step 1.   Power the computer on and boot from the hard disk. If a logon password is needed, contact the instructor or lab assistant. When Windows loads, exit to a DOS prompt. The steps to get to a prompt are listed below for various Windows operating systems.

Windows 98: (1) Click on the **Start** button, point to **Programs**, and click on the **MS-DOS Prompt** option; (2) click on the **Start** button, click on the **Run** option, and type in **COMMAND** at the dialog box and press **Enter**; (3) boot from a bootable disk; (4) during startup, hold down either the **CTRL** key or press the **F8** key to access the Command-Prompt-Only mode.

NT Workstation: (1) Click on the **Start** button, point to **Programs**, and click on the **Command Prompt** option; (2) click on the **Start** button, click on the **Run** option, type in either **CMD** or **COMMAND** (both work); and click on the **OK** button.

Windows 2000: (1) Click on the **Start** button, click on the **Run** option, type in **CMD** or **COMMAND** (both work) in the dialog box, and click on the **OK** button.

Question 1:   Does a prompt display? If not and you followed every step correctly, contact your instructor.

Question 2:   Write down the prompt displayed on the computer screen.

Step 2. From the command prompt, type **CD**.

The prompt changes to C:\>. If a message appears stating invalid command or invalid directory, you made a typing error. If you suspect an error, verify the backslash is after CD and there are no extra spaces. The backslash starts from the left side and goes to the right (\). Other commands use a forward slash, which would be in the opposite direction (/). CD is the command for Change Directory, which tells the operating system to go to a different directory in the tree structure. The \ after the CD command tells the operating system to go to the root directory. An alternative way of typing this command is CD \. Notice the space between the CD command and the backslash. There are usually different ways to do every command from a prompt. Note that the CD\ command allows you to return to the root directory at any time.

Step 3. At the command prompt, type **DIR**.

A list of files and directories appears. Files are the items that show an extension (up to three characters) out to the right of the filename, file size, and file creation date. Directories have a <DIR> entry to the right of the name.

DOS files can have names up to eight characters long. DOS files normally have file extensions and a name. File extensions frequently give clues as to which application created the file. An extension is an addition to the filename and can be no more than three characters. An extension usually identifies the software package that created the file. A period (.) separates the name from the extension. The file CHERYL.DOC has a name of CHERYL and DOC is the extension. The complete filename includes the eight-character name as well as the period and the extension. In the prior example, CHERYL.DOC is the filename.

Question 3: List one file and one directory shown on the screen.

Step 4. When the number of files exceeds what can be shown on the screen, the files quickly scroll off the screen until all files finish displaying. The DIR command has a switch that controls this scrolling. A **switch** begins with a forward slash and enhances or changes the way a DOS command performs. At the DOS prompt, type **DIR /P**.

After looking at the data on the screen, press **Enter** again. Continue pressing **Enter** until the DOS prompt reappears. The DIR command's */P* switch tells DOS to display the files one page at a time.

Step 5. At the prompt, type **DIR /W**.

Question 4:   What is the function of the */W* switch?

Multiple switches can be used with a DOS command.

Step 6. At the prompt, type **DIR /W/P**.

Using the DIR command */W* and */P* switches cause files to display in a wide format, one page at a time.

Step 7. Different versions of DOS have documentation with online help. To find out the DOS version loaded on the computer, at the DOS prompt, type **VER**.

Question 5:   Who is the operating system manufacturer and what version is being used on the computer?

Step 8. At the prompt, type **DIR /? |more**.

A short explanation of the command appears followed by the command's syntax (instructions or rules for how the command is to be typed). A technician needs to be able to understand command syntax to function when a computer is broken. The | symbol is called the **pipe symbol** and it is discussed later in this chapter. The |more command tells the operating system to display the output one page at a time. Answer the following two questions and then press any key to continue until you return to a prompt.

Question 6:   Write the DIR syntax in the space below.

Question 7:   Write down one switch that can be used with the DIR command along with a short explanation of its purpose.

Step 9. Type **CD***XXXXX* where the *XXXXX* is replaced by the name of the directory you wrote down as the answer to Question 3. For example, in Question 3, if I wrote the directory name, CASINO, I would type CD\CASINO at the prompt.

Step 10.   Type **DIR A*.***.

The *A*.** is not a switch. This part of the command is directing the operating system to list all files or subdirectories that start with the letter A. The **.** part means all files. The directory you chose may not have any files or subdirectories that start with the letter A. If this occurs, the operating system displays the message "File not found." The ***** is known as a wildcard for DOS. A **wildcard** substitutes for one or more characters. The first asterisk (*) is the wildcard for any name of a file. The second asterisk (*) is the wildcard for any extension.

Question 8:   Are any files or subdirectories that start with the letter A listed? If so, write one of them in the space below. If not, did the operating system let you know this? If so, write the message displayed.

Step 11.   Type **CD..** .

The **..** tells the operating system to move back (up) one directory in the tree structure. Since you are one level down (because of typing the CD*XXXXX* command), this command brings you back to the root directory.

Question 9:   If you wanted to display a list of all commands in the root directory that start with the letter C, what command would you type? Try this command on the computer to see if it works.

Question 10:   Does the COMMAND.COM file appear in the list of commands that start with the letter C?

Question 11:   What is the purpose of the COMMAND.COM file?

ON YOUR OWN

Step A.   Change to the directory that contains Windows. The directory's name is normally WINDOWS or WINNT. If you cannot determine what directory contains Windows, contact your instructor or lab assistant. Write the command you used to do this.

Step B. List three Windows files that begin with the letter D.

Step C. Look for the DRWATSON.EXE file. Is the file there?

Step D. Return to the root directory. Write the command you used.

───────────────

Step 12. Insert a disk then type **DIR A:**.

Watch for the light to appear on the floppy drive.

Question 12: What drive letter does the first bootable hard drive normally get?

Question 13: See if the disk has any files on it. List one filename from the disk if it has files. Do not forget to include the extension.

The following steps wipe (format) a diskette:

Step 13. From the prompt, type **FORMAT A:**.
A message similar to the following appears on your screen.
C:\>FORMAT A:
Insert new diskette for drive A: and press **Enter** when ready.

Step 14. Insert a disk into the floppy drive (the A: drive) then press **Enter**.
The FORMAT command erases all files on a floppy disk.

Step 15. At the prompt for volume label, simply press **Enter**.

Step 16. At the prompt to format another, type **N** (for no and press **Enter**).

Step 17. At the prompt, type **A:**.

Question 14: How does the prompt change?

_____ *Instructor's Initials*

Step 18. Remove the floppy disk from the A: drive.

Step 19. From the prompt, type **PROMPT PT**.

Question 15: What happened to the command prompt on the screen?

Step 20. From the prompt, type **PROMPT Technicians rule the world $g**.

Question 16: Write down what the command prompt looks like now.

Step 21. From the prompt, type **PROMPT $P $D $T $G**.

Step 22. From the prompt, type **PROMPT $P $G**.
The command prompt is in its normal format.

_____ *Instructor's Initials*

_____

ON YOUR OWN

Step E. Using the ?, find at least one possible value (such as $P) for the PROMPT command that has *not* been used. Write the value as well as a short explanation of the value's purpose.

Step F. Type the command to return to the hard drive. Write the command used.

