ZENITH data systems

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THE QUALITY GOES IN BEFORE THE NAME GOES ON

PERSONAL COMPUTER SYSTEMS

MICROSOFT™

Conversational MS™-DOS

A Beginner's Guide to MS™-DOS Version 2

Conversational MS™-DOS

A Beginner's Guide to MS-DOS Version 2

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Essential requirements for using MS-DOS version 2:

a. Distribution Media: Three 5.25-inch, soft-sectored, 48-tpi disks
b. Machine Configuration (minimum): Z-150, 128K memory, one floppy disk drive, and CRT

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Read This First

This manual, *Conversational MS™-DOS (A Beginner's Guide to Version 2)*, is one in a series of innovative manuals developed by Zenith Data Systems Corporation. These introductory manuals are based on the "80-20" principle. It is our experience that 80 percent of our users normally need 20 percent of the MS-DOS version 2 commands on a regular basis. *Conversational MS-DOS* helps you learn about the operating system and the commands you will use most frequently.

New computer users and those with limited experience often feel they need to be programmers or know their computer's operating system before they are able to use their Zenith Personal Computer (Z-100™ PC). This is *not* the case. *Conversational MS-DOS* will help you get started quickly and give you some hands-on experience with the commands you will be using most often.

These manuals are written in a conversational style. Documentation is organized in learning patterns similar to those you experience as you install and use MS-DOS. For your convenience, each chapter begins with headings that establish the objectives and content of each section.

This "conversational" manual is not intended to replace the hardware manuals you received with your Zenith Data Systems Computer or the *MS-DOS Version 2* reference manual you received with your operating system. Rather, this manual helps you install your operating system, learn the commands you need to begin using application packages, and identify the enhancements available with MS-DOS version 2. You should refer to both the *MS-DOS Version 2* manual and your hardware manual for further information.

Read This First

Please send your comments and suggestions about *Conversational MS-DOS (A Beginner's Guide to Version 2)* to:

Zenith Data Systems
Software Development
1900 North Austin
Chicago, IL 60639

Introduction

There are a lot of materials in my box of MS-DOS version 2. What are they for?

The manual text, index, and fly sheet should be unwrapped and placed inside the three-ring binder. The plastic disk holder page is for the MS-DOS version 2 software distribution disks for the Z-100 PC. These three disks are found in a sealed envelope.

There should also be a folder entitled IMPORTANT MATERIALS. In this folder you will find:

- End-User Non-Disclosure and Sublicense Agreement—This agreement must be signed and returned in the self-addressed Heath-Zenith envelope provided,
- End-User Non-Disclosure and Sublicense Agreement file copy for your records,
- *MS-DOS Version 2 Quick Reference Guide*,
- Spine to be inserted in the binder, and
- IMPORTANT INFORMATION—A list of changes (due to the latest product developments) to be incorporated in your manual.

Chapter 1

Personal Computers and MS-DOS Version 2

Using This Manual
The Operating System: MS-DOS Version 2
MS-DOS Version 2 Distribution Disks

Why should I use this manual?

Since the *MS-DOS Version 2* manual is voluminous, we created this manual to get you started using your operating system and to point out the enhancements with MS-DOS version 2.

This manual assumes that you have read your *Personal Computer Desktop System User's Guide* that you received with your Z-100 PC.

Why do I need the operating system?

The *operating system* ties the components of your Personal Computer (such as the keyboard, monitor, disk drives, and printer) together as a system. The operating system is a program which also controls the use and execution of *application programs.*

Let's see if I have this straight. There are two types of programs my computer will use, operating systems and application programs?

There are really more than just operating systems and application programs, but let's start there for now.

OK, what are application programs for?

Application programs are designed to perform specific tasks. Word processing packages, spreadsheets, and accounting packages are examples of application programs. The operating system establishes the link between the application program and your personal computer system.

What does the operating system do?

Your operating system, MS-DOS version 2, keeps track of each of the physical components of your Z-100 PC system. At the same time, the operating system keeps track of where data and information are located on the disk and retrieves the information (stored in files) when you request it.

Think of it like this: your floppy disk (or Winchester hard disk) is like a file cabinet. (Refer to Figure 1.1.) Just as you store file folders of information in the file cabinet, you store files of your data on your disk. Each file is assigned a file name (similar to the file folder label). The operating system is like the file clerk that manages these files and displays them at your command.

MS-DOS also erases programs and/or data from disks when you decide they are no longer needed. It also controls reading and writing of data from devices such as the keyboard, modems, printer, plotter, and the video monitor.

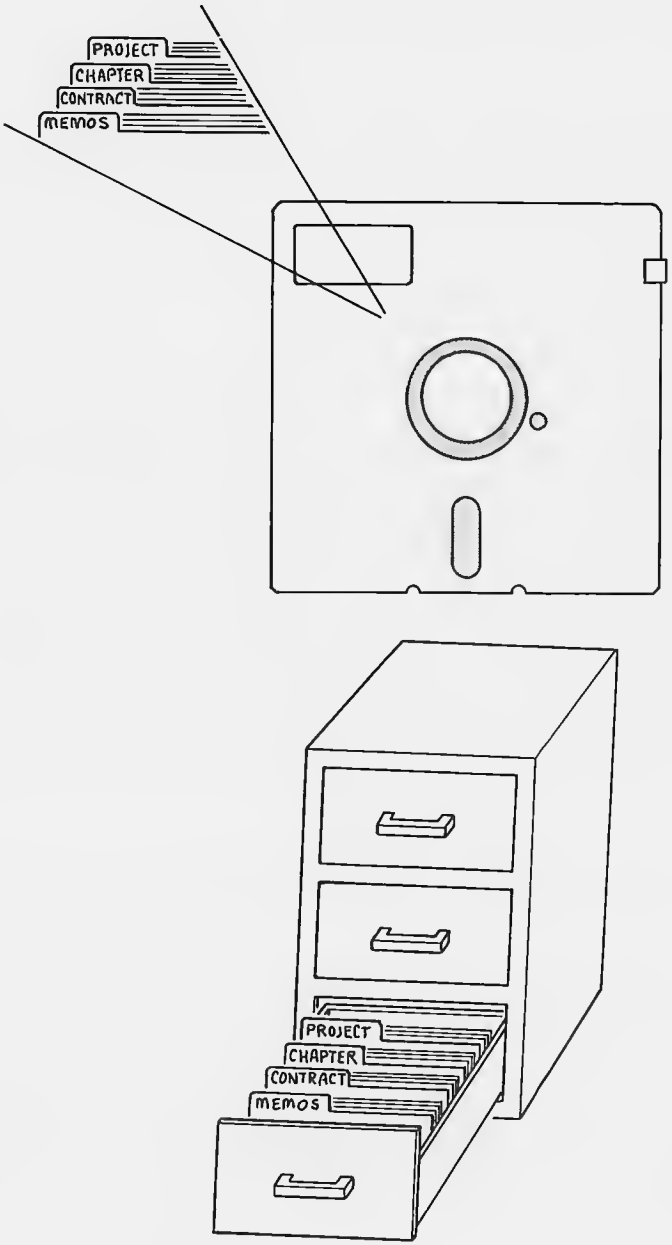

Figure 1.1. Disks as File Cabinets

Good. That sounds like one program doing a great deal.

Well, that is true. The operating system performs many tasks. You can find the operating system (Microsoft® MS-DOS version 2) on one of the three MS-DOS distribution disks you received with the *MS-DOS Version 2* manual.

What are "MS-DOS distribution disks"?

Distribution disks are disks on which your software is shipped from the factory. Your operating system, MS-DOS version 2, is stored on three distribution disks. These disks contain the operating system (MS-DOS) and a set of commands that help you to get the most out of your Personal Computer system. Take a minute now to locate these three disks.

Now that I've located them, what is on these three MS-DOS distribution disks?

The MS-DOS distribution disks contain:

- version 2 operating system and commands, and
- version 1.25 operating system and commands.

Why do I need all these distribution disks?

The first disk contains version 2 of the operating system and some of the commands. Since all the version 2 commands cannot fit on one disk, the remaining commands are on the second disk. The third disk contains a version 1.25 of the operating system and all the commands for this version.

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Why do I need two versions of the operating system?

The 1.25 version of MS-DOS is provided for application programs that do not run under version 2. Some application programs may not run under version 2 because of the relatively large memory requirements of MS-DOS version 2. So, a disk containing MS-DOS version 1.25 designed to work in a Z-100 PC is provided with your software package. Generally, you will not need to use it unless an application program asks for it.

What are the tabs on one side of my distribution disks for?

These tabs were put on at the factory and serve a very important function. The tabs *write-protect* your distribution disks. By write-protecting the disks, you prevent accidental erasing or altering of the programs contained on the distribution disks.

You can write-protect any 5.25-inch disks by applying an adhesive tab to the write-protect (square notch) on the disk, as shown in Figure 1.2. Thus, information on the disk can only be read and cannot be altered or deleted.

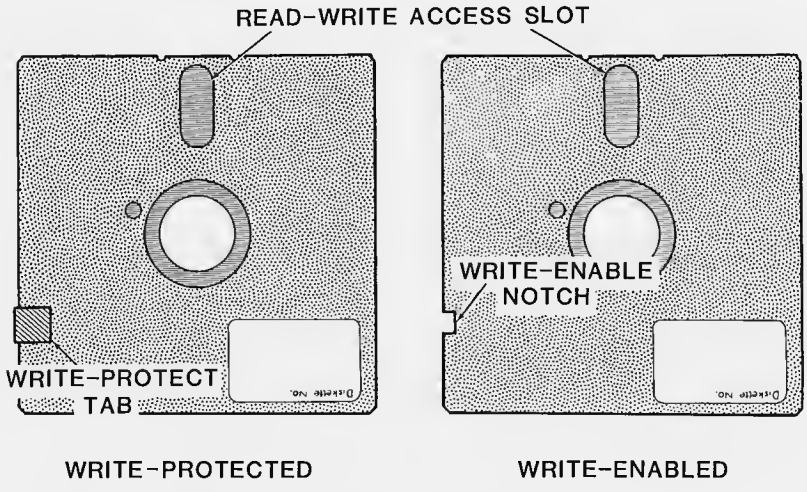

Figure 1.2. 5.25-Inch Floppy Disks

Which of the commands on the MS-DOS distribution disks will I use most often?

