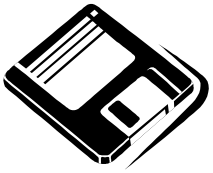
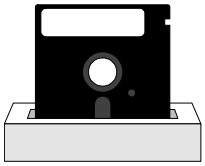
MS-DOS A closer look Part II

Preparing disks to hold information



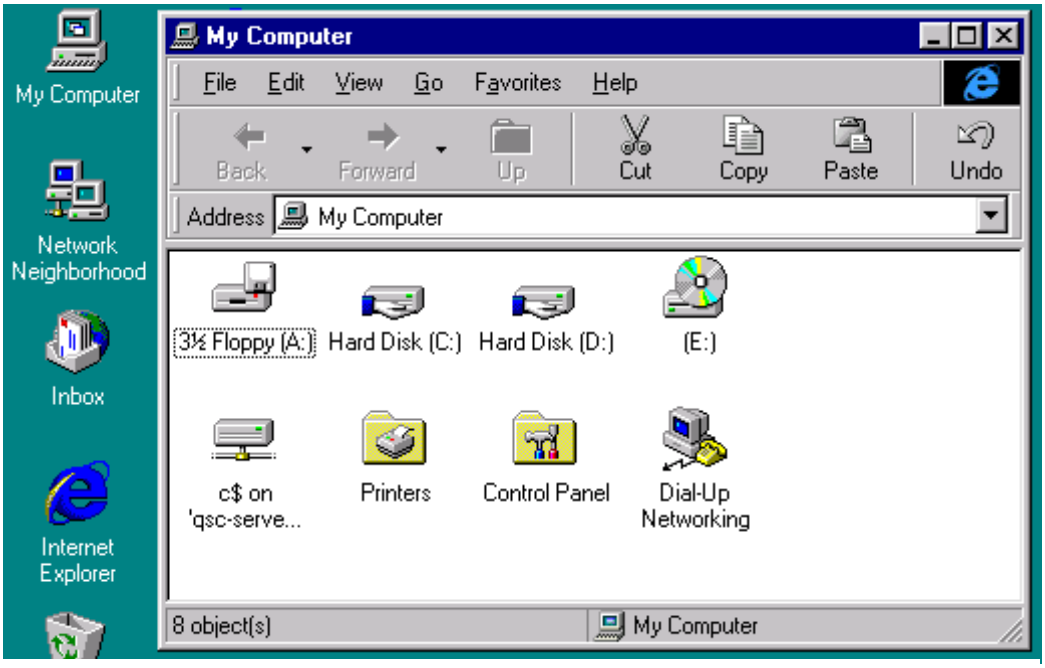
If you have a new disk that has never been used, you must prepare it for storing information. On microcomputers, you do this by running a program that prepares the diskette by laying out the areas where data is to be placed. The program "formats" or "initialises" the disk so the disk's file organisation is understood by the operating system.

During the format process the disk is cleared, the logical layout of the diskette is defined and an area is set aside for an index of the contents of the diskette *(obviously the initial content is very minimal or has nothing in it but the index.)* The most common floppy disk layout is the MS-DOS layout 'format' with the index known as the FAT (File Allocation Table). The FAT maintains a list of areas currently used, and which file is using it, as well as the areas currently available for storing additional files.



Available space is also called "free space".

The format process also checks the disk to ensure each major area (known as a sector) can be written to and read from reliably. If one of the disk areas cannot reliably store files, then it is marked in the index (FAT) as a "bad sector" and will not be used.



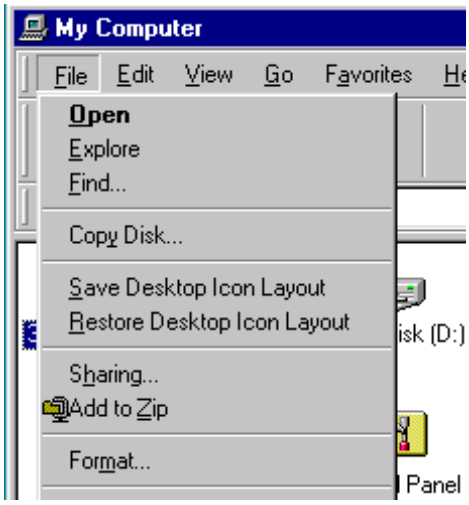
The Windows 95/98/NT Desktop - with My Computer opened

Preparing a Disk in Windows 95/98/NT

To prepare, format, a floppy diskette in Windows 95/NT, the steps are as follows.