_____

MORE DOS COMMANDS

In the previous exercise, the **CD** command changes the prompt to a different directory. The CHDIR command could have been used instead. CHDIR is the full command name for change directory and the CD command is a shortcut. Be aware there are many shortcuts and methods that can be used to issue the same command. This chapter is designed as an overview of DOS and does not cover all possible ways of doing the same task. Besides, most technicians have reference books on the operating systems they support.

In the exercise, the **FORMAT** command is used for the first time. The FORMAT command prepares a disk for use. Most disks come preformatted; however, there are vendors who still sell unformatted disks. You may want to completely wipe all information from the disk by using the FORMAT command. In Windows 9x, you can use the FORMAT command with the *∕S* switch to create a boot disk. The disk contains the system files (the two hidden files and COMMAND.COM). A similar result can be achieved using the **SYS** command. For example, if you type *SYS A:* from the command prompt, the two hidden files and COMMAND.COM copy over to a floppy disk (making the disk bootable). The SYS command is a valuable program for technicians especially when working with hard drives and system problems. For NT Workstation and Windows 2000, the installation disks are used as a boot disk.
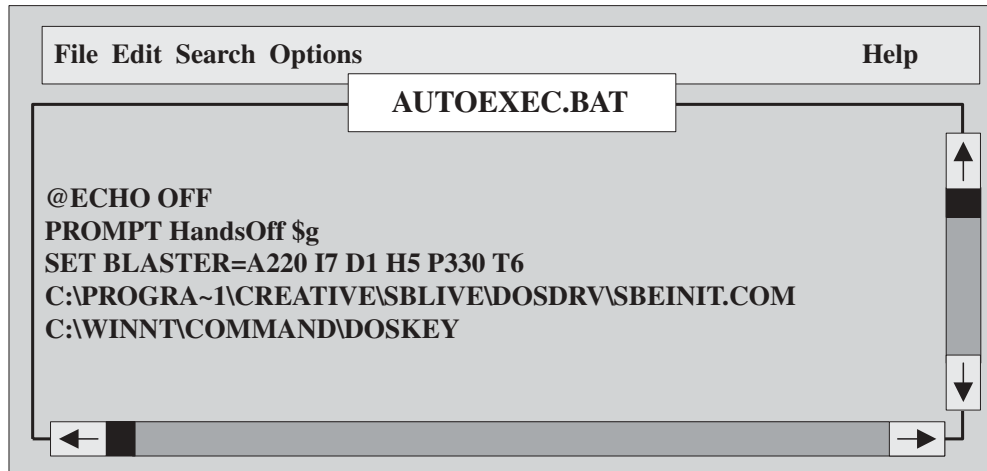
Be aware that older DOS versions' SYS command does not work the same as today's versions. The format is the same, but with older versions of DOS, only the two hidden files copy to the disk. Also, with older versions, the COMMAND.COM file must be copied separately to make a disk or hard drive bootable.

THE AUTOEXEC.BAT FILE

In the exercise, the **PROMPT** command changed the appearance of the command prompt. However, when the computer boots for the first time, the command prompt is already there. This is because of a special file called the **AUTOEXEC.BAT** file that executes every time the computer starts if it exists in the root directory. The AUTOEXEC.BAT file can execute multiple commands, one right after another. Today's operating systems set the prompt through the IO.SYS file, but it can be changed by adding the PROMPT command to the AUTOEXEC.BAT file. An example of an AUTOEXEC.BAT file is in DOS Figure #3.

DOS Figure 3: AUTOEXEC.BAT Example

File Edit Search Options	Help

AUTOEXEC.BAT

```
@ECHO OFF
PROMPT HandsOff $g
SET BLASTER=A220 I7 D1 H5 P330 T6
C:\PROGRA~1\CREATIVE\SBLIVE\DOSDRV\SBEINIT.COM
C:\WINNT\COMMAND\DOSKEY
```

The first line of the AUTOEXEC.BAT is @ECHO OFF. The **ECHO OFF** command prevents other AUTOEXEC.BAT commands from showing on the screen while the computer boots. The @ symbol in front of ECHO OFF keeps the words *ECHO OFF* from also showing. The second line of the AUTOEXEC.BAT file is PROMPT HandsOff $g, which is a similar command to the one used in the exercise. It sets the command prompt's appearance.

The third line, SET BLASTER sets configuration parameters for a Creative Labs SoundBlaster card. The fourth line, C:\PROGRA~1\CREATIVE\SBLIVE\DOSDRV \SBEINIT.COM directs the operating system to execute the SBEINIT.COM file when the computer starts. The rest of the command tells the operating system where to find the file (in a subdirectory called DOSDRV, which is a subdirectory of SBLIVE, which is a sub-directory of CREATIVE, which is a subdirectory called PROGRA~1, which is located on the hard drive).

A common command is PATH. This command was always placed in the AUTOEXEC.BAT file during DOS days. The **PATH** command instructs the operating system where to look for commands. An example of a path statement for today's operating system is as follows:

PATH=C:\;C:\WINNT;C:\WINNT\COMMAND;C:\PROGRA~1\DELL\RESOLU~1\COMMON\BIN
When a command is typed at the prompt, the operating system first looks in the current directory for the file. If the file is not there, the PATH statement takes effect. The operating system looks in the root directory. If the file is not in the root directory, it looks in the WINNT directory. If the file is not in the WINNT directory, it looks in the COMMAND subdirectory (which is located under the WINNT directory). The COMMAND subdirectory holds DOS commands for the Windows operating systems. If the file is not there, the operating system looks in the BIN file, which is a subdirectory of the COMMON directory (which is a subdirectory of the RESOLU~1 directory, which is a subdirectory of the DELL

directory, which is a subdirectory of the PROGRA~1 directory, which is located on the hard drive). After all that, you can now understand why operating systems today are much easier to use.

Today's operating systems load the PATH statement through the IO.SYS file. The PATH statement can be replaced or added to by statements placed in the AUTOEXEC.BAT file or by typing a new PATH statement at the prompt.

> The PATH statement should always include (1) the root directory, (2) the directory that contains the operating system files, and (3) any frequently used directory.

> When working from a prompt, you do not have to type a file's name and extension, only the filename. The operating system simply looks for files that have file extensions of COM, EXE, or BAT. These files are **executable files**. For ease of troubleshooting, all lines in the AUTOEXEC.BAT file should contain the file's full path (even though the file may be in one of the directories listed in the PATH statement).

The fifth line involves the DOSKEY program. **DOSKEY** allows the use of the arrow keys to bring up previously entered commands. DOSKEY is a favorite of many technicians and is used to save time while typing commands. DOS Table #1 lists the keys used with DOSKEY.

DOS Table 1: Keys Used with DOSKEY

Key	Function
Up arrow	Recalls the last typed command
Down arrow	Recalls commands
ESC	Clears current command
F7	Command history
F8	Searches command history
F9	Selects a command by number
ALT+F7	Clears command history

Even if the DOSKEY program is not used, the function keys on the keyboard allow a small amount of command control. For example, the F1 function key displays the last command one character at a time. The F3 function key displays all the previous DOS command characters.

The AUTOEXEC.BAT file is a potential source of problems with computers. Because the commands do not show on the screen, one cannot easily tell if all programs and commands in the AUTOEXEC.BAT file execute. Today's Windows operating systems provide an easy way to troubleshoot AUTOEXEC.BAT file problems through the use of the F8 key or through a startup menu.