The commands you will use most often perform such functions as:

- keeping track of the locations of files in the disk drives,
- moving files from disk to disk, and
- erasing data files from disks.

These commands are often referred to as *resident* commands because they are stored in the computer memory as soon as your Personal Computer is started up. The resident commands you will most frequently use (CHDIR, COPY, DIR, DEL, MKDIR, REN, and RMDIR) are explained in Chapters 6 and 7 of this manual.

Commands which are not used as frequently as resident commands are stored on disk until they are needed (rather than in the computer's memory). These commands are called *transient* commands and perform such functions as:

- preparing new disks to receive data,
- adapting MS-DOS so that your specific printer can be used, and
- checking disks for available space.

Do I need to memorize what we have covered so far?

No. We will be going over these terms again as we start to use the system.

You are now ready to begin using your operating system, so turn to Chapter 2.

Chapter 2

Beginning to Use MS-DOS Version 2

Ok, now that I have some information about my operating system, how do I begin using MS-DOS?

There are three steps that you should follow to prepare your operating system disks for use with your application programs. They are:

1. *start up* your system,

2. *back up* your operating system distribution disks, and

3. make *working disks* (or working partitions if you have a Winchester disk based system) that will contain working copies of the operating system.

Let's begin with the first procedure you mentioned, the startup procedure. What does this mean?

The startup procedure is the process of getting your hardware and software ready so you can begin using MS-DOS version 2 on your Z-100 PC. It is necessary to perform a startup procedure before performing any other procedure. Once you successfully complete this procedure, the MS-DOS version 2 system prompt is displayed and you can enter commands.

Well, I'm ready. How do I begin the startup procedure?

Startup consists of four main activities that you must perform in the specified order:

1. Insert the disk;
2. Boot up the system;
3. Enter the date; and
4. Enter the time.

So, I should insert the disk first?

Yes. Turn on your computer. Insert the MS-DOS system disk (Distribution Disk I) into the upper (or only) floppy disk drive slot, as shown in Figure 2.1, and close the latch door. We will refer to this drive as *drive A* for now. (If you have a portable system, the disk drives are located side by side; in this manual, your left disk drive corresponds to the upper drive.)

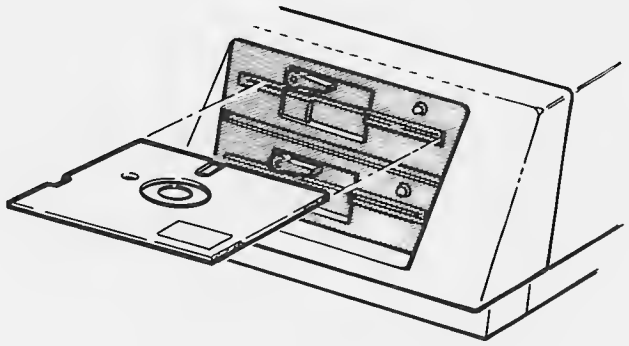

Figure 2.1. Disk Insertion

Next, boot up the operating system. If you have any questions about disk insertion, bootup, or date and time entry, refer to Chapter 2, "Startup Procedure," in the complete *MS-DOS Version 2* manual you received with your operating system.

Once you boot up and enter the date and time, MS-DOS version 2 displays the *system prompt* (A>—or C> if you have a Winchester disk) to show that you have successfully started up the system.

Now that I've started up the system, does MS-DOS immediately begin working with my application programs?

Not right away. MS-DOS version 2 requires that specific commands be entered whenever you want to use the operating system. A *command* is an instruction that tells MS-DOS what you want done. (Table 5.1 contains a list of all MS-DOS commands.)

When can I issue a command?

A command can be entered only when there is a system prompt (A>) followed by a flashing cursor. The cursor is an underscore which indicates where data can be entered. The entry you make at the system prompt to run a command is called a *command line*.

Are there any restrictions in entering commands?

Not really. Commands may be entered in uppercase, lowercase, or a combination of both. MS-DOS version 2 will automatically treat any lowercase character as the corresponding uppercase character.

Let's issue a command. Enter **DIR** at the system prompt and press the **RETURN** key. (You must press the RETURN key in order to send the command to the Z-100 PC's memory.)

The DIR command causes MS-DOS to display a list of directories and files in the following form:

```
Volume in drive A is 890-434
Directory of A:\

COMMAND  COM    18176   1-18-84   9:03a
FORMAT   COM    12656   2-07-84  10:09a
CONFIGUR COM    19724   1-18-84  10:42a
CHKDSK   COM     6468  11-21-83   3:24p
.
.
.
PSCP920  COM      816  11-18-83   3:04p
PSCMX80  COM     1456  11-08-83   3:02p
PSCMPI   COM     1394  11-08-83   3:03a
ANSI     SYS     1950   1-16-84   4:35p
       28 File(s)     65536 bytes free
```

Since the directory is too long to fit on one screen, the data automatically scrolls (each line of data enters from the bottom of the screen and pushes the line at the top of the screen out of view). To temporarily stop the scrolling, press CTRL-S (while holding down the CTRL key, press the S key). Try this now. Enter **DIR** and press the **RETURN** key. As soon as the directory begins to be displayed, press **CTRL-S.** To continue scrolling, press any key.

The directory list tells you which files are on a disk and how much space on the disk each file uses. Other information is given, but you don't need to understand it at this point.

Does the operating system always respond to a command like this?

No, the way the operating system responds to commands depends upon the purpose of the command or the kind of program to be accessed. When you issue a resident command (such as DIR, COPY, or RENAME), MS-DOS searches for the requested command in the computer's memory. Each time you boot up your system, the resident commands are loaded into memory and available, no matter which disks are in the disk drives.

When you issue a transient command (such as DISKCOPY, FORMAT, or RESTORE), MS-DOS searches the disk drive directory. These commands must be located in files that are on the disk in the default or specified drive in order for the commands to be available.

Let me see if I understand. Transient commands exist on the disk the same as my data files?

Yes, that's correct. In fact, transient commands are stored in command files. Both data files and command files are under the control of the operating system. It is by using the command files that you can create, analyze, and manipulate your data files.

So, I used the DIR command to get a listing of any transient or data files on the disk in drive A. And, since DIR is a resident command, it didn't appear on the list of files!

Right.

But how do I know which commands are resident and which commands are transient?

Table 5.1 lists all the MS-DOS version 2 commands and identifies whether the command is resident or transient.

How does MS-DOS keep track of all these files?

Well, one way MS-DOS keeps track is by the file's name. A file is identified by a name composed of two parts: the *primary file name* and the *extension*. The primary file name, consisting of from one to eight characters, is required for every file. The extension, consisting of from one to three characters, is required for command files and is optional for many user-created files.

What is the purpose of a file name extension?

The file name extension describes the file's contents and lets the operating system know what type of file it is.

While file name extensions are generally optional for user-created files, you may find it helpful to give the files you create extensions that describe the file's contents, type, or purpose. For example, the extension .DOC is commonly used to identify document files such as letters, memos, and reports. The extensions .COM and .EXE are reserved for executable command files, such as the transient commands.

So, MS-DOS keeps track of files by their file name; but how can I keep track of which file or disk is in use?

You also keep track of which file is in use by the file name; you determine which disk is in use by the disk drive. MS-DOS version 2 recognizes each disk drive in the system by an alphabetic *drive name*. Supported drive names under MS-DOS version 2 are the letters A through H, followed by a colon (:). This colon is a very important part of the drive name. MS-DOS reserves particular drive names for certain hardware configurations.

What are these reserved drive names?

The preassigned drive names in a standard system are:

- Drive names A: and B: always refer to 5.25-inch floppy disk drives; and
- Drive names C:, D:, E:, and F: are reserved for the Winchester disk partitions.

If your system contains more than two floppy disk drives, the drive assignments will be different.

What if I have a Z-100 PC with only one drive?

Well, MS-DOS version 2 and your Personal Computer need to have two disk drives to work with so that data can be copied from one disk to another. So, MS-DOS pretends your Personal Computer has two drives. MS-DOS version 2 acts as if your existing drive were actually two different physical drives. Thus, MS-DOS treats the single drive first as one drive (drive A:), and then as if it were a second drive (drive B:).

Every time that MS-DOS switches from treating your single drive as one physical drive to the other (from A to B, or B to A), MS-DOS stops and tells you to change the disk from the one that should be in A to the one that should be in B (or vice versa).

How does the system know where to look for my files?

Unless another drive name is specified, the system looks to read or write information from what is called the *default drive*. The default drive is usually the one from which MS-DOS is loaded into memory when you boot up your system. The system prompt is the default drive name, followed by a right-angle bracket (>).

Can I change the default drive to B?

Yes, you can, by entering the drive name of the desired default drive, followed by a colon, at the system prompt and pressing the RETURN key. Try it. Since the current default drive is A, change the default drive to B.

In this manual, **boldface** type indicates terms you enter at the keyboard. If the term appears in UPPERCASE, enter exactly what is shown; if the term appears in lowercase, the entry is variable.

Enter **B:** (remember to include the colon as part of the drive name) and press the **RETURN** key. The system prompt is now `B>`, showing the default drive is B. Change the system prompt back to `A>` by entering **A:** and pressing the **RETURN** key. (From now on in this manual, "press the RETURN key" will be abbreviated to "press RETURN.")

If my files are in another drive, how can I access them?

