

Introduction

The word DOS is often taken to stand for Disk Operating System, but this is not historically accurate. The current versions of DOS were developed from QDOS, which stood for Quick and Dirty Operating System, a reference to the fact that it was a simple and not very sophisticated system in comparison to others around at the time!

At one time, most PCs used DOS as their primary OS. Back then it looked after everything: the hard disk, the CPU, the memory, and communication with I/O devices such as the keyboard and printer. Gradually, Windows took over and DOS was relegated to the background. In fact, many people today are unaware of its continued existence. However, it still has an important role to play in running modern computers and a vital role when it comes to maintenance and trouble shooting.

Unlike Windows, which uses a graphical interface, DOS uses a command line interface i.e. you type commands and the computer carries out your instruction. This makes it less "user friendly" as you have to remember lots of individual commands - and if you make a tiny mistake, it won't understand you! On the other hand, once you have learnt DOS you will have a better understanding of how a computer operates and the underlying directory structure of your hard disk. Hence it is worth making the effort to get to know it well.

Starting DOS

There are several ways to get to DOS, but the easiest is from within Windows - click Start, Programs, MS-DOS Prompt. DOS will open in a window rather like any other program window, except that it has white text on a black background and a rather strange-looking tool bar. You can do many things in this DOS window, but I am not keen on using it as it is DOS running within Windows - I prefer to have DOS running by itself.

To get to a "stand alone" version of DOS, press F8 as the words "Starting Windows" appear during the boot sequence and then choosing "Command prompt only". The screen will clear and you will be left at the command prompt which, by default, looks like:

```
C:\>_
```

The flashing cursor (an underscore) means that it is ready to accept an input from the keyboard.

Directories

You need to be aware that DOS will carry out your instructions in the "current directory" unless told otherwise. And the current directory is the same as the letter or word proceeding the > of the DOS prompt. In the present case, any instruction you type will be applied to \, which is the symbol representing the "root" of the hard drive i.e. the highest level you can go up to. All directories come down from the root.

Try this example: at the prompt, type **dir** (or **DIR** - DOS is not case sensitive) and then press enter. You will see a listing of the main directories and files on C: drive. Below them the DOS prompt will reappear, awaiting your next instruction.

In the listing produced by typing dir, you will note that some entries have the word <dir> after them. This means that they are directories, and may contain further sub-directories or files.

(What exactly is a directory? Think of it as a place on the computer where you store other things so that you can find them easily)

We can look at those directories too, but first we must change the current directory to be the one we are interested in. Suppose we want to look in the directory containing Windows itself. At the DOS prompt type: **cd windows** and then press enter (cd is short for the command change directory). Note that the prompt changes from C:\> to C:\windows\ >, meaning that WINDOWS is now the current directory. Now type **dir** and press enter. A listing of all the files in the WINDOWS directory will flash past on the screen.

Switches

Many DOS commands can be followed by a "switch" which modifies their behaviour. We just saw how a directory listing can flash past on the screen too fast to be read. We can list the files one screenful at a time by adding the switch "p" to the "dir" command. Note that all switches are preceded by the forward slash (/). Whilst still in the WINDOWS directory, type the following command: **dir /p** and then press enter. This time you will see the first screen of information and the scrolling will halt and wait for you to tell it to show another screenful - by pressing any key. Another useful switch to use with the dir command is /w. Type **dir /w** and press enter, noting how this differs from using the /p switch.

Now let's return to the root of the drive directory by typing **cd** followed by the enter key. The symbol \ represents the root or highest level of the directory structure, remember?

Internal commands

Dos contains a number of **Internal Commands**. These are commands built in to the command interpreter, command.com, which is at the heart of DOS. You can execute these commands by typing the appropriate command at the DOS prompt and pressing enter. Try these:

```
ver  
time  
date  
cls
```

Changing drives

Why does the letter "C" occur in the DOS prompt? Well, it refers to the hard drive inside the machine, usually called C:, although there may be other drives (or partitions) present too, and these will be called D:, E: etc. The letters A and B are reserved for floppy disk drives, which use removable disks for data storage. If there is only one floppy drive it will be called A: and the letter B will be unused.

To view files or do anything else on another drive, you have to make it the "current drive". To do this simply type its drive letter (e.g. D:) and then press enter. If you are changing to a floppy drive you must have a disk in the drive before you do this or an error message will be displayed. The DOS prompt will change to D:\> or A:\> depending on what you typed. If you now issue the dir command, a list of directories and files on that drive disk will be produced on the screen.