- Insert the diskette to be formatted into the Floppy Disk Drive

- Open “My Computer” by double clicking on the icon
- Click, select, the floppy disk drive icon where you have placed the diskette
- Select the file menu
- Select the “Format...” command
- On the following dialog box, select [Start] button to begin formatting.



As Windows 95/NT formats the diskette it will show a graphical bar as it progresses. When the format process is complete, a dialog box is displayed with summary information of the work that it has done.

MS-DOS - FORMAT

The MS-DOS program/command to prepare a disk for use is:
`FORMAT.COM`

For example, the following command formats a floppy disk in drive A:

```
FORMAT A:
```

You should always specify the drive that contains the disk you want to format.

As it formats the disk, MS-DOS displays the percentage of the disk that has been formatted. After the disk is formatted, you are prompted to give the disk a “volume label”. Type the name you want to give the disk, or press ENTER if you don’t want a label.

MS-DOS then displays information about how the disk was formatted:

```
C:\>format a:
Insert new diskette for drive A:
and press ENTER when ready...

Checking existing disk format.
Formatting 720K
Format complete.

Volume label (11 characters, ENTER for none)?

      730,112 bytes total disk space
       61,440 bytes in bad sectors
      668,672 bytes available on disk

        1,024 bytes in each allocation unit.
          653 allocation units available on disk.

Volume Serial Number is 2657-11CE

Format another (Y/N)?
```

The Windows operating systems and MS-DOS provide the following summary information.

Bytes total disk space Indicates the storage capacity of the disk.

Bytes used by the system Appears if you have transferred system files to the disk. This line shows how much space is used by the system files.

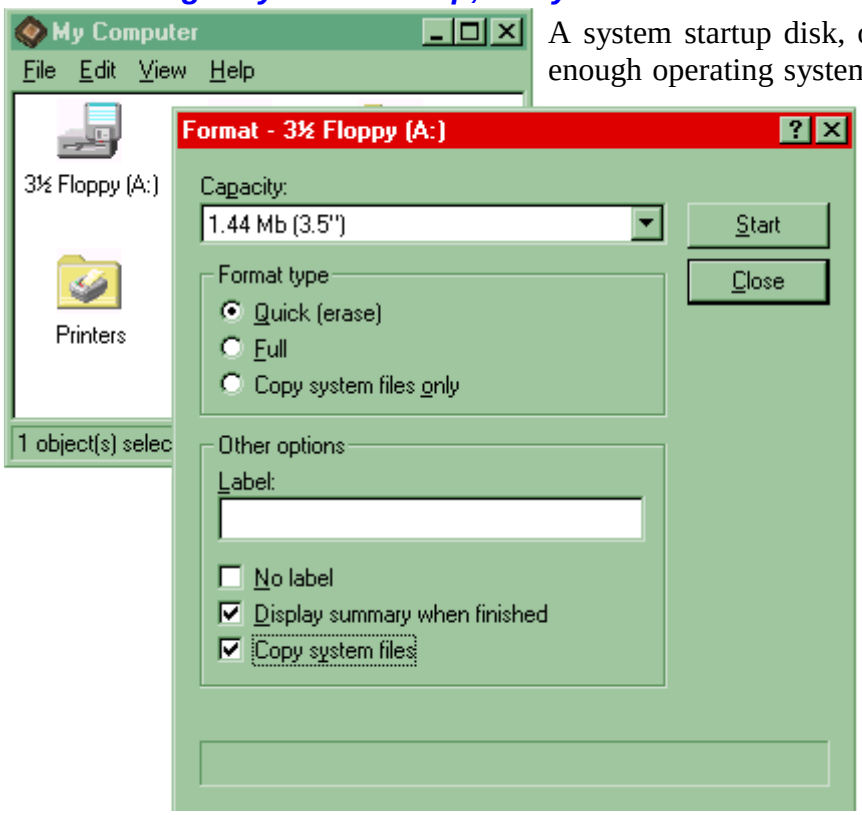
Bytes in bad sectors Indicates how much of the disk is unusable because of bad sectors. If there are no bad sectors, this line is omitted.

Bytes available on disk Indicates the total disk space minus the space taken up by the system files and bad sectors.

Bytes in each allocation unit and *allocation units available on disk*. Indicates the minimum storage unit the disk has been configured to store and how many units are available. If you multiply the two numbers on these lines, the result is the same as "bytes available on disk" number.

Volume serial number Indicates the serial number assigned to the disk. This number is unique for each disk to help the operating system differentiate between different floppy disks.

Creating a System Startup, or System Boot Disk



A system startup disk, or system boot disk is a diskette with enough operating system files on it that it can be used to start up a microcomputer.

Windows 95/98

Windows 95/98 provides two different ways of creating system startup, or system boot disks. From the File | Format ... command, the following dialog box provides the different options discussed earlier for formatting a disk.

If the diskette has already been formatted, then the user can select that only the system files are to be copied. (Copy system files only)

If the diskette also needs to be formatted then the system files can be copied as part of the formatting process.
(copy system files)

FORMAT /S - Preparing a disk to contain the OS

To prepare a disk that you want to contain a copy of the operating system (ie. so that you can start the computer with it) you can use a parameter for the format command. The parameter **/s** tells format to transfer the "system" files to the disk. For example, the following command formats the disk in drive b, then copies system files to the disk:

```
format a: /s
```

To make a disk that is already formatted a system disk, use the **sys** command. For example, the following command copies system files from the current drive to a formatted disk in drive b:

```
sys b:
```

Getting HELP

MS-DOS commands accept the parameter **/?** which forces the command to display a "help" screen of command information. For example the following command will display more helpful information on the format command.

```
format /?
```

The computer will display the following information.

```
C:\>format /?
Formats a disk for use with MS-DOS.

FORMAT drive: [/V[:label]] [/Q] [/U] [/F:size] [/B | /S] [/C]
FORMAT drive: [/V[:label]] [/Q] [/U] [/T:tracks /N:sectors] [/B | /S] [/C]
FORMAT drive: [/V[:label]] [/Q] [/U] [/1] [/4] [/B | /S] [/C]
FORMAT drive: [/Q] [/U] [/1] [/4] [/8] [/B | /S] [/C]

  /V[:label]  Specifies the volume label.
  /Q          Performs a quick format.
  /U          Performs an unconditional format.
  /F:size     Specifies the size of the floppy disk to format (such
              as 160, 180, 320, 360, 720, 1.2, 1.44, 2.88).
  /B          Allocates space on the formatted disk for system files.
  /S          Copies system files to the formatted disk.
  /T:tracks   Specifies the number of tracks per disk side.
  /N:sectors  Specifies the number of sectors per track.
  /1          Formats a single side of a floppy disk.
  /4              Formats a 5.25-inch 360K floppy disk in a high-density
drive.
  /8          Formats eight sectors per track.
  /C          Tests clusters that are currently marked "bad."
```

Windows / MS-DOS LAB Work Assignment 11

1. Prepare a floppy disk in drive A: for file storage by using Windows and do the same thing using the MS-DOS FORMAT command.

2. Write down the summary storage information given by Windows and by MS-DOS and note any differences.

3. Write down the prompts MS-DOS command gives you, and your responses.

4. Insert the newly formatted disk into drive a: and restart the computer by shutting the computer, turning the computer off and turning it back on again.

5. Write down the error message when the computer has restarted.

6. Remove the floppy diskette from the disk-drive, restart the machine or press a key to continue.

7. Put the newly formatted disk into drive A:. Transfer the system files onto the newly formatted disk by either using the SYS command or /S parameter for the format command.

8. Insert the newly prepared disk that should now contain the system files into drive A: and restart the computer by using a warm boot.
Note any errors

MS-DOS LAB Work Assignment 12

1. Write down the help information you get when using the /? parameter with the following commands:

dir
cd
md

2. What happens when you use the **/oe** parameter with the **dir** command?

3. What is the difference between typing **dir /a** and **dir**? Write down the difference in the number of files, and which files are different.

Review Questions

1. The command FORMAT B: /S
   a) requires the availability of the FORMAT program
   b) formats the disk in drive B, and further makes it possible to boot the system from the formatted disk.
   c) erases every file currently on the disk in drive B
   d) all of the above
   e) none of the above

Sources and Reference:

Microsoft MS-DOS 5.0 User's Guide and Reference, Microsoft Corporation.
Microsoft MS-DOS 6.2 Help files.
Student Manual DOS Introduction Course, Education Development Centre, B.C., Canada.

http://www.qsc.edu.to - Queen Salote's SchoolNET Website
http://www.tongatapu.net.to - **Tonga** on the **'NET**

Queen Salote's SchoolNET Website does not require Internet access as it is not connected to the world wide Internet but uses the same technology within Queen Salote College and participating schools.