To request a file that is on a disk in a drive other than the default drive, you must precede the command or file name you enter to invoke the program with the appropriate drive name or directory. When you enter a command in which a file is referenced by a drive name (represented by *d:*) and/or directory path name, file name, and extension, you have entered a *file specification* or *filespec*. (Don't concern yourself with what a *path name* is at this time; it will be explained later.)

An example of a filespec is B:MEMO.DOC in the command line entry COPY B:MEMO.DOC A:.

Knowing my typing skills, I'll probably make some typing mistakes when entering command lines. If this happens, what should I do?

If you incorrectly enter a command line, there are several ways to recover. First, if you have not yet pressed RETURN, you may backspace (by using the BACK SPACE key or the 4/(left arrow) key on the Special Function Keys keypad). Or, as you press DEL, the characters you previously typed are erased. You can then retype the command line correctly and press RETURN.

MS-DOS version 2 is selective when it comes to accepting command lines. You must spell all *parameters* (specifications or values) of a command line correctly. If you do not, MS-DOS version 2 is not able to carry out your command and responds with the message: `Bad command or file name.`

What happens if I already pressed RETURN?

Don't worry. If you made an error in the command line and pressed RETURN, you won't hurt your machine or disk. Since the operating system will attempt to run the command, you have two alternatives. You can wait until an error message appears, or you can abort (terminate) a command that is running by pressing CTRL-BREAK (or CTRL-C). This is done by holding down the CTRL key and pressing the BREAK (or C) key simultaneously. Whichever way you choose, you can try entering the command line again.

Am I ready to begin using an application program?

Not yet. First you need to make those backup copies of your distribution disks and the working copies of MS-DOS version 2 we talked about earlier.

Chapter 3, "Making Backup Copies of MS-DOS," explains how to back up your distribution software. Chapter 4 explains how to make working disks and working partitions that contain the operating system.

If you have already made working copies of MS-DOS version 2, you can now begin to use MS-DOS features and/or commands as described in Chapters 5, 6, and 7 of this manual.

Chapter 3

Making Backup Copies of MS-DOS

Backup Disks
DISKCOPY Command

What does "backing up my distribution software" mean?

Backing up is the process of making a duplicate copy, or *backup* disk, of the software that is shipped from the factory.

Backing up your distribution disk gives you a second copy of the operating system in case the disks are damaged or there is an electrical failure while you are using your Personal Computer. Once you've backed up your distribution disks, store the originals in a safe place. Use the backup copies for everyday purposes.

Duplicate copies of the disks in your MS-DOS distribution disk set can save you a great deal of expense and inconvenience; so to protect your software investment—make backup disks.

I agree. Making backup disks sounds like a good idea. How do I go about doing that?

First you need to have three blank double-sided double-density floppy disks. Label these disks "MS-DOS Backup Disk I – version 2," "MS-DOS Backup Disk II – version 2," and "MS-DOS Backup Disk III – version 1.25" (be sure to use a felt tip pen!).

Now you can begin using the DISKCOPY command. Make sure the MS-DOS Distribution Disk 1 is in the upper (or only) floppy disk drive and the system prompt (`A>` or `C>`) is visible on the screen.

How do I use the DISKCOPY command?

Enter the command **DISKCOPY/V** at the system prompt. The /V verifies the accuracy of the disk copying operation.

Once you enter this line, press **RETURN**. DISKCOPY displays a message and the `Source drive name? (A-B) :` prompt.

What is the source drive name I'm being asked for?

The source drive name identifies the drive where the disk you want to copy is inserted. Since MS-DOS Distribution Disk 1 is the source disk (the disk you want to copy) and it is the disk with which you booted up (drive A), press **A**. DISKCOPY displays the `Destination drive name? (A-B) :` prompt.

What should I enter for the destination drive name?

Whether you have a single-drive or a double-drive system, your destination drive is B. Press **B**. DISKCOPY displays the prompt:

```
Place the source disk in A and destination disk in B.
Press RETURN when ready.
```

But what if I only have one drive!

Don't worry, even though you only have one disk drive (and MS-DOS likes to work with two drives), your single drive can function as two separate drives. MS-DOS version 2 treats your single drive first as one drive—drive A, and then as a second drive—drive B. MS-DOS will even prompt you to change the disk every time the system needs to access the disk in the other drive.

The procedure which follows is for a double-drive system. If you have a single-drive system, DISKCOPY displays prompts in the following form:

```
Place disk d in drive A.
Press RETURN when ready.
```

where *d* will be either disk A or disk B.

When a prompt in this form reads `Place disk B in drive A`, insert the MS-DOS Backup Disk I and press **RETURN**.

When a prompt in this form reads `Place disk A in drive A`, insert the MS-DOS Distribution Disk I and press **RETURN**.

What should I do next?

You already have your source disk in drive A. If you have a double-drive system, insert the blank disk labelled MS-DOS Backup Disk I in the lower disk drive. Close the latch and press **RETURN**. DISKCOPY displays the `Formatting destination...` prompt.

At the same time, the light on drive B will glow for several seconds. After DISKCOPY displays the message `Copying...`, the lights on each drive glow alternately. When DISKCOPY displays the message `Verifying...`, the glowing of the drive lights alternates faster for several seconds. Then DISKCOPY displays the following prompt:

```
Do you wish to copy another disk? (Y/N) <N>
```

Can I copy my other two distribution disks now?

Yes. Press the **Y** key and then press **RETURN**. DISKCOPY displays the `Source drive name?` prompt.

Do I have to change disks?

Yes, but you should wait until the prompt instructing you to do so appears. Press **A** for the source drive name and **B** for the destination drive name. Then DISKCOPY displays:

```
Place the source disk in A and destination disk in B.
Press RETURN when ready.
```

Now you can place your MS-DOS Distribution Disk II in drive A; and, if you have a double-drive system, insert the blank disk labelled MS-DOS Backup Disk II in drive B (the lower disk drive). Close both latches and press **RETURN**. If you have a single-drive system, switch disks when you are prompted.

When DISKCOPY is finished copying Distribution Disk II, the `Do you wish to copy another disk? (Y/N) <N>` prompt will appear.

Should I repeat this procedure with Distribution Disk III?

Yes, but since Distribution Disk III is Microsoft version 1.25, you cannot use the DISKCOPY command from version 2.

So I have to perform the startup procedure again?

Right, but first you must complete this DISKCOPY procedure. Press **N** at the `Do you wish to copy another disk? (Y/N) <N>` prompt and press **RETURN**. MS-DOS displays the system prompt (`A>`).

Should I put Distribution Disk III in drive A?

Yes, go ahead and put MS-DOS Distribution Disk III in drive A and reboot the system. While holding down **CTRL** and **ALT**, press **DEL** to reset the system. Follow the bootup procedure as described in Chapter 2 of the *MS-DOS Version 2* manual. When you receive the system prompt (A>), you are ready to back up Distribution Disk III.

Do I back up Distribution Disk III the same way as the other two distribution disks?

Yes, back up Distribution Disk III by using the DISKCOPY command the same way as you did for the other distribution disks. (Enter **DISKCOPY/V** and press **RETURN**. Press **A** for the source drive and **B** for the destination drive. Insert MS-DOS Backup Disk III when prompted and press **RETURN**.)

When DISKCOPY displays the `Do you wish to copy another disk? (Y/N) <N>` prompt, press **N**. MS-DOS displays the system prompt (A>).

Place all your MS-DOS distribution disks in the jackets provided, and store these disks in a safe place. Use your MS-DOS backup disks for future activities.

Am I ready to move on to something new?

Now that you have backed up all your distribution disks, you are ready to go on to something new; but first you need to reboot the system to work under MS-DOS version 2. Remove Backup Disk III from drive B; insert Backup Disk I into drive A. While holding down **CTRL** and **ALT**, press **DEL** to reset the system. Boot up Backup Disk I.

When you receive the system prompt (A>), you are ready to make working disks or partitions with MS-DOS version 2. Working disks and working partitions contain the operating system and application programs and/or data files. Chapter 4 in this manual will explain the procedure for making working disks and working partitions.

Chapter 4

Making Working Disks and Partitions

Working Disks
Winchester Working Partition
Assigning Partitions
Copying Application Programs
Configuring for the Printer

When can I begin to use my application programs?

Once you've prepared your bootable working disks and/or bootable working partitions, you will be ready to use the operating system along with your application packages.

Wait a minute; what is a bootable working disk?

A *bootable working disk* is a floppy disk that contains the operating system and application program files and/or data files.

So, a working disk is another backup disk except it also contains the operating system.

That's right.

Making Working Disks and Partitions

What purpose does a working disk serve?

Working disks increase the efficiency and convenience of your Personal Computer's applications. By combining MS-DOS and your application programs on the same floppy disk, you won't need a separate disk. If you do not use a bootable working disk, it means having to switch between your operating system disk and a program disk. This constant changing of disks decreases your efficiency. With a working disk, you can start up your ZDS Personal Computer system with the same disk on which your application program files reside.

That sounds great; how do I make a working disk?

During the procedure to make a working disk, you can perform three activities: FORMAT, COPY, and CONFIGUR. Since you will need a working data disk to complete the tasks in this manual, first you must format a disk. (If you have any questions while completing this chapter, refer to Chapter 4, "Working Disk/Partition Procedures" of the *MS-DOS Version 2* manual.)

How should I begin?

First, you need a blank double-sided double-density floppy disk. Label this disk "Working Data Disk." Enter **FORMAT B:/S/V** at the system prompt and press **RETURN**.

In the preceding command line, B: is the drive where the disk to be formatted is placed; /S causes the MS-DOS system files to be copied; and /V verifies the operation's accuracy and isolates bad sectors.

FORMAT displays a message and prompts you to press RETURN.

If you have a single floppy disk drive, refer to the FORMAT section in Chapter 4, "Working Disk/Partition Procedures" of the *MS-DOS Version 2* manual.

If you have two floppy disk drives, insert the blank disk in the lower (B) drive. Press **RETURN**. The `System transferred` message and the following prompt are displayed:

```
Enter desired volume label (11 characters, RETURN for none)?
```

What is a volume label? Is it the same as the label I wrote for the outside of the disk?