Creating directories

We can use DOS to create both directories and files. Let's start by making a new directory to hold files which we will copy from elsewhere. To create a directory you use the Make Directory command, "md", followed by the name of the directory you wish to create.

Now create a new directory on the root of drive C: by typing **md test** followed by the enter key. The DOS prompt remains unchanged, but if you type **dir** and you will see an additional entry, the new directory called test.

Copying

The basic syntax for the copy command is: **copy source destination** where source is the name and location of the file(s) you wish to copy, and destination is the location you want to copy them to. It's easiest (to follow!) if you make the source your current directory.

Let's copy some files into the TEST directory. Type **dir** to get a listing of the directories and files on C: drive. You should see a file called autoexec.bat in the list. Copy it to the TEST directory by typing **copy autoexec.bat test** followed by enter.

Make TEST the current directory by typing **cd test** and then issue the **dir** command to see what is inside it. You should see a copy of autoexec.bat.

Return to the root of the drive by typing **cd** and then copy config.sys to the TEST directory by typing **copy config.sys test** followed by enter. Change to the TEST directory and check its contents again.

Return to the root and then change to the WINDOWS directory by typing **cd windows**. Issue the **dir** command and you will see that there are many many files in it! Near the bottom of the list is one called system.old - copy this to the test directory by typing **copy sytem.old test** - and check to make sure that it's there.

You will find that it *isn't* there! Look carefully in the WINDOWS directory and you will find a new file called test. This is where the copy of system.old ended up - in the original directory but with a new name. The full syntax of the copy command is **copy source destination name** and this gives a clue as to what happened. DOS assumed that the TEST directory was below WINDOWS in the same way that WINDOWS is below the root. But in fact, it is at the same level as the WINDOWS directory, so it couldn't be found. SO DOS assumed that the last part of the command, "test", was the name you wanted to give the copied file. So it copied system.old into the same directory and called it test!

To correctly copy system.old from WINDOWS into the TEST directory you have to tell DOS to go up to the root and then down into TEST i.e.
copy system.old \test - try it.

Change back to the WINDOWS directory and issue the **dir/p** command. You should see himem.sys in the first page of entries. Copy this to the TEST directory - be careful! Change to TEST and you should see four files there: system.old, autoexec.bat, config.sys and himem.sys.

Let's try copying a file from the TEST directory to a floppy disk. Insert a floppy disk into the disk drive, make sure that you are in the TEST directory (how can you tell?) and then type **copy autoexec.bat a:** and press enter. Change to the A: drive and issue the **dir** command to check its contents. You should see autoexec.bat amongst the files there.

Now make a new directory on the floppy disk to hold a number of files. Type **md backup** and press enter. Change back to C: drive and make TEST the current directory. Copy system.old to the BACKUP directory on your floppy disk - what is the command? Change to A: drive, make the BACKUP directory current and then issue the **dir** command to check it's contents.

Paths

It is quite possible to transfer files from anywhere to anywhere, no matter what the current directory. All you have to do is specify the full *paths*. Make the root of D: drive current so that the DOS prompt looks like D:\> and then type **copy c:\test\himem.sys a:\test\himem.bak** followed by enter. Change to A:\TEST and issue the **dir** command. You will see that himem.sys has been copied across, but renamed himem.bak on the way. This is a correct use of the renaming feature of the copy command.

Deleting

Suppose we no longer want autoexec.bat on the floppy disk? Type **cd** to make the root of A: current and then type **del autoexec.bat** to remove this file. Notice that you did not receive any warning before the deletion took place, unlike in Windows!

Wild cards

If you are dealing with a lot of files it would be very tedious to have to type all their names individually to copy or delete them. Fortunately, DOS provides an easy way to handle multiple files - the "wild card". This is similar in concept to the wild card in a game of cards i.e. one card can be used to represent any other. So in DOS, the symbol * is taken to mean any letter, symbol, or group of letters or symbols. A few examples will illustrate its use.

Change to the WINDOWS directory and type **dir *.sys**

A small group of files, all ending in the extension "sys" will be produced.

Next type **dir net.*** and press enter.

A small group of files, all starting with "net" will be produced.

Now type **dir net*.*** and press enter.

What do you get?

Type **copy dir net*.*** to copy these files to your floppy disk.

Finally type **dir *.*** to see all the files in the WINDOWS directory flash past!

Suppose we no longer need the files in the backup directory on the floppy disk. We can easily delete them all in one go. Make a:\backup the current directory, type **del *.*** and press enter. Issue the **dir** command to check that they have been deleted. Now we need to delete the directory. To do this use the "remove directory" command, rd. Type **rd backup** and press enter. An error message is given! You cannot delete a directory whilst it is the current directory; you must first go up one level. To do this, type **cd** and press enter. Now type **rd backup** and press enter. This time it will be deleted and you can check this by issuing the dir command.