Much more information about troubleshooting specific problems with the AUTOEXEC.BAT file is included in the Memory, IDE/SCSI Devices, and Multimedia chapters.

THE TYPE COMMAND

Another useful command is the **TYPE** command used to display text (.TXT) or batch (.BAT) files on the screen. Many times README.TXT or READ.ME files are included with software applications and utilities. The TYPE command allows viewing these files; however, most of the time, these files occupy more than one screen. So, using the |more parameter after the TYPE command permits viewing the file one screen at a time. For example, TYPE README.TXT|MORE allows viewing the text file one page at a time. Sometimes a technician needs a printout of a text file. In this case, use the redirect symbol, (the greater than sign >). For example, if the name of the file to be printed is README.TXT, then typing TYPE README.TXT >LPT1 sends the text file to the parallel port printer instead of the screen.
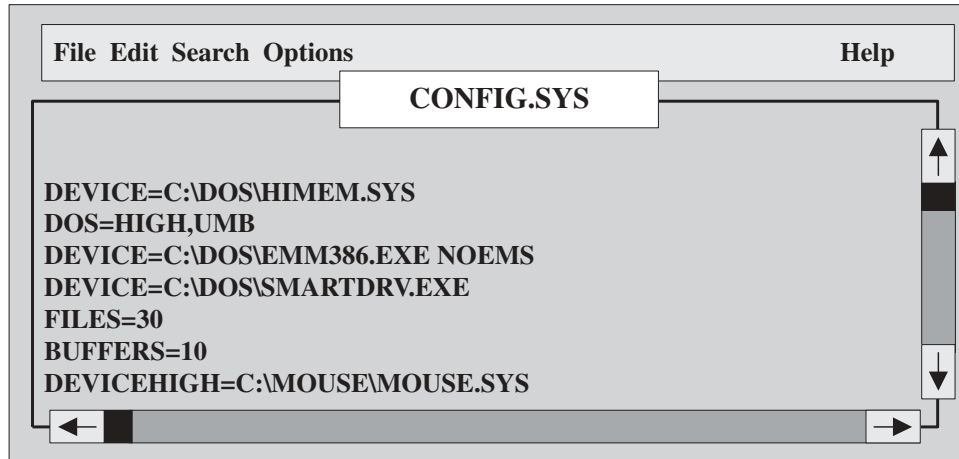
THE CONFIG.SYS FILE

The two files that execute automatically (if present) are AUTOEXEC.BAT and CONFIG.SYS. The **CONFIG.SYS** file customizes and configures the computer's environment. It contains parameters such as how many files a program uses or how many file buffers are allocated. Pieces of software called **device drivers** allow hardware devices to operate. Device drivers load through the CONFIG.SYS file.

Restart the computer for the changes made to the CONFIG.SYS or AUTOEXEC.BAT files to take effect.

An example CONFIG.SYS file is in DOS Figure #4.

DOS Figure 4: CONFIG.SYS Example

DOS Figure #4 shows a CONFIG.SYS file from a DOS machine. Today's computers frequently have no CONFIG.SYS statements or even a CONFIG.SYS file because (1) these same parameters are replaced by commands executed through the IO.SYS file or (2) the installed hardware uses 32-bit drivers loaded from the registry instead of the CONFIG.SYS file. If a Windows-based computer has a CONFIG.SYS file it is because an older driver is being used or a default parameter such as files and buffers is being changed. Because the concept of CONFIG.SYS is important, the lines in Figure #4 need to be covered.

The first three lines shown in DOS Figure #4 are for memory management. More details on these individual commands are in the Memory chapter. The fourth line of the CONFIG.SYS file, DEVICE=C:\DOS\SMARTDRV.EXE is a disk caching manager. The DEVICE= statement at the beginning of the line shows that the SMARTDRV.EXE file loads as a device driver. Another device driver shown in DOS Figure #4 is on line 7, DEVICEHIGH=C:\MOUSE\MOUSE.SYS. The MOUSE.SYS is the device driver that allows the mouse to operate. When using DOS, device drivers always load via the CONFIG.SYS file. Device driver files normally have the file extension of .SYS or .EXE.

Lines 5 and 6 of the CONFIG.SYS file in DOS Figure #4 set various parameters for DOS programs. The FILES= statement sets how many files can be open at one time. The BUFFERS= statement sets aside a certain amount of RAM for DOS to use when transferring information to and from a disk. This number is normally lower when using a caching program such as SMARTDRV.EXE.

The order programs load in CONFIG.SYS is sometimes a problem. Technicians frequently need to view these files as they execute. When DOS is the operating system, watch for the message "Starting MS-DOS" to appear when the computer boots. Press the F8 key and the CONFIG.SYS and AUTOEXEC.BAT files execute one line at a time. For the Windows operating systems, different techniques are used to have the operating system step through this process.

CREATING AUTOEXEC.BAT, CONFIG.SYS, OR BATCH FILES

Technicians frequently modify or create AUTOEXEC.BAT or CONFIG.SYS files. Also, a technician modifies or creates files known as **batch files** that have a .BAT file extension. AUTOEXEC.BAT is an example of a batch file. Batch files can be used to check out hardware, make user menus, or run user programs in an easier fashion. Only batch file creation is covered in this chapter, but there are some good books on the subject (although they are getting harder to find now that DOS is losing popularity).

Programs that create or modify batch programs or the CONFIG.SYS file included with DOS are COPY CON (all DOS versions) or EDIT (MS-DOS editor). **COPY CON** (COPY CONSOLE) is the hardest to work with because once you enter a line and press Enter, the line cannot be modified except through an editor or by creating the entire file again. The **EDIT** editor that comes with DOS and Windows is much easier to handle.

Name _____

COPY CON AND AUTOEXEC.BAT EXERCISE

Objective: To use the COPY CON to create a file

Parts: Windows 9x computer and floppy disk OR a bootable disk (to be used with NT or Windows 2000)

Note: **For each step requiring a typed command the Enter key must be pressed to execute the DOS command. This instruction will *not* be given with each step.**

Step 1. Power the computer on and boot from the hard disk. If a logon password is needed, contact the instructor or lab assistant. When Windows loads, exit to a DOS prompt. If you forgot how, reference the previous exercise.

Step 2. If you are on a Windows 9x computer (check with the instructor or lab assistant if unsure or use the VER command from the prompt), insert a disk into the A: drive and type **FORMAT A: /S**.

A message appears stating "Insert new disk for drive A: and press **Enter** when ready." If the message does not appear, perform Step 2 again. Follow the directions on the screen. At the "Volume label (11 characters, Enter for none)?" prompt, press **Enter**. Disk space and serial number information appear. At the "Quick Format another (Y/N)?" prompt, press **N** for No then press **Enter**.

If you are on an NT Workstation or Windows 2000 computer, insert a bootable disk.

Step 3. To verify that the disk is bootable, reboot the computer with the disk inserted into the floppy drive. The A:\> prompt appears. If the prompt does not appear, redo Step 2 or obtain another bootable disk.

Question 1: What does making a disk or a drive *bootable* mean?

Step 4. Note that when Enter is pressed after each line, no messages appear. From the C:\ command prompt, type
COPY CON: A:\AUTOEXEC.BAT
@ECHO OFF
ECHO This is a fine mess you've gotten me into Ollie.
ECHO This computer is about to EXPLODE if you
PAUSE.
ECHO press Enter one more time.
ECHO Haven't we completed enough DOS exercises for
ECHO one class?????
ECHO LATER GATOR.

Press **F6**. A caret (^) and a Z appear on the screen. Press **Enter**. A message appears stating that one file copied.

Step 5. Reboot the computer and watch for the messages created in Step 4 to appear on the screen as the AUTOEXEC.BAT file automatically executes.

Question 2: Did the AUTOEXEC.BAT file run okay? If the AUTOEXEC.BAT file does not run correctly, perform Steps 4 and 5 again.

Step 6. Have a classmate verify the AUTOEXEC.BAT file executes properly.

Classmate's printed name: _____

Classmate's initials: _____

Step 7. Remove the disk from the floppy drive.

Step 8. Reboot the computer.

Name _____

EDIT COMMAND EXERCISE

Objective: To use the EDIT editor to create a file

Parts: A computer with the EDIT editor loaded
A bootable disk

Note: **For each step requiring a typed command the Enter key must be pressed to execute the DOS command. This instruction will *not* be given with each step.**

Step 1.   Power the computer on and boot from the hard disk. If a logon password is needed, contact the instructor or lab assistant. When Windows loads, exit to a DOS prompt. If you forgot how, reference the first exercise.

Step 2.   If a printer is attached to the computer, type **TYPE C:\AUTOEXEC.BAT>LPT1**.

If a printer is not attached, type **TYPE C:\AUTOEXEC.BAT.**

Question 1:   Does the AUTOEXEC.BAT file appear on the screen? If not, is there an AUTOEXEC.BAT file loaded on the hard drive's root directory? If there is a file on the hard drive, you made a mistake in your typing. Write one line from the AUTOEXEC.BAT file and explain its purpose.

Step 3.   Insert a bootable disk into the A: drive.

Question 2:   What three files make a disk *bootable* in a DOS environment?

Step 4.   From the prompt type **EDIT A:\AUTOEXEC.BAT**.

The EDIT editor screen appears. The filename, AUTOEXEC.BAT is across the top center of the screen. The cursor blinks in the upper-left corner.

Step 5.   Type the following using the backspace or arrow keys to correct any mistakes. Press **Enter** to move the cursor to the next line.
@echo off
Echo Sure as Schmidt we are about to get this editing down.
Echo This Schmidt woman is working our fingers to the bone.
Pause
Echo No one told me that we would have to type so much.
Echo Folks from Tennessee are cool! Go VOLS!

Step 6. Press **ALT**. The word *File* on the menu bar highlights.

Step 7. Press **F**. The File drop-down menu appears.

Step 8. Press **X**. A message box appears stating "Loaded file is not saved. Save it now?"

Step 9. Press **Y** for YES. The command prompt appears.

Step 10. Reboot the computer and watch for the messages created in Step 5 to appear on the screen as the AUTOEXEC.BAT file automatically executes.

Question 3: Did the AUTOEXEC.BAT file run correctly? If not, perform Steps 3 through 10 again. Also, the disk may not be bootable.

Step 11. Have a classmate verify the AUTOEXEC.BAT file executes properly.

Classmate's printed name: _____

Classmate's initials: _____

Step 12. Remove the disk from the floppy drive.

Step 13. Reboot the computer from the hard drive.

Name _____

DOSKEY COMMAND EXERCISE

Objective: To use the DOSKEY program efficiently

Parts: A computer with a Windows operating system loaded
                  A formatted disk

Note: **For each step requiring a typed command the Enter key must be pressed to execute the DOS command. This instruction will *not* be given with each step.**

Step 1.   Power the computer on and boot from the hard disk. If a logon password is needed, contact the instructor or lab assistant. When Windows loads, exit to a DOS prompt. If you forgot how, refer to the first exercise.

Step 2.   To install the DOSKEY program from the prompt, type **DOSKEY**.

Step 3.   Insert the floppy disk into the floppy drive.

Step 4.   From the command prompt, type
            A:
            MD\SPECIAL

Step 5.   Verify the creation of the directory by typing **CD\SPECIAL**.

Question 1:   Did the command prompt change to the A:\SPECIAL> directory? If not, redo Steps 2 through 5.

Step 6.   The DOSKEY program allows use of the arrow keys and function keys (the F1 through F12 keys on the keyboard). Press the **up arrow** once. The last typed command appears at the prompt. If the last command does not appear, then DOSKEY is not loaded properly. Perform Steps 1 through 6 again.

Step 7.   Press the **up arrow** until the MD\SPECIAL command appears at the command prompt. *Do not* press Enter when the command appears.

Step 8.   Press the **left arrow** key three times until the blinking cursor is under the *I* in SPECIAL. *Do not* press Enter. The arrow keys, when used with DOSKEY, allow movement through the command line.

Step 9.   While the cursor is blinking under the letter I, type the letter **T**. Do *not* press Enter. The command should now read MD\SPECTAL. DOSKEY is automatically in the typeover mode.

Step 10. Press **INS** (Insert), but do *not* press Enter. The cursor changes to a blinking box.

Step 11. While the cursor is a blinking box over the letter *A*, type the letter **R**. The command changes to SPECTRAL, because pressing the INS key causes DOSKEY to go into the insert mode.

Step 12. Press **Enter** to create a directory named SPECTRAL.

Step 13. Press the **up arrow** key once. The last command typed appears on the screen.

Step 14. Press **ESC** (Escape) once. ESC erases the current command from the command prompt.

Step 15. Press **F7** once. A list of all typed commands appears on the screen.

Step 16. Press **F9** once. The Line Number prompt appears. While in DOSKEY, F9 allows you to Enter a specific command based on a line number (that showed when you pressed F7).

Step 17. Type the number corresponding to the **A:** command, then press **Enter**. The A: command appears at the command prompt.

Step 18. Press **ESC** to clear the command.

Step 19. Press and *hold down* **ALT**. While holding ALT down, press **F7** once, then release both keys. DOSKEY uses ALT+F7 to clear the list of commands DOSKEY tracks. Sometimes, the F7 key is cumbersome to use because the command list is so long. Clearing the command list allows DOSKEY to start over tracking commands.

Step 20. Press **F7** to verify the command list is clear.

_____ ***Instructor's Initials***

COPYING FILES

Two commands used most frequently to copy files are COPY and XCOPY. The difference between the two commands is that **COPY** is an internal command and **XCOPY** is an external command residing on a disk or a hard drive. Either command is able to copy a file to a different disk, copy a file from one directory to another, copy a group of files using wildcards, or rename a file as it is being copied. XCOPY can copy multiple files and directories under other directories, but the COPY command cannot. With older versions of DOS, the COPY command replaces a file with the same name as the file being copied, without any warning or prompting. However, with newer versions of operating systems, a warning message appears asking if the file is to be replaced. Both the COPY and XCOPY commands have three parts with each part separated by a space:

1. The command itself (COPY or XCOPY)
2. The source (the file being copied)
3. The destination (where the file is being copied)

The destination is optional if the file copies into the current directory. For example, if working from the A:\> command prompt and copying the DOCUMENT file from the hard drive's root directory, then the command could be COPY C:\DOCUMENT. The destination is omitted because the file will automatically copy to the current drive and directory (which is A:\).

The command requires all three parts if the destination is *not* the current drive and directory. For example, take the situation of being at the C:\> command prompt. To copy the FORMAT.COM command from the hard drive to a disk located in the A: drive, type the following command:

    COPY C:\WINDOWS\COMMAND\FORMAT.COM A:\

Note that the COPY command is first. Then the source, the location, and name of the file being copied—C:\WINDOWS\COMMAND\FORMAT.COM—is next. Last is the destination, A:\, where the file is to be placed. If the current directory is the C:\WINDOWS\COMMAND hard drive directory, then the source path does not have to be typed. Instead, the command would look like the following:

    C:\WINDOWS\COMMAND> COPY FORMAT.COM A:\

The backslash (\) after the A: is not necessary if the floppy drive does not have directories. The COPY command does not need the entire path in front of the command because COPY is an internal command. Internal commands are part of COMMAND.COM and the operating system can always find internal commands no matter where in the tree structure the command executes.

New technicians commonly make mistakes in specifying a command's correct path. If you are a beginner, the safest way is to type the complete path of both the source and destination locations. Before using any command, consider these questions:
1. What command do you want to issue?
2. Where is the command located in the tree structure?
3. Where in the tree structure are you currently working?
4. If you are copying a file or moving a file, in what directory does the file need to be placed?

THE XCOPY COMMAND

The XCOPY command is more powerful and faster than the COPY command. The XCOPY command allows the copying of directories, subdirectories, and files. The syntax or typing format for the XCOPY command includes the command, a source, and a destination just like the COPY command. If the destination is omitted, the XCOPY command copies the source files to the current directory. If you have a disk containing files in subdirectories to be copied to a different capacity disk, the XCOPY is a great command to use.

THE ATTRIB COMMAND

The **ATTRIB** command sets, removes, or shows the attribute of a file or a directory. Attributes change how a file or directory is displayed on the screen or what can be done with the file or directory. Possible attributes include read-only, archive, system, and hidden. The **read-only attribute** protects files so they cannot be accidentally changed or deleted. For example, the AUTOEXEC.BAT and CONFIG.SYS files start and configure a computer. Make these two files read-only so they are not accidentally changed or deleted by a user. The **archive attribute** marks files that have changed since they were last backed up by a backup program. The RESTORE, XCOPY, and MSBACKUP commands use the archive attribute as well as any other backup software program. The **system attribute** designates a file as a system file. Files with this attribute do not show in directory listings. The **hidden attribute** allows file hiding and even directory hiding. Technicians frequently use the hidden attribute. If another person has hidden some files and the technician wants to see the files without having to change the attributes of all the files, then the DIR command displays all the files no matter which attributes the files possess.

Set each attribute using the +x switch where the +R switch adds the read-only attribute, the +S switch adds the system attribute, the +H adds the hidden attribute, and the +A adds the archive attribute. Remove each attribute using the −R, −S, −H, or −A switch with the

ATTRIB command. One command can set more than one attribute on files or directories. For example, to make the CHERYL.TXT file hidden and read-only, type *ATTRIB +R +H CHERYL.TXT.*

An excellent use of the archive attribute is to copy multiple files onto a disk. Normally, if copying too many files, there is no warning that the disk cannot hold all the files until it is too late and the disk runs out of room. Traditionally, people used the BACKUP and RESTORE commands to get around this problem. However, the ATTRIB command (with the *+A* switch) and the XCOPY command (with the */M* switch) together can copy files across multiple disks. For example, all the DOS files require more than one disk. If copying all the files to a disk, the operating system copies as many files as possible, then produces an error saying the destination disk is full. To prevent this problem, use the ATTRIB command and assign all the files the archive attribute. Type *ATTRIB +A C:\TESTDIR*.** then insert a disk into the A: drive and type *XCOPY C:\TESTDIR*.* A: /M.* When the XCOPY command stops and displays the error message that the destination disk is full, insert a new floppy into the A: drive and repeat the command. The */M* switch tells XCOPY not to copy the same files over. The */M* switch only copies files that have the archive attribute set. Once the file copies, the files no longer have the archive attribute.
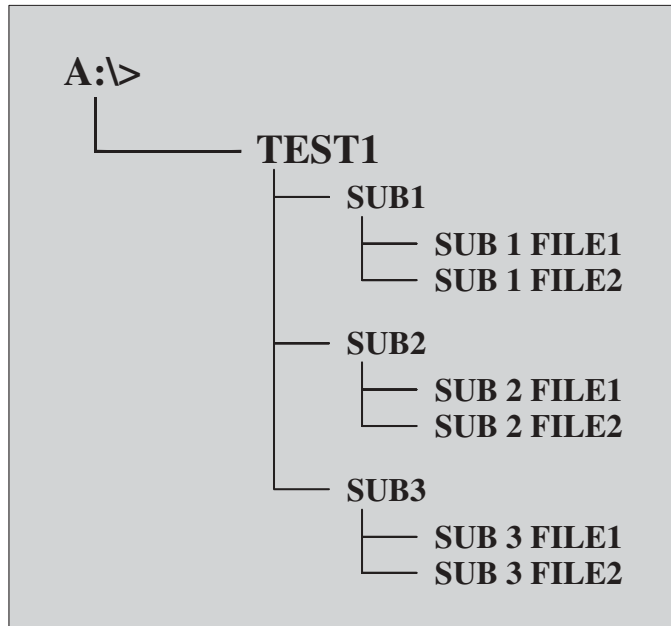
> Most technicians have a bootable disk with their favorite utilities and commands on it. Different DOS versions come with different utilities. Even the two hidden files and COMMAND.COM are different between vendors and between versions of DOS.

You never know what DOS version you will encounter. Therefore, the DOS version on the bootable disk is the same version of ATTRIB that needs to be on the disk. Be careful executing DOS commands from a floppy disk if the machine did not boot from that floppy.

MOVING AROUND IN DOS

The most frequently used command for moving around in the cumbersome tree structure is CD (Change Directory). Take, for example, a disk with a TEST1 directory that has subdirectories called SUB1, SUB2, and SUB3 as shown in DOS Figure #5.

DOS Figure 5: Sample Tree Structure

```
A:\>
      └──────── TEST1
                 ├── SUB1
                 │      ├── SUB 1 FILE1
                 │      └── SUB 1 FILE2
                 │
                 ├── SUB2
                 │      ├── SUB 2 FILE1
                 │      └── SUB 2 FILE2
                 │
                 └── SUB3
                        ├── SUB 3 FILE1
                        └── SUB 3 FILE2
```

Assume the prompt is at A:\>. To move to the SUB2 subdirectory, type the command *CD TEST1\SUB2*. The command prompt changes to A:\TEST1\SUB2>. Another command that will work is CD A:\TEST1\SUB2. To move to a subdirectory that is on the same level as the SUB2 directory (such as SUB1 or SUB3), several commands are possible. The easiest and fewest keystrokes are CD SUB1. Notice there is not a backslash (\) between the CD and the SUB1. Omit the backslash only when moving along the same level in the tree structure shown in DOS Figure #5. The commands CD\SUB1, CD A:\TEST1\SUB1, or CD TEST1\SUB1 will each take you to subdirectory SUB1. However, if the prompt is currently located at the root directory (A:\ >) either A:\TEST1\SUB1 or CD TEST1\SUB1 must be used. The other commands given do not operate properly because of the current location within the tree structure. Practice is the only way to master moving around from a prompt. The following exercises should help with these concepts.

Name _____

COPY COMMAND EXERCISE

Objective: To use the COPY command correctly

Parts: A computer with a Windows operating system loaded
                 A formatted disk

Note: **For each step requiring a typed command the Enter key must be pressed to execute the DOS command. This instruction will *not* be given with each step.**

Step 1. Power on the computer and boot from the hard disk. If a logon password is needed, contact the instructor or lab assistant. When Windows loads, exit to a DOS prompt. If you forgot how, refer to the previous exercise.

Step 2. In this next step, the command you type depends on the operating system installed. Make sure you know which operating system you are using before you type the command. If the command does not work, contact the instructor or lab assistant. The commands below assume standard operating system installation.

In Windows 9x, type **CD\WINDOWS\COMMAND**.

In NT or Windows 2000, type **CD\WINNT\SYSTEM32**.

Question 1: What is the purpose of the CD command?

Step 3. Type **COPY FORMAT.COM A:**.

A message appears stating that one file copied. If the message does not appear, redo Steps 2 and 3. Since the prompt is currently at the COMMAND directory, the full source path does not have to be typed. The destination is the A: drive's root directory.

Step 4. Type **COPY XCOPY.EXE A:**.

A message appears stating that one file copied. If the message does not appear, perform Step 4 again.

Question 2: Do a directory of the floppy disk to verify the two files copied properly. List the command used to perform this step. If the files are not on the disk, redo the steps again.

Question 3:   What would the command be for Step 3 if the prompt was C:\?

Question 4:   Could the backslash (\) be omitted in the command's destination (A:\)? Why or why not?

Step 5.   From the prompt, type the following commands:
A:
CD
MD\TEST

The first command, A:, makes the floppy drive the default. The CD\ command instructs the operating system to change the directory to the root directory. The MD command is used to make a directory. The MD\TEST command creates a directory called TEST.

Step 6.   Type **COPY A:*.* A:\TEST**.

A message appears stating that two files copied. If a message does not appear, redo this step.

Question 5:   What does the command in Step 6 do?

Step 7.   To verify Step 6, type the following commands:
CD\TEST
DIR

The command prompt should be A:\TEST>. Both the FORMAT and the XCOPY commands should appear on the screen. If not, redo the exercise.

Step 8.   From the prompt, type **CD..** .

The system returns to the root directory.

Step 9.   From the prompt, type **DIR A:\TEST**.

Question 6:   What is the difference between Step 7 and Step 9?

Step 10. Multiple files can be copied using wildcards. To start, we must create another direc-
tory. Type **MD FUN**.

Notice how this command is different from Step 5. It does not include a backslash
between MD and the directory name. The backslash is not required. The backslash is
required if the default prompt is not in the directory if the subdirectory is being cre-
ated. For example, I have a directory called CHERYL. The prompt is at the root
directory. If I wanted to create a subdirectory under CHERYL called CLASSES, from
the prompt, I would type MD CHERYL\CLASSES. If the prompt was A:\CHERYL>,
I would simply type MD CLASSES.

Step 11. Type **COPY A:\TEST*.* A:\FUN**.

When the copying is complete, a message appears stating how many files copied. If
the message does not appear, perform the step again. COPY is the command. In the
part A:\TEST*.*, the A: tells what drive (the floppy drive). The \TEST portion tells
the operating system that the files to copy are in the TEST directory that is off the root
directory (the backslash before TEST designates the root). The *.* tells the operating
system what files to copy. The backslash separates the directory name from the file-
name. Since we want all of the files in the TEST directory to be copied to FUN,
wildcards are used. Otherwise we would have to type a command for every file to be
copied. The A:\FUN is the destination. This tells the operating system to place the
copied files on the floppy drive in a directory called FUN.

Question 7: Why are two asterisks used in Step 11?

Question 8: Is the A:\TEST a necessary part of Step 8's command? Why or why not?

Step 12. The COPY command can copy a file and rename it at the same time. For example,
to copy the AUTOEXEC.BAT file to a disk and rename the file to AUTOEXEC.BAK,
type the following command: **COPY C:\AUTOEXEC.BAT A:\AUTOEXEC.BAK**.

A message appears stating that one file copied. If the message does not appear, per-
form the step again.

Question 9: Verify the AUTOEXEC.BAK file is placed in the floppy disk's root directory. Write
the command used to verify the copying.

_____ *Instructor's Initials*

Step 13. In today's operating system, the PATH command is automatically loaded through the IO.SYS command. To view the current PATH statement, type **PATH** from the C:\> prompt.

Question 10: Write the computer's path.

ON YOUR OWN

Step A. Create a backup copy of the CONFIG.SYS file located in the hard drive's root directory to the floppy disk's root directory. Name the file CONFIG.BAK. Complete everything using *one* command. Write the command in the following space.


Step B. Verify that the CONFIG.BAK file is in the floppy drive's root directory. Write *each* command used to verify the file in the following space.

Step C. Look on the hard drive to see what directories are available. Use the PATH command to set the path used by the operating system to search for executable files and include at least two hard drive directories. Write the command used to complete this task.

_____ *Instructor's Initials*

Step 14. Remove the floppy disk and reboot the computer.
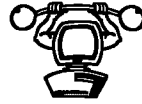
Name _____

XCOPY, RD, AND DELETE COMMANDS EXERCISE

Objective: To use the XCOPY and DELETE commands correctly

Parts: A computer with a Windows operating system loaded
                  A formatted disk

Note: **For each step requiring a typed command the Enter key must be pressed to execute the DOS command. This instruction will *not* be given with each step.**

Step 1. Power on the computer and boot from the hard disk. If a logon password is needed, contact the instructor or lab assistant. When Windows loads, exit to a DOS prompt. If you forgot how, refer to the previous exercise.

Step 2. Insert a disk into the A: drive and create two files, called FRIEND.TXT and FOE.TXT, and place the files in the A: drive's root directory. Use an editor to create the two files. Type two lines of text in each file.

Question 1: Have a classmate verify the creation of each file using the TYPE command. Write the commands he or she uses to do this in the following space.

Classmate's printed name: _____

Classmate's initials: _____

Step 3. From the C:\> prompt, type **XCOPY A:\F*.* A:\TEST1**.

A message might appear asking if TEST1 is a file or a directory. If so, press **D** for directory. A message appears stating the number of files copied. If the message does not appear, redo Steps 2 and 3.

Question 2: What does the command in Step 3 do?

There are several ways to delete files in DOS, but today's operating systems only include the DEL (DELETE) command for deleting files.

Step 4. Verify that the files copied.

Question 3:   Have a classmate verify the creation of the directory and that the files copied. Write the commands he or she uses to do this in the following space.

Classmate's printed name: _____

Classmate's initials: _____

   Step 5.   From the C:\> prompt, type **DEL A:\TEST1*.***.

Question 4:   Verify that the files are deleted from the TEST1 directory. Write the commands to verify this operation in the following space.

_____ *Instructor's Initials*

   The RD or RMDIR (Remove Directory) command removes the directory name only if all the directory's files are deleted prior to issuing the RD command.

   Step 6.   From the C:\> prompt, type **RD A:\TEST1**.

   This command removes the TEST1 directory.

   Step 7.   Verify that the directory is gone by typing **DIR A:\TEST1**.

_____

ON YOUR OWN

   Step A.   Verify the disk is in the first floppy drive and type the following commands:
   A:
   MD\TEST2
   CD\TEST2
   MD SUB1
   MD SUB2
   MD SUB3

Question 5:   What would have happened if the command typed was MD\SUB1, MD\SUB2, and MD\SUB3?

   Step B.   Using an editor, create three files called FILE1, FILE2, FILE3 and place the files in the SUB1 subdirectory. Verify that the files are created and in the current directory before proceeding.

Step C.   Using the XCOPY command, copy all of the files located in SUB1 subdirectory to the SUB2 and SUB3 subdirectories on the floppy disk.

Question 6:   Verify the files copy to each subdirectory. Write the commands you used to perform this step in the following space.

Question 7:   Draw a tree of the floppy disk's file structure.

_____ *Instructor's Initials*

Step 8.   Removing subdirectories is a chore from the command prompt. Directories and sub-directories must be empty before the RD command can be used. From the A:\> prompt, type **DEL A:\TEST2\SUB1*.***. This command deletes all files in the SUB1 subdirectory.

Step 9.   To remove the SUB1 subdirectory, type **RD A:\TEST2\SUB1**.

Only the SUB1 subdirectory is deleted.

Question 8:   Verify the SUB1 subdirectory has been deleted. Write the command you use in the following space.
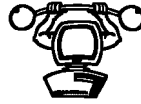
ON YOUR OWN

Step D.   Delete the files in the SUB2 and SUB3 subdirectories.

Step E.   Remove the SUB2 and the SUB3 subdirectories.

_____ *Instructor's Initials*

Name _____

ATTRIB COMMAND AND MOVING AROUND
IN THE TREE STRUCTURE EXERCISE

Objective:　　To use the ATTRIB command and to work correctly from a prompt when dealing with directories and subdirectories

Parts:　　A computer with a Windows operating system loaded
A formatted disk

Note:　　**For each step requiring a typed command the Enter key must be pressed to execute the DOS command. This instruction will *not* be given with each step.**

Step 1.　Power on the computer and boot from the hard disk. If a logon password is needed, contact the instructor or lab assistant. When Windows loads, exit to a DOS prompt. If you forgot how, refer to a previous exercise.

Step 2.　Insert the disk into the floppy drive. On the disk, make a directory called JUNK. Type:
A:
MD JUNK

Step 3.　Under the JUNK directory, make subdirectories called SUB1, SUB2, and SUB3. Type:
CD JUNK
MD SUB1
MD SUB2
MD SUB3

Step 4.　Return to the floppy drive's root directory. Be sure the root directory is the default directory by looking at the command prompt after returning to the root directory.

Question 1:　What command makes the floppy drive's root directory the default directory? What does the command prompt look like?

Step 5. Make a new directory called TRASH from the root directory of the floppy drive. Within the TRASH directory, make subdirectories called SUB1, SUB2, and SUB3.

Type:
MD TRASH
CD TRASH
MD SUB1
MD SUB2
MD SUB3

Step 6. Return to the floppy drive's root directory.

ON YOUR OWN

Step A. Make a new directory called GARBAGE from the floppy drive's root directory. Within the GARBAGE directory, make subdirectories called SUB1, SUB2, and SUB3. Write each command you use.

Step B. Create three files called SPECIAL1.TXT, SPECIAL2.TXT, and TICKLE.TXT. Place them in the GARBAGE\SUB1 subdirectory on the floppy drive. Write each command you use.

Step C. Copy all files that begin with the letter *S* from the GARBAGE\SUB1 subdirectory and place them in the TRASH\SUB3 subdirectory on the floppy drive. Write each command you use.

Step D. Copy the file that begins with *T* from the GARBAGE\SUB1 directory of the hard drive and place them in the SUB2 subdirectory of the JUNK directory. Write each command that you use.

_____ *Instructor's Initials*

Step 7. The TREE command is useful for viewing the file structure of a disk or a drive. Type **TREE**.

An image of the disk tree structure is displayed on the screen. If it does not appear, perform the step again.

Step 8. The TREE command also verifies files within the tree structure using the */F* switch. Type the following:

A:
TREE /F

A listing of the three directories, TRASH, GARBAGE, and JUNK, is displayed as well as the SUB1, SUB2, and SUB3 subdirectories. The */F* switch causes the files within each subdirectory to appear. The SUB2 subdirectory of JUNK holds the TICKLE file. The SUB1 subdirectory of GARBAGE holds the SPECIAL1, SPECIAL2, and TICKLE files. The SUB3 subdirectory of TRASH holds the SPECIAL1 and SPE-CIAL2 files. Repeat the On Your Own steps if these files do not appear on the screen.

Step 9. To make the SPECIAL1 and SPECIAL2 files read-only, use the ATTRIB command with the *+R* switch. Type **ATTRIB +R A:\TRASH\SUB3*.***.

Step 10. To verify the read-only attribute is set, type **DIR A:\TRASH\SUB3*.***.

The SUB3 subdirectory should list two files. Both have an *R* beside them indicating that the read-only attribute is set. If the two files do *not* have the read-only attribute set, perform Steps 9 and 10 again.

Step 11. The best way to prove that the files are read-only is to try and delete them. Type **DEL A:\TRASH\SUB3*.***.

A message appears on the screen stating "All files in directory will be deleted. Are you sure (Y/N)?"

Step 12. From the prompt, type **Y** for Yes. A message appears on the screen stating, "Access denied." Then, the command prompt appears. If the access denied message does not appear, the files were deleted which means the read-only attribute was not set. If this is the case, perform On Your Own Step B, followed by Steps 9, 10, 11, and 12 of this exercise.

Step 13. Hiding a directory is always useful to a technician. Users who constantly delete directories or files by mistake can sometimes be controlled using the ATTRIB command's *+H* switch. Type **ATTRIB +H A:\JUNK\SUB2**.

No message appears on the screen. The command prompt appears again.

Step 14. To verify that the directory is hidden, type **DIR A:\JUNK*.***.

The file should not appear.

Step 15. Use the ATTRIB command to verify that the directory is hidden by typing **ATTRIB A:\JUNK\SUB2**.

The directory listing appears with an *H* beside the name.

Step 16. The two hidden files that make a disk or a drive bootable are automatically marked as system files. Type **ATTRIB C:*.***.

The two system files appear, similar to the following example.

         A   SHR   C:\IO.SYS
         A   SHR   C:\MSDOS.SYS

The SHR indicates that the two hidden files have the system, hidden, and read-only attributes set. If a similar display does not appear, type the command in Step 15 again. If there are more files than will fit on one screen, type **ATTRIB C:*.* |more**.

The symbol before the word *more* is called the pipe symbol. For most keyboards, create the pipe symbol by holding down the Shift key and pressing the backslash key. The symbol looks like two vertical dashes on the keyboard key. The pipe symbol and the word *more* are used with many DOS commands that do not have a switch such as */P* to display one screen at a time.

ON YOUR OWN

Step E. Hide the SPECIAL1.TXT file located in the SUB1 subdirectory of the GARBAGE directory. Write the command you used.

Step F. Verify that the SPECIAL1.TXT file is hidden by using the DIR and ATTRIB commands. Write the command you used.

_____ *Instructor's Initials*

Step G. Remove the hidden attribute from the SPECIAL1.TXT file in the SUB1 subdirectory of the GARBAGE directory. Use Help, if necessary, to find the switch to remove an attribute. Write the command used in the following space.

Step 17. Have a classmate verify that the SPECIAL1.TXT file is no longer hidden.

Classmate's printed name: _____

Classmate's initials: _____

Step 18. Make the current drive the floppy drive's root directory. If the command prompt is not A:\>, try this step again and refer to prior notes and exercises.

Step 19. Moving around within subdirectories can be a challenge when you first use a prompt. Move to the SUB3 subdirectory of the TRASH directory by typing **CD TRASH\SUB3**.

The command prompt changes to A:\TRASH\SUB3>.

Step 20. Moving to the SUB2 or the SUB1 directory is much simpler because the SUB1 and SUB2 directories are on the same level as SUB3. Type **CD SUB1**.

The command prompt changes to A:\TRASH\SUB1>.

Step 21. A shortcut to move up one directory is to type CD.. from within the SUB1 subdirectory. The prompt immediately changes to one level up (the TRASH directory). Type **CD..** .

The command prompt changes to A:\TRASH.

Step 22. Using the CD.. command again returns one level back in the directory structure to the root directory of the floppy drive. Type **CD..** .

The command prompt changes to A:\.

_____

ON YOUR OWN

Step H. From the root directory of the floppy drive change to the SUB2 subdirectory of the GARBAGE directory. Write the command used in the following space.

Step I. How can one verify that the current directory is A:\GARBAGE\SUB2?

Step J. From the A:\GARBAGE\SUB2 subdirectory, change the current directory to the SUB3 subdirectory of the TRASH directory. Write the command you use.

_____

Step 23. Have a classmate verify that the current directory is A:\TRASH\SUB3.

Classmate's printed name: _____

Classmate's initials: _____

    Step 24. Using the CD.. command, move from A:\TRASH\SUB3 to A:\TRASH.

    Step 25. Using the CD.. command, move from A:\TRASH to A:\.

ON YOUR OWN

    Step K. Using the ATTRIB, DEL, and RD commands, delete the TRASH and GARBAGE directories including all subdirectories underneath them. Write the commands used in the following space.

    Step L. Using the ATTRIB, DEL, and the RD command, delete the JUNK directory and all subdirectories underneath. Write the commands used in the space below.

_____ ***Instructor's Initials***

Name _____

DOS REVIEW QUESTIONS

1. What does an operating system do for a microcomputer?

2. List at least two operating systems.

3. What file is known as the command interpreter?

4. [T / F] All system files are the same between DOS versions.

5. [T / F] Internal commands are part of the command interpreter.

6. What is the difference between internal and external commands?

7. Give an example of what the command prompt looks like.

8. [T / F] The root directory is limited in how many files can exist there.

9. Why should directories be created on a hard disk instead of placing every file in the root directory?

10. What is the difference between a directory and subdirectory?

11. What command always allows you to move to the root directory?

12. Which of the following DOS filenames are valid? (Pick all that apply)
    [RAINA.TXT / KARLTEXT2 / KARA.EXE / TROUBLE.SYS / THOMAS.BAT]

13. What is the purpose of the FORMAT command's /S switch?

14. Which of the following commands controls how the command prompt appears?
    [SHOW / TREE / VIEW / PROMPT]

15. What do the PG parameters do when used with the PROMPT command?
    A. Displays the path and > sign
    B. Displays the drive letter and the > sign
    C. Keeps the prompt from showing on the screen
    D. Tells DOS where to find commands

16. What does the SYS command do?

17. What is the purpose of the path statement in the AUTOEXEC.BAT file?

18. [T / F] Every computer requires the AUTOEXEC.BAT file.

19. What file extensions does DOS look for to execute? (Pick all that apply)
    [.BAT / .TXT / .WIN / .COM / .HLP / .EXT / .EXE]

20. What program allows the use of arrow keys to bring up previously entered DOS commands?

21. Which of the following keystrokes allows you to view the last executed DOS command by single characters?
    [F1 / F3 / F5 / F7 / F8]

22. Which of the following keystrokes brings up the last executed DOS command?
    [F1 / F3 / F5 / F7 / F8]

23. Which of the following commands is for viewing text files on the screen?
    [VIEW / SCREEN / OUTPUT / TYPE / EDIT]

24. What is the purpose of the CONFIG.SYS file?

25. [T / F] Every computer requires the CONFIG.SYS file.

26. [T / F] The COPY CON command is easier to use than Microsoft's EDIT editor when editing or creating a file.

27. What are some common mistakes technicians make when using the COPY or XCOPY commands?

28. [T / F] The COPY command does not always require a destination.

29. Which of the following commands can be used to delete a file? (Pick all that apply) [DELTREE / DEL / ERADICATE / RD]

30. [T / F] The ATTRIB command cannot hide directories.

31. List two file attributes.

Name _____

DOS FILL-IN-THE-BLANK

1. A computer needs an _____ to operate.

2. All viewable DOS commands are known as _____ commands.

3. The first floppy drive is assigned the drive letter _____.

4. The first hard drive partition is assigned the drive letter _____.

5. All DOS work is done from the _____.

6. DOS files are grouped into _____.

7. The _____ directory is the starting place for all files and directories.

8. DOS filenames can be up to _____ characters and have _____ letter extensions.

9. The _____ command is used to move around in the tree structure.

10. The _____ command is used to erase floppy disks.

11. The _____ command is used to transfer system files to a disk.

12. The _____ file, if found, is a batch file that executes when the computer boots.

13. _____ is the DOS command that keeps batch file commands from showing on the screen.

14. The _____ statement tells the operating system where to search for files.

15. The _____ program allows easy access to previously typed commands.

16. The _____ file customizes the computer's environment.

17. _____ are pieces of software that allow hardware to operate.

18. _____ is the text editor shipped with Microsoft DOS.

19. The _____ DOS command is an external command used for copying files, directories, and subdirectories.

20. ATTRIB +R A:\TEST\TEST1.DOC sets the _____ attribute on the _____ file.

21. The _____ command shows the DOS file structure.

22. The _____ symbol used with the word more is frequently used to show one screen of data at a time.

Name _____

INTERNET DISCOVERY

Objective: To obtain specific information on the Internet regarding a computer or associated parts

Parts: Computer with Internet access

Question 1:   Locate an Internet site that lists DOS commands and shows different examples of the commands. Write the URL.

Question 2:   Use the Internet to find the DOS commands that Windows 2000 supports when working from a prompt.

Question 3:   Find a web site that explains the use of the DISKCOPY command. The site cannot be one used for Questions 1 or 2.

Question 4:   Find the steps to create a Windows 98 boot disk on the Internet. Write down the site(s) you found.

Question 5:   Using the Internet, locate a site that details how to write a BATCH file.

Question 6:   Describe the steps to change the drive letter for an Iomega Zip drive when using 2000 Professional. Also write the URL of the Internet location where you found this information.

NOTES