Not really. This volume label is 1 to 11 valid file name characters used to identify a particular disk. For this disk, you might enter "DOS 2 DATA". Since this label is written directly on the disk, it cannot be lost or mutilated.

Once a disk is inserted in a drive, the paper label is not visible. However, you can quickly find out which disk is in the drive by this volume label. Volume labels written on the disk are displayed through the directory commands or the VOL command.

If you wish to enter a volume label, do so now. Only when formatting a disk may you enter a volume label. Whether you enter a label or not, be sure to press **RETURN**. FORMAT displays statistics about the bytes (bytes are a unit of storage in the computer) on the disk and the `Do you wish to format another disk (Y/N)?` prompt. Press **N**. The system prompt will appear. You will need this disk again in Chapter 6.

What if I have a Winchester disk—is a working partition similar to a working disk?

Yes. A *working partition* is a section of a Winchester disk that contains the operating system and application program files and/or data files. If you do not have a Winchester disk, skip ahead to the *Can I put my word processing program on my disk or partition?* question later in this chapter.

Making Working Disks and Partitions

What purpose does a working partition serve?

Working partitions increase the efficiency and convenience of your Z-100 PC's applications. By combining MS-DOS and your application programs on the same Winchester partition, you won't need a separate disk or partition. With a working partition, you can start up your ZDS Personal Computer system with the same partition on which your application program files reside.

I'm still not completely clear on what a Winchester partition is for.

Winchester disks have large storage capacities. To make practical use of all this storage space, the Winchester disk is divided into sections called *partitions.*

A partition behaves like a floppy disk in most operations because you can access a partition's data and/or software by entering commands that refer to the drive name that is designated for that particular partition.

If your Winchester disk was installed at the factory, then it was prepared for receiving data (by the PREP command) and disk space was allocated to one partition. If your Winchester disk was not installed at the factory, you must prepare the disk to receive data and allocate a partition. Refer to the PART and PREP commands in the "Winchester Command Guide" (Chapters 16 and 17) of your *MS-DOS Version 2* manual.

How do I make a Winchester working partition?

There are three activities you must complete before using your working partition:

1. Assign Winchester disk partitions to drive names;
2. Format these partitions; and
3. Copy programs and/or files to the partitions.

What does assigning partitions mean?

By assigning partitions, you temporarily associate Winchester disk partitions with drive names so that the partitions are accessible.

Is there a specific procedure for assigning partitions?

Yes, partitions are assigned through the ASSIGN command. If the system prompt is displayed on the screen and MS-DOS version 2 Backup Disk I is in the upper floppy disk drive, you are ready to use the ASSIGN command.

First, let's take a look at how partitions are currently assigned. Enter the command line **ASSIGN 0:** at the system prompt and then press **RETURN**.

In the preceding command line, 0: is the number of the Winchester disk drive unit. (If you have more than one Winchester disk, you could specify unit numbers 0 through 7.)

```
            ASSIGN Version 2.01
Copyright 1984, Zenith Data Systems Corporation

    Partition          Start              End          Size in
      Type           Cylinder           Cylinder      Kilobytes
    ---------        --------           --------      ---------
1.  DOS                 0                  303           10335
2.  Unallocated
3.  Unallocated
4.  Unallocated

  Drive C: = 0:1
  Drive D: = Unassigned
  Drive E: = Unassigned
  Drive F: = Unassigned
```

Figure 4.1. Sample Partition Table

ASSIGN displays a table (see Figure 4.1) that shows the names and sizes of all established partitions and the drive names to which the partitions are currently assigned.

Let's say I want to assign partition 1 to drive C.

Enter the partition assignment command, **ASSIGN 0:1 C:** and press **RETURN**.

In the preceding command line, 0: is the unit number for your Winchester drive; 1 identifies the partition you wish to assign to the drive; and C: is the drive name by which all future references to the partition are made.

ASSIGN displays a message confirming that partition 1 is assigned to drive C. Now you are ready to format the partition.

But I thought only floppy disks needed to be formatted.

No, that's not true. Winchester partitions also need to be formatted. The FORMAT activity prepares the surfaces of your working partition(s) just as it does for working disks.

Do I format the whole Winchester disk?

Each partition on the Winchester disk has to be formatted before it can be used. You format as many working partitions as you need to hold both MS-DOS and your application programs or data.

What if I want to put my word processing program (or any application program) on drive C?

First, you have to make drive C a working partition. Enter **FORMAT C:/S/V** at the system prompt and press **RETURN**.

In the preceding command line, C: is the drive that has been assigned the partition being prepared; /S causes MS-DOS system files to be copied; and /V causes verification of the operation's accuracy and isolation of bad sectors.

When FORMAT displays a message and prompt in the following form

```
Format version x.x

Will FORMAT partition assigned drive C:
Strike any key when ready
```

press **RETURN**. The light on the Winchester drive is on for several seconds as FORMAT is preparing the partition. Then the `System transferred` message, statistics about the partition, and the `Enter desired volume label (11 characters, RETURN for none)?` prompt is displayed.

If you wish to enter a volume label, do so now. Only when formatting a disk may you enter a volume label. Whether you enter a label or not, be sure to press **RETURN**. FORMAT displays statistics about bytes on the disk and the following prompt:

```
Do you wish to format another disk (Y/N)?
```

If I only want to use drive C right now, should I press N?

Yes, press N and the system prompt appears. But if you want to prepare more than one working partition, press Y; and repeat the FORMAT procedure for each partition. (You can prepare only partitions that have been assigned valid drive names since you started up the system.)

Could I use this bootable partition just to store data?

Yes. In fact, you need this working partition for storage of the data you will create in Chapter 6. You can read through the rest of this chapter to learn how to copy application programs and/or existing data to the partition, or continue with Chapter 5, "MS-DOS Version 2 Features."

Can I put my word processing program on my disk or partition?

You sure can. Remove MS-DOS Backup Disk 1 from the floppy disk drive and store it in a safe place. To copy application programs to the working disk or partition, you need to use the COPY command.

That makes sense. What does the COPY command do?

The COPY command allows you to duplicate application programs and/or data files on other floppy disks or formatted partitions of the Winchester disk.

You begin by inserting a disk that contains copies of your word processing programs (or the application program or data to be copied) into the floppy disk drive A. If you are copying files to another floppy disk, place the disk to receive the files in drive B. Next, the command line is entered in the following form: COPY *s:primname.ext d:*/V.

Italic type used in a command line represents a user supplied variable. In the preceding command line, *s:* is the name of the floppy disk drive from which you wish to copy application programs or data—in this case, drive A; *primname.ext* stands for the file(s) that you wish to copy from the application program or data disk. (Entry of the *.* wildcard file name copies all the files from the disk); *d:* is the drive name assigned to the partition that is receiving the application program(s) and/or data (B: for a floppy disk, or C: for the Winchester drive prepared for your word processing program); and /V verifies the accuracy of the copy operation.

When MS-DOS displays the system prompt, all the files are copied.

Couldn't I also copy some of the commonly used MS-DOS commands which reside on disk onto my working disk or partition?

Yes, you can copy transient commands from your MS-DOS backup disks to your working disks and partitions. To copy the most used MS-DOS programs to a working disk or partition, you could use your MS-DOS backup disk as an application program disk and enter a command similar to:

```
COPY A:*.COM d:/V
```

In this command line, A: represents the source disk drive and d: is the destination drive or working partition (B for a floppy disk or C for a partition). The asterisk (*) is a *wildcard* character (wildcards are explained further in a later chapter) used to represent multiple characters.

Once you've entered the line, you would press RETURN. When MS-DOS displays the system prompt, all the transient command files are copied.

Great. You've told me about FORMAT and COPY, but what about the CONFIGUR command you mentioned earlier?

The CONFIGUR command adjusts MS-DOS for your printer, modem, or other serial/parallel device. If you don't have a printer, or have a parallel printer, or have already successfully used your printer with your PC, then you don't need to run the CONFIGUR program.

Otherwise, to configure a serial printer, begin with Backup Disk I in the upper (or only) floppy disk drive. Enter **CONFIGUR** at the system prompt and press **RETURN**. If you have a single disk drive, then follow the disk exchange prompts.

The CONFIGUR menu will appear, prompting you to select the kind of device you want to configure. Press **A** three times (to configure the LPT device, to map parallel output to serial output, and for the LPT1 parallel port). Next, press **B** (to map to COM1) and press **C** to exit from this menu.

Now you need to configure the COM device, so press **B**. Then press **A** to select COM1 as the serial port to be configured. If your device and its characteristics are specifically listed, then press the key corresponding to your hardware device. Otherwise, press **H** and refer to the CONFIGUR command in Chapter 11, "Command Descriptions" of the *MS-DOS Version 2* manual.

Press **F** to make the changes to both disk and memory. If you have a Winchester disk, press **C** to select the working partition. If you have a floppy disk drive, replace the Backup Disk I in drive A with the working disk you just made and press **A**.

Press **C** to exit from the CONFIGUR activity. The system prompt appears. Connect your printer to the upper serial connector on the back panel of your PC. Test whether or not the system works with the printer by simultaneously pressing **CTRL** and **PRTSC**. Release both keys and press **RETURN** several times. Your printer should print system prompts. To discontinue this printer test, simultaneously press **CTRL** and **PRTSC**.

If your printer does not work with the system, refer to the text on CONFIGUR in Chapter II of the *MS-DOS Version 2* manual.

Well, so far MS-DOS version 2 doesn't seem much different from other versions of DOS.

It may seem like that so far; but if you proceed to Chapter 5, "MS-DOS Version 2 Features," you'll find this isn't true.

Chapter 5

MS-DOS Version 2 Features

Hierarchical Directory Structure
Additional Commands
Winchester Commands

How is MS-DOS version 2 different from previous versions of DOS?

MS-DOS version 2 contains additional commands, changes to the Winchester hard disk commands, and a *hierarchical* (tree) directory structure.

What is a hierarchical directory structure?

Personal computers generally use two types of directory structures—*flat* and *hierarchical.* The flat directory structure allows a limited number of files to be stored in a single directory per disk or partition.

MS-DOS version 2 uses a hierarchical (or tree) structured directory. The tree structure allows a disk to contain several directories, each of which is limited in size only by the capacity of the disk itself. MS-DOS version 2 imposes a structure over these directories, thus making large numbers of files easier to handle.

How does the tree structured directory work?

When a disk is formatted by MS-DOS version 2, a single directory is created. This directory is called the *root*, since it is the beginning of the file system. Once you format the disk, you can instruct MS-DOS version 2 to create other directories (subdirectories).

You give these directories names just as you do ordinary files. MS-DOS version 2 keeps track of these directories just as it does files. Subdirectories, like files, appear as entries in other directories. The directory that contains the name of another directory is said to be that directory's "parent."

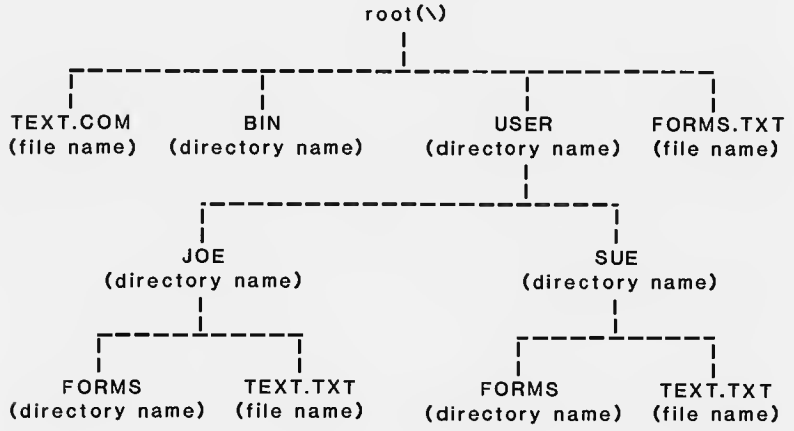

Figure 5.1. Tree Structured Directory

Could you show an example of a tree structured directory?

Certainly. Figure 5.1 shows a model tree structured directory. In this model, the root directory contains four entries, TEXT.COM (a file name), BIN (a subdirectory containing MS-DOS transient programs), USER (a subdirectory containing other subdirectories), and FORMS.TXT (a file name). The root directory is the parent of the USER subdirectory, and in turn, USER is the parent directory of subdirectory JOE.

Can I move from directory to subdirectory and vice versa?

Yes, it is possible for you to start at the root and travel down any of the 'branches' in the tree structured directory. Also, if you are in a subdirectory, you can travel from where you are (referred to as the "current working directory") toward the root.

With all these subdirectories branching off of directories, how can I find my way within this structure?

To move through the tree structure, you may issue commands that use a *path name*. A path name is a list of directories (sometimes ending with a file name) that MS-DOS version 2 follows in order to find a given directory or file. The names of directories in a path name are separated by the backslash character (\):

[[\]*directory*] [*directory*...] [*filename*]

where *directory* is any subdirectory in the system; and
filename is any valid file name for a disk file.

So, if I want to see the TEXT.TXT file in the JOE directory of Figure 5.1, would the path name be \USER\JOE\TEXT.TXT?

That's right.

What if I am currently working in the SUE directory?

To view the TEXT.TXT file in the JOE directory, while currently residing in the SUE directory, you could use the same path name. The command line entry would be TYPE \USER\JOE\TEXT.TXT. (The TYPE command is defined in Table 5.1.) The initial backslash in \USER\JOE\TEXT.TXT tells MS-DOS to begin the path back at the root directory.

You could also enter the path name ..\JOE\TEXT.TXT and receive the same results.

Where did the '..' come from?

There are two special directory names which may be used in place of the directory entries in a path name. The dot (.) refers to the current working directory, and dot dot (..) refers to the current directory's parent directory.

So, the path name ..\JOE\TEXT.TXT tells MS-DOS version 2 to begin the path at the current directory's parent directory (USER), proceed to the subdirectory JOE, and display the file TEXT.TXT.

For more information on path names and the MS-DOS version 2 hierarchical directory structure, refer to Chapter 7, "Directory Features" in the complete *MS-DOS Version 2* manual.

You mentioned earlier that some commands have been added. Which commands are new with MS-DOS version 2?

Table 5.1 contains all the MS-DOS version 2 commands. Commands which are new appear in **boldface**. Transient commands are followed with the letter T and resident commands with an R.

Table 5.1. Commands

COMMAND	R/T	PURPOSE
APPLY	T	Executes a command with substitution
ASSIGN	T	Assigns Winchester partition to a drive letter
BACKUP	T	File archiver—creates a backup file
BREAK	R	Sets check for CTRL-BREAK or CTRL-C
CHDIR	R	Displays or changes current directory
CHKDSK	T	Provides status of disk contents
CIPHER	T	Encrypts and decrypts files
CLS	R	Clears the screen
COMMAND	T	Makes EXEC calls on resident commands
CONFIGUR	T	Configures MS-DOS for your hardware
COPY	R	Copies file(s) specified
CTTY	R	Changes device from which commands are issued
DATE	R	Displays and sets the date
DEL	R	Deletes file(s) specified
DIR	R	Lists requested directory entries
DISKCOMP	T	Compares disks
DISKCOPY	T	Copies disks
ECHO	R	Controls echo feature
EXE2BIN	T	Converts .EXE files to binary format
EXIT	R	Exits COMMAND.COM; returns to previous level
FC	T	Lists differences between specified files
FIND	T	Searches for constant string of text
FOR	R	Repeats an MS-DOS command during batch and interactive file processing
FORMAT	T	Prepares a disk to receive MS-DOS files
GOTO	R	Branches out of execution
IF	R	Allows conditional execution
MKDIR	R	Makes a new directory
MORE	T	Displays output one screen at a time
PATH	R	Specifies directories to be searched for transient commands

Table 5.1 (continued). Commands

COMMAND	R/T	PURPOSE
PAUSE	R	Suspends execution
PRINT	T	Prints hardcopy of ASCII files
PROMPT	R	Designates MS-DOS system prompt
PSC*printer*	T	Outputs all graphic and special characters to printer
RDCPM	T	Copies CP/M files
RECOVER	T	Recovers file or files specified
REM	R	Displays a batch file comment
REN	R	Renames first file as second file
RESTORE	T	Restores archived files
RMDIR	R	Removes a directory
SEARCH	T	Locates files within directory structure
SET	R	Sets one string value equivalent to another
SHIFT	R	Allows use of over 10 replaceable parameters
SORT	T	Sorts data alphabetically or numerically
SYS	T	Transfers system files IO.SYS and MSDOS.SYS to specified drive
TIME	R	Displays and sets the time
TYPE	R	Displays contents of the ASCII file specified
VER	R	Displays MSDOS.SYS and IO.SYS version numbers
VERIFY	R	Verifies that data is correctly written to disk
VOL	R	Displays disk volume label

For entry forms and detailed information regarding all these commands, refer to Chapter 11, "Command Descriptions," in your *MS-DOS Version 2* manual.

NOTE to previous DOS users: Three commands from previous DOS versions are renamed. The DSKCOPY and DSKCOMP commands are now DISKCOPY and DISKCOMP, and the FILCOM command is FC. In addition, the MAP command is omitted from version 2. The MASM, and CREF commands are available on a different disk and discussed in another reference manual. Also, while the purpose of the Winchester disk commands (PREP, PART, SHIP, and DETECT) is the same, some of the command procedures have changed.

- SHIP does not ask the user to specify the shipping cylinder address; instead, once SHIP is executed, the read/write heads automatically move to the center of the Winchester disk.

- The DETECT command, previously named VERIFY, prompts for the Winchester drive unit number.

For further information on any of these Winchester disk commands, refer to the "Winchester Command Guide" (Chapters 16-19) of your *MS-DOS Version 2* manual.

This information has been helpful, but I want to apply what we've been talking about and create a directory.

Then you are ready to move on to Chapter 6 in this manual to learn about the commands which help you create and manipulate your directories.

Chapter 6

Directory Commands

What do I need to create a directory?

All you need to create a directory is the MKDIR command. But, before you learn how to use specific commands, let's review some information about commands in general.

MS-DOS uses two types of commands: resident and transient. A command line is entered through the keyboard and is usually followed by one or more parameters. The basic command line includes: drive name or destination drive name, a command, parameters (such as file specifications or switches), source drive name, and the command line terminator (RETURN). Command lines can be entered only when there is a system prompt.

Are there any command line entry requirements I should know?

Yes, MS-DOS requires that command lines be entered in a specific form. For instance, commands and parameters must be separated by delimiters. Valid delimiters under MS-DOS version 2 are the space, comma (,), semicolon (;), equal sign (=), and TAB key.

Sometimes during command execution, the system displays the Press any key prompt. You can press any *single* alphabetic (A-Z) or numeric (0-9) key on the keyboard—or RETURN.

Also, if you want to abort or terminate execution of a command that is already running, you can press CTRL-BREAK (or CTRL-C). This is done by holding down CTRL and simultaneously pressing BREAK.

Are commands the only entries to which the system responds?

No, when using MS-DOS version 2, you can enter what are referred to as *control character entries*. These entries alter a command line or affect the way your peripheral devices respond to the command line. When you use a control character, such as CTRL-BREAK, you must hold down the first key, CTRL, and simultaneously press the second key, BREAK.

For more automatic entering of commands, you can use MS-DOS editing and function keys (see the *MS-DOS Version 2* manual, Chapter 5, "Command Features").

Which commands help to manipulate the directory?

There are four MS-DOS commands that are frequently used when working with files and directories. These directory commands are:

DIR
MKDIR
CHDIR
RMDIR

Didn't I use DIR to see what is on the disk in drive A?

Yes, that's right. The DIR command causes MS-DOS to give you a list of all the files contained within a specified directory on a specified disk.

What if I want information on a single file, like the DISKCOPY command?

If you want information on just one file, you can enter DIR and the *filename.ext* (DISKCOPY.COM in this case). Try it by entering **DIR DISKCOPY.COM** and pressing **RETURN**.

You can also use a *wildcard* to get information on a group of files. To see all the .COM files, enter **DIR *.COM** and press **RETURN**.

Can I use the DIR command to view the directory of the disk in drive B?

Sure. In fact, there are two ways you can view the directory on drive B. First, enter **DIR B:** and press **RETURN**. Secondly, since the DIR command is resident in the system, you can change drives and still access the DIR command.

Change the default drive by entering the drive name followed by a colon, **B:**, and press **RETURN**. The default drive becomes B, and the new system prompt (B>) is displayed. Make sure you have your working disk in drive B. Enter **DIR** and press **RETURN**. The directory of drive B is displayed.

In addition, the DIR command has two switches (/P shows one page of the directory at a time, and /W displays the entries in a wide format) to facilitate display of directory entries on the screen.

Try the /W switch. Change the default drive back to A by entering **A:** and pressing **RETURN**. Now, enter **DIR/W** and press **RETURN**. Notice how the display has changed.

I still don't know how to create a directory!

That's true, but now you understand some preliminary concepts of a directory. We'll move on to how a directory is created. You'll need your working disk or working partition. If your working disk or partition is in a drive other than B, then in the following examples substitute that drive name wherever B is used.

The MKDIR (Make Directory) command is used to create a new directory. You can make directories anywhere in the tree structure by specifying MKDIR (or MD) and a path name. MS-DOS automatically creates the dot (.) and dot dot (..) entries in the new directory.

How do I create a subdirectory?

To create the subdirectory, USER, in your root directory, enter the command

```
MKDIR B:\USER
```

and press **RETURN**. Next, create the subdirectory JOE under \USER by entering

```
MKDIR B:\USER\JOE
```

and pressing **RETURN**. To create the subdirectory SUE under \USER, enter

```
MKDIR B:\USER\SUE
```

and press **RETURN**.

How can I view files in my subdirectory named USER?

To view the list of files and/or subdirectories that are included in the subdirectory named USER, enter

```
DIR B:\USER
```

and press **RETURN**. The display should look similar to the following:

```
Volume in drive B has no label
Directory of B:\USER

.           <DIR>          2-19-84  10:09a
..          <DIR>          2-19-84  10:09a
JOE         <DIR>          2-19-84  4:27p
SUE         <DIR>          2-19-84  4:27p
     4 File(s) 231424 bytes free
```

The first two lines tell you that a disk volume label was not entered when this disk/partition was formatted and that you are looking at the contents of the disk in the subdirectory \USER on drive B.

In the first line of the directory shown,

. stands for the current working directory (USER);
<DIR> indicates this is a directory rather than a file;
2-19-84 is the date the directory was created; and
10:09a is the time the directory was created.

In the second line shown,

.. stands for the *parent* directory of your current working directory (in this case, the \ or root); and
<DIR> indicates this is a directory rather than a file.

In the third line shown,

JOE is the name of a subdirectory on this disk.

In the fourth line shown,

SUE is the name of another subdirectory on this disk.

In the last line shown,

4 File(s) are in this directory; and
231424 bytes are available for use.

Why create subdirectories?

Subdirectories allow you to keep all your related files grouped together. With the tree structure, you can have all your word processing files in one directory and all your accounting files in another directory. Within the accounting directory you can have subdirectories such as accounts payable, accounts receivable, and general ledger. Subdirectories are especially advantageous with the Winchester disk.

Can I use the name of a file in one subdirectory in another subdirectory?

Yes. Once a directory is created, files and subdirectories can be entered; but all names must be unique within a directory. Yet, as you can see from Figure 5.1, names in one subdirectory can be used in other subdirectories.

How do I get to the subdirectory \USER\JOE we just created?

The CHDIR (Change Directory) command is used to reassign the current directory. Until now you have stayed in the root directory to make the \USER and \USER\JOE directories. You can also move into a directory and create files and subdirectories. You can change the current directory to any directory by specifying CHDIR (or CD), the root (\), and a path name.

CHDIR can also put you into the parent directory of the directory you are currently in, or display the path name of the current directory.

To change the current working directory to another directory, follow these instructions. Your current working directory is the root; now you can change to the \USER\JOE directory by entering

```
CHDIR B:\USER\JOE
```

and pressing **RETURN**. MS-DOS immediately puts you in the new directory.

You can view the path name of the current working directory by using the same command as for changing a directory. The only difference is that you do not specify a directory name. Enter

```
CHDIR B:
```

and press **RETURN**. The screen displays the current directory, `B:\USER\JOE`.

While you are in the \USER\JOE directory, create the FORMS subdirectory. First, take a look at which files are in the directory. Enter **DIR B:** and press **RETURN**. You are going to add another directory to this list.

After looking at the directory entries, enter **MKDIR B:FORMS** and press **RETURN**. Look at the directory entries again (enter **DIR B:** and press **RETURN**); you will notice that the FORMS directory is added to the listing.

Change to the \USER\JOE\FORMS directory by entering **CHDIR B:FORMS** and press **RETURN**. Notice that since you were already in the \USER\JOE directory, you didn't have to specify \USER\JOE before FORMS in the command line.

Check to make sure you are in the \FORMS directory by looking at the path name of the current working directory (enter **CHDIR B:** and press **RETURN**).

Can I use CHDIR to access the parent directory?

Yes. To move from the directory you are working in to the parent of that directory, you can use the .. shorthand notation

```
CHDIR B:..
```

and press **RETURN**. View the current directory by entering **CHDIR B:** and pressing **RETURN**. The system displays the parent directory \USER\JOE.

Does the backslash (\) always bring me back to the root?

Yes. Try this by using the backslash in the command line entry

```
CHDIR B:\
```

and pressing **RETURN**. MS-DOS accesses the root directory from any directory. To make sure you are at the root, enter **DIR B:** and press **RETURN**. The screen should display the B:\USER directory.

Now that I can make a directory, how can I remove a directory?

The RMDIR (Remove Directory) command is used to remove a directory from the directory structure. However, any directory you wish to remove with the RMDIR command must be empty of all files and subdirectories (except for the . and .. entries). This is to prevent you from accidentally deleting directories and files.

You can remove a directory by specifying RMDIR (or RD), the root (\), and a path name.

Give an example of the command line entry to remove a directory.

Certainly. So you won't have to include the drive specification with every command line entry, change the default drive to the drive containing your working disk or partition. In this case, enter **B:** and press **RETURN**. The system prompt (B>) appears.

To remove a directory, such as \USER\JOE\FORMS, first check that the directory is indeed empty (do this by using the DIR command: enter **DIR \USER\JOE\FORMS** and press **RETURN**). Since the directory is empty, except for the current and parent directory entries, enter

```
RMDIR \USER\JOE\FORMS
```

and press **RETURN**. The directory is then deleted from the directory structure. Check this by entering **CHDIR \USER\JOE\FORMS** and pressing **RETURN**. The system displays the `Invalid directory` message.

If the directory has entries, then you must delete all the entries (use the DEL command as explained in Chapter 11 of the *MS-DOS Version 2* manual) before removing the directory.

If my current working directory is a directory other than the root, would I use the same command line entry?

No. Let's use the same example, but assume that, instead of being in the root directory, you are in the \USER\JOE directory. Create the FORMS directory again by entering **MKDIR \USER\JOE\FORMS** and pressing **RETURN**. Now, change the current working directory to \USER\JOE by entering **CHDIR \USER\JOE** and pressing **RETURN**. You can now delete the directory FORMS from the parent directory, \USER\JOE, by entering

```
RMDIR FORMS
```

and pressing **RETURN** rather than the command line RMDIR \USER\JOE\FORMS you had to use while in the root directory.

We have explored the commands which help you manipulate your directory: DIR, MKDIR, CHDIR, and RMDIR. For further information on any of these commands, refer to Chapter 11, "Command Descriptions," in the *MS-DOS Version 2* manual.

The next chapter explains the MS-DOS version 2 commands you will be using most frequently.

Chapter 7

Common Commands

What are the frequently used commands?

The frequently used commands which will be discussed in this chapter consist of:

- commands that prepare your disks (DISKCOPY and FORMAT); and
- commands that move and remove files (COPY, REN, and DEL).

Commands used specifically with the Winchester disk (BACKUP, DETECT, RESTORE, and SHIP) are also explained.

Since not all MS-DOS version 2 commands are presented here, after completing this manual you may want to refer to Chapter 11 in the *MS-DOS Version 2* manual.

Didn't I use the disk preparation command DISKCOPY while making backup copies of my operating system?

Yes. You used the DISKCOPY command to copy the contents of your distribution disks onto other disks so that the contents of both are identical.

The entry form for DISKCOPY consists of the command name, followed by the source drive name and the destination drive name. The /V switch (sets the verify function on) is optional.

What happens if I just enter DISKCOPY?

When you enter DISKCOPY at the system prompt and press RETURN, DISKCOPY displays the `Source drive name? (A-B) _:` prompt.

Once you enter the letter name of the drive that contains the disk you wish to copy, DISKCOPY displays the `Destination drive name? (A-B) _:` prompt.

Enter the letter name of the drive that contains a blank disk (any information on the destination disk is overwritten by DISKCOPY, effectively erasing all data on the disk).

Once I enter the destination drive name, what happens?

DISKCOPY tells you to place your source disk in the drive you specified and place the destination disk in its specified drive.

When you place the correct disks in the drives specified, press **RETURN**. DISKCOPY displays a message as it begins each of its operations. For instance, you will see

```
Formatting destination...
Copying ...
```

appear on your screen.

How will I know when DISKCOPY is finished?

When all operations have finished, DISKCOPY asks you,

```
Do you wish to copy another disk (Y/N)? <N>
```

Pressing any key except Y (followed by a RETURN) brings you to the system prompt. If you just press RETURN, the default (<N>) will return you to the system prompt. Pressing Y causes DISKCOPY to request source and destination drives again.

If you receive error messages or want further information regarding options you may use with this command, refer to Chapter 11 of the *MS-DOS Version 2* manual.

Didn't I use the disk preparation command FORMAT while making working copies?

That's right. FORMAT is the first program that you run before using a new floppy disk or Winchester disk partition. FORMAT checks the disk for tracks or sectors that may be damaged, then prepares the disk for storing programs and data. FORMAT can copy the MS-DOS resident programs onto the new disk (if the /S switch is used). FORMAT will also build the root directory for the disk being formatted.

How do I enter the FORMAT command?

The entry form for FORMAT consists of the command name, alone or followed by the destination drive name, and any switches.

You are already familiar with the two most frequently used switches: the /V switch (sets the verify function on) and the /S switch (copies the system files). Additional switches are explained in the FORMAT section of Chapter 11 in the *MS-DOS Version 2* manual.

To prepare a bootable disk or partition, shouldn't I enter FORMAT /S/V and press RETURN?

Right. Then you must enter the name of the floppy disk drive or Winchester disk partition that you wish to use for this operation. Remember that *any data that is already on the disk in this drive or in this partition will be destroyed.*

What happens after I enter the drive name?

After you enter the drive name, the screen display changes and another prompt appears:

```
Insert new disk for drive d
and press RETURN when ready.
```

The *d* will be whichever drive name you entered.

If you are formatting a partition of the Winchester hard disk, rather than a floppy disk, the message displayed is:

```
Will format partition n assigned drive d:
Press RETURN when ready.
```

The *n* will be the partition number and *d:* will be whichever drive name you entered.

Since the /S switch was specified, once you press RETURN, the `System transferred` message is displayed after the system is placed on the specified disk.

How do I know when FORMAT is finished?

When FORMAT is finished formatting a disk, it displays a short message that reports what was done. An example of the completion message might be:

```
362496 bytes total disk space
 47104 bytes used by system
325392 bytes available on disk
```

After a disk is formatted, FORMAT also prompts you to enter a volume label:

```
Enter desired volume label (11 characters, RETURN for none)?
```

If you receive any error messages during this operation, refer to the *MS-DOS Version 2* manual, under the FORMAT section of Chapter 11, for explanations.

What can I do with the COPY command?

Through COPY, you can duplicate files by copying them to:

- a different location on the same disk or partition,
- another disk or partition that was prepared and made bootable, or
- a different directory.

DISKCOPY lets me copy an entire disk. With COPY do I have to copy files one at a time, or can I copy groups of files?

You can copy files individually (by specifying the file name and extension) or in groups by using the *wildcards*.

The two valid MS-DOS wildcard characters are asterisk (*) and question mark (?). The asterisk represents multiple characters and may be used to represent an entire file name or extension. The question mark represents only one character in the position in which it is located.

Thus, the entry ????????.??? is equivalent to *.*—both represent *all* files in the directory.

What is the entry if I wanted to copy all my text files?

To copy all your text files (let's say all text files have the extension .TXT), you could enter *.TXT and press RETURN.

How do I enter the COPY command?

The entry form for the COPY command consists of:

`COPY s:primname.ext d:/V`

where *s*: is the name of the disk drive from which you wish to copy programs or data;
primname.ext stands for the file(s) you wish to copy from the program or data disk in drive *s* (entering *.* enables all of the files from the disk to be copied with just one command line entry);
d: is the drive name assigned to the drive or partition receiving the application programs and/or data; and
/V is a switch causing the accuracy of the operation to be verified.

How can I copy a file to a disk in a different drive?

Let's try this. To copy the file named DISKCOPY.COM from drive A to the root directory in drive B, keeping the same name for the new file, enter

```
COPY A:DISKCOPY.COM B:\/V
```

and press **RETURN**. Verify that the file was copied to the root by accessing the root (enter **CHDIR ** and press **RETURN**) and checking the directory (enter **DIR** and press **RETURN**).

What if I want to give my new file a different name?

To copy the file named RDCPM.COM from drive A to drive B and change the name to READCPM.COM, enter

```
COPY A:RDCPM.COM B:READCPM.COM/V
```

and press **RETURN**.

How can I copy a file to a different directory on the same disk?

To copy a file from one directory on a disk to another directory on the same disk, just specify the directory to which you are copying. For example, copy DISKCOPY.COM (which is in the root directory of drive B) to a directory named SUE (on the same drive). First, enter **B:** and press **RETURN**. Next, enter

```
COPY DISKCOPY.COM \USER\SUE/V
```

and press **RETURN**. The file DISKCOPY.COM exists in both the root and in the SUE subdirectory. Verify this by viewing the root (enter **DIR** and press **RETURN**) and the SUE directories (enter **DIR \USER\SUE** and press **RETURN**).

You can also copy a file from one subdirectory to another subdirectory. To copy a file from the SUE subdirectory to the JOE subdirectory in the \USER directory, enter

```
COPY \USER\SUE\DISKCOPY.COM \USER\JOE/V
```

and press **RETURN**. If the current working directory was the \USER directory, then you could enter COPY SUE\DISKCOPY.COM JOE/V and achieve the same result.

What if I already copied a file, can I still change its name?

Yes, the REN (or RENAME) command is used to change the name of an existing file.

How do I enter the REN command?

The entry form for REN consists of the command name, followed by a file specification identifying the file you want to rename, a space, and finally, the new file name for the specified file.

If the file to be renamed is in the current directory of the default disk, then the file specification can be:

- a full file specification (drive designation, file name, and extension); or
- a file name (and extension, if any).

Could you give an example?

Sure. Suppose you wish to rename a file (READCPM.COM) in the current working directory of your default disk. Rename the file by entering

```
REN READCPM.COM RDCPM.COM
```

and pressing **RETURN**. Verify that the file name is RDCPM.COM (enter **DIR** and press **RETURN**).

What if the file is not in the current directory?

If the file is not in the current directory, a valid path name must be entered as part of the file specification. For example, the DISKCOPY.COM file is in a second-level directory named SUE.

Change the current directory to the subdirectory \USER\JOE, (enter **CHDIR \USER\JOE** and press **RETURN**). Make sure the file DISKCOPY.COM does not exist in the current directory (enter **DIR** and press **RETURN**). Now, rename the file by entering

```
REN \USER\SUE\DISKCOPY.COM COPYDISK.COM
```

and pressing **RETURN**. Verify that the file was renamed (enter **DIR \USER\SUE** and press **RETURN**).

That's if my directory is on the same disk; what if it is on a different disk?

To rename a file that is not on the default disk, enter the appropriate drive name as part of the first parameter.

For example, let's rename the READCPM.COM file on drive B to RDCPM.COM. Begin by returning to the root and changing the default drive to A (enter **CHDIR ** and then **A:**—be sure to press **RETURN** after each entry). Next, enter

```
REN B:READCPM.COM RDCPM.COM
```

and press **RETURN**. Verify that the file was renamed (enter **DIR B:** and press **RETURN**).

If the file is not in the current directory, you must also enter the appropriate path name. Enter

```
REN B:\USER\SUE\COPYDISK.COM DISKCOPY.COM
```

and press **RETURN**. The COPYDISK.COM file in the SUE subdirectory is renamed. Verify that the file is renamed (enter **DIR B:\USER\SUE** and press **RETURN**).

What command do I use to erase files?

You can use the DEL (or ERASE) command to erase specified file(s) from the default or other specified disk. The entry form for DEL consists of the command name followed by a space and then the name of the file you want to delete. The file can be identified with a full file specification or just a path name and file name.

Can I delete more that one file at a time?

Yes, you can use the wildcard characters to delete more than one file at a time. Also, if you end a command line with a directory name rather than a file name, that entire directory is erased.

What if I want to delete a file from my current directory?

No problem. Change the default drive to B (enter **B:** and press **RETURN**) and view the directory (enter **DIR** and press **RETURN**). You can delete the file READCPM.COM by entering

```
DEL READCPM.COM
```

and pressing **RETURN**. Check the directory—the READCPM.COM file no longer is listed.

What if the file is not in the current working directory?

If the file you wish to delete is not in the current working directory, specify the correct path name for the system to locate the file. For example, the file DISKCOPY.COM is in the directory \USER\SUE on the default disk, delete this file by entering

```
DEL \USER\SUE\DISKCOPY.COM
```

and pressing **RETURN**. In this example, USER and SUE are existing sub-directories. The system searches the specified directory on the default disk for the file and erases it.

What if DISKCOPY.COM isn't on the default disk?

If the file you wish to delete is not on the default disk, you must enter the correct drive name as part of the file specification immediately following DEL.

Change the default drive to A (enter **A:** and press **RETURN**). Check the subdirectory JOE on drive B (enter **DIR B:\USER\JOE** and press **RETURN**). Delete the DISKCOPY.COM file by entering

```
DEL B:\USER\JOE\DISKCOPY.COM
```

and pressing **RETURN**. Verify that the file no longer is listed (enter **DIR B:\USER\JOE** and press **RETURN**).

This ends the section on frequently used commands. To learn about the special Winchester disk commands, continue reading. Otherwise, turn to the last page of this manual for a final message.

Which did you say were the commands used with a Winchester disk?

The special commands used with a Winchester disk are: BACKUP, DETECT, RESTORE and SHIP.

Which of these commands is used most often?

Well, that depends on your needs. For example, if you frequently move your Personal Computer from location to location, you will use the SHIP command most often.

What is the purpose of the SHIP command?

The purpose of the SHIP command is to preserve your data. Winchester disks are sensitive precision instruments that can be easily affected by physical shock or impact. The data stored on a Winchester disk is vulnerable, so take special precautions when shipping your Personal Computer, or even when moving the computer across the room.

Run SHIP whenever you intend to physically move the unit containing your Winchester disk. SHIP moves the disk's read/write heads toward the center of the Winchester platters.

The head positioning caused by SHIP remains in effect only until you turn the Winchester disk on again and access a partition.

How do I run the SHIP command?

To run the SHIP command, you would enter SHIP and press RETURN. SHIP displays a message explaining the purpose of the SHIP command and the `Do you wish to continue (Y/N):` prompt.

What happens if I answer "Yes"?

If you respond Y to the prompt, SHIP moves the read/write heads to the shipping cylinder. The system displays the message:

```
Heads moved to shipping cylinder.  Turn off your personal computer and
prepare it for shipping.
```

The heads will remain at the shipping cylinder while you turn off the personal computer and move it.

For further information on the SHIP command, refer to Chapter 18 in the *MS-DOS Version 2* manual.

How can I check if my disk has been affected by moving it?

Use the DETECT command after every time you move your Personal Computer. The DETECT command examines a Winchester partition and isolates *unusable* (often referred to as *bad*) *sectors* so they will not be accessed by MS-DOS. Bad sectors are media imperfections that can cause errors when the software (operating system or program) tries to access the Winchester disk.

How do I run the DETECT command?

To run the DETECT command, you would enter DETECT and press RETURN. DETECT displays a message explaining the purpose of the DETECT command and the `Do you wish to proceed with DETECT (Y/N)?` prompt.

If you press Y to continue, DETECT displays the following prompt:

```
Winchester drive unit number (0-7):
```

This prompt is asking you to enter the number associated with the Winchester drive unit you wish to use. After you enter that number, DETECT displays the following prompt:

```
Enter bad sector address, or zero to end:
```

Wait a minute! What does this mean?

DETECT is asking for known bad sectors. If you know a certain sector is bad, enter its logical sector number at this prompt. If not, entering a zero and pressing RETURN causes DETECT to begin its detection process. DETECT will read the entire disk looking for bad sectors. Any bad sectors will be added to the Bad Sector Table.

Are the bad sector addresses important?

Yes. When bad sectors are encountered during disk access operations, MS-DOS displays a hard error message in the form:

```
<type> error <I/O action> drive <d>
Sector address of error is <nnnn>
abort,Retry,Ignore:
```

where <type> indicates the type of problem that caused the error condition (such as Write Protect, SEEK, DATA, SECTOR NOT FOUND, WRITE FAULT, or DISK);
<I/O action> identifies the operation that was being performed when the error occurred (such as reading or writing);
<d> is the name of the drive to which the partition was assigned when an error was encountered on the partition; and
<nnnn> is the logical hexadecimal address of the sector on which the hard error occurred. (Logical sector addresses begin with the first sector on the entire Winchester disk, which is sector 0000.)

So, if I encounter this message, should I write down the address?

We recommend that you record the sector address of the error when this hexadecimal value is displayed. Also, record the number of the partition and the unit number of the Winchester disk on which the error(s) occurred.

What happens if I enter zero when the prompt asks for a bad sector address?

DETECT begins to search for bad sectors and displays the message:

```
Beginning detection...
```

When DETECT is finished detecting bad sectors, it displays the `Beginning detection...Completed` message.

If DETECT found no bad sectors during the operation, it displays the `No bad sectors detected` message.

And if DETECT found a bad sector during the search?

Then DETECT displays the message:

```
Bad sectors located. Tables modified.
```

The words "Tables modified" means DETECT has recorded new bad sector information on the Bad Sector Table. These words will not appear if DETECT cannot record the new bad sector information.

When DETECT finds more than 169 bad sectors on the Winchester disk, it displays the message: `Bad sector count exceeded for this drive.` If this occurs, refer to Chapter 19 in the *MS-DOS Version 2* manual.

Once the bad sector information is recorded on the table, will those sectors be marked "out of use"?

Not quite. The bad sectors that DETECT found will not become inaccessible until the FORMAT command is used on the partition that contained the bad sectors. FORMAT redefines the sector boundaries of the partition so that bad sectors cannot be accessed.

Be sure to reset the computer after using DETECT. No partition will be accessible until you do.

So, if DETECT isolated bad sectors, I should now use FORMAT?

Well, we recommend that before using FORMAT you first use the BACKUP command to copy all files from the partition on which the bad sectors occurred. Then, you should use FORMAT on the partition on which the bad sectors occurred. Finally, you should use RESTORE to replace the backed up files on this partition.

Is the only time I use the BACKUP command after I use DETECT?

No, you can also use BACKUP at regular intervals to back up files from your Winchester disk partitions.

BACKUP creates a single backup file from multiple source files. Each source file retains its unique identity within the backup file. Individual source files may be recovered from the backup file by using the RESTORE command.

How do I run the BACKUP command?

To obtain a screen display that summarizes the use, syntax, and switches of the BACKUP command, enter

```
BACKUP ?
```

and press **RETURN**. Otherwise, enter the command name (BACKUP), followed by a file specification for the file(s) to be backed up, the destination drive name where the files are to be written, the primary file name (do *not* include an extension) and one or more of these switches. Information on switches and their default states is in the BACKUP section of Chapter 11 in the *MS-DOS Version 2* manual.

So, after entering BACKUP, I enter the source file or files?

That's right, but there are some restrictions for the source file specification.

At least one source file specification, *filespec*, must be provided. Wildcard characters (* and/or ?) may be used in the source *filespec* to designate more than one file.

Be careful to accurately enter the full file specification required by the system to locate the file, but do not include directory path names.

Next I enter the destination file; are there any restrictions?

Yes, there are. Specify the destination file name to which the backup file is to be written. If the destination file is on a different disk, include the appropriate drive name. Be sure to separate the source file and the destination file parameters with a space.

Wildcard characters cannot be used in the destination file name, and you can't specify a file name extension because BACKUP automatically assigns numeric file name extensions.

Let's say I entered my BACKUP command line; then what?

BACKUP begins executing, and the `Format backup disk (Y/N) ?` prompt appears.

If you enter N (for "no formatting"), the backup operation begins immediately.

If you enter Y, the system prompts for single- or double-sided formatting. Enter D and the disk will be formatted double-sided. Once the disk is formatted, the backup operation begins.

What happens during BACKUP?

BACKUP copies source files to the destination disk until all the files are transferred or until the disk is filled. Whenever a backup disk becomes full, BACKUP stops temporarily and prompts:

```
Insert another disk in drive d: for backup
and press RETURN when ready or any other key to abort.
```

At this point, remove the filled disk and replace it with a blank disk. Then press RETURN to resume the backup operation. If you do not want to continue with the backup operation, press any key other than RETURN; and BACKUP is aborted.

So the backup file can fill more than one disk?

That's right. Each separate disk used to store the file is called a *volume* and is assigned a volume number. When more than one disk is required for the backup operation, the program will prompt you to change disks and will optionally format destination disks as they are required.

Also, when more than one disk is required for the backup file, BACKUP must occasionally update and adjust the backup file's internal directory. When this is necessary, the system prompts:

```
Insert backup master volume 1, filename.000, in drive d: and
press RETURN when ready.
```

Exchange disks as prompted and press RETURN.

If you have any questions regarding the BACKUP command, refer to Chapter 11 in the *MS-DOS Version 2* manual.

So, after I isolate the bad sectors with DETECT, I first BACKUP the files, and then RESTORE the backed up files?

Almost, but you forgot one thing. The FORMAT command should be run after you've used BACKUP but before the RESTORE command.

OK, once I format the partition I run the RESTORE command to retrieve the data stored in backup files.

That's right.

How do I run the RESTORE command?

To obtain a screen display that summarizes the use, syntax, and switches of the RESTORE command, enter

```
RESTORE ?
```

and press **RETURN**. Otherwise, enter the command name (RESTORE), followed by the drive name and primary file name for the file to be restored, the original file specification for the file or files, and one or more of the many switches. Information on the switches and their default states is in the RESTORE section of Chapter 11 in the *MS-DOS Version 2* manual.

So, after entering RESTORE, I enter the source file or files?

Yes, but just as with the BACKUP command, there are restrictions for the source file specification.

At least one source file specification, *filespec*, must be provided. The source file name must be the name of a backup file that was created with BACKUP and cannot include any wildcard characters. Be sure not to enter an extension for the source file name. If the backup file being restored is not on the disk in the default drive, precede the source file name with the appropriate drive name.

Next, I enter the destination file; are there any restrictions?

Yes. Destination file restrictions consist of the following.

You must enter at least one destination file specification or *filespec* to describe which files in the backup file are to be restored. Wildcard characters (* and/or ?) may be used in the destination *filespec* to designate more than one file.

If you are entering more than one destination file specification, each *filespec* must be separated from the adjacent file specification(s) by a plus sign (+). Wildcard characters may be used.

So, once I enter the command line, RESTORE does the work?

Right. Although, RESTORE might occasionally issue the following message while running:

```
File filespec already exists, do you wish to delete it (Y/N)?
```

When this message is displayed, RESTORE has encountered a file on the destination disk that has the same primary file name and extension as a file that is to be restored. If you do not want RESTORE to overwrite the existing file with the restored file, enter N. If you want RESTORE to overwrite any existing files without automatically displaying the above prompt, use the /O (Overwrite files) switch when you enter a RESTORE command line.

For further information regarding RESTORE, refer to the *MS-DOS Version 2* manual, Chapter 11, under the section RESTORE.

This "conversational" manual is designed to introduce you to MS-DOS version 2 and help you begin working on your Zenith Personal Computer. If you have any questions, refer to the complete *MS-DOS Version 2* manual or one of your hardware manuals. For technical assistance, contact Zenith Data Systems Software Consultation between 8:00 AM and 4:30 PM (Eastern Time Zone) at (616) 982-3860; or write to:

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