Warning: the **del *.*** command can be very dangerous and should be used with care. If you use it in your WINDOWS directory your computer will no longer operate...

Formatting

So far, all the commands we have used have been "internal" i.e. built in to the main DOS file called command.com which has to be present for DOS to run. There are also a large number of "external" commands which are, in actuality, separate programs contained in the DOS directory.

Let's copy one such program onto our floppy disk. Change to the WINDOWS directory and then type **cd command** followed by **dir/p**. You are now looking at the listing of all the DOS commands on your PC, which are kept in a sub

directory of WINDOWS, called COMMAND. As you page down you will see a file called format.com; type **format /?** and read the hints given.

External commands are issued in exactly the same way as internal ones, by typing the command name and pressing enter. Type **format a:** and press enter. DOS will inform you that it is checking the existing disk format, saving unformat information and then will give a read out in percentage terms as the formatting progresses. When it has finished it will ask if you would like to format another disk. Since you don't, type **n** and press enter. Now type **dir a:** and press enter. You will note that the disk is now empty - formatting completely destroys the contents of a disk - so be careful not to format the hard drive of your computer as it will not work any more!!

(Formatting is a special process that prepares disks so that they can receive data. Imagine it as the process of laying down circular tracks all over the disk surface, dividing them up into sectors and numbering these sectors so that the computer can keep track of where it stores files)

There are a couple of useful switches associated with the format command: s and V. The s switch copies system files to the floppy once the formatting process is complete, making it into a "boot floppy" from which you can boot your computer if it will not boot normally. The v switch sets the "volume label" which gives a name to the floppy. Return to the WINDOWS\COMMAND directory and type:

format a:/s/v:bootdisk

Change to A: drive and issue the dir command. You should see the volume label BOOTDISK and one file, command.com, present. Command.com is at the heart of DOS and is an essential part of what makes it work.

Scandisk

DOS contains many other external commands. Here we will look at a few of the more useful ones. First, make WINDOWS\COMMAND the current directory.

Now type **scandisk** and press enter. A window opens scandisk starts checking the files structure of C: drive for errors. When it finishes it gives a summary of its findings and offers to start a surface scan. This checks the physical surface of the disk for faults and takes a long time. Use the tab key to select No and press enter. The window closes and you can select Exit to return to the DOS prompt.

Edit

Another useful external command is **edit**, which invokes edit.com, a text editor. This can be used to write simple text files or for editing existing text files. You might like to think of it as a very simple word processor. Type **edit** and press enter. A window opens with a menu bar across the top: file, edit, search, view, options, help (it's very similar to Notepad! In fact, Notepad is really a Windows version of Edit). Type some text into the bottom part of the window. Now press the Alt key and the F key at the same time. The File menu opens. Use the down arrow key to move the highlight bar to Save and press enter. A dialogue box opens. Use the Tab and arrow keys to move the cursor around to highlight A: drive and then press Enter. Move the cursor again and give the file the name Hello. Finally move the cursor until the save button is highlighted and press enter to save the file to your floppy. The title bar above the text window will change to show the complete path of your file. Press Alt + F again and select Exit to leave the editor and return to the DOS prompt. Make A: drive current and type **edit hello** and press enter. The editor will open with your file already loaded. Add an extra word to the bottom of the text and then save your file. Note that you will be asked if you want to replace the old version. Say yes. Interestingly, you can view the contents of a text file without invoking edit.com: type **type hello** and the contents of hello will be displayed.

Naming conventions

Every file in a directory has to have a unique name - you cannot have two first.doc files in your a:\docs directory for example. When naming files you have to follow the "8.3" naming convention. The first part of the name can consist of up to **eight** letters or numbers. The second part, called the extension, is optional, but if it exists it can be up to **three** letters or numbers long, and is separated from the first part by a period. There should be no spaces anywhere in the name.

Very few symbols are allowed in DOS file names so it is a good idea to stick to letters and numbers. Furthermore, certain extensions are commonly used for specific programs or file types, so "letter.txt" would normally be a simple text file whilst "letter.doc" would be a Word for Windows file containing complex formatting. So whilst "letter.lst" might make sense to the writer, it would be better to call it letter1.doc if it is in Word for Windows format.

Which of the following are valid DOS file names?

- letter.text
- letter
- letter. doc
- letter.2nd
- letter.tx
- letterhome.txt
- 1.doc
- 1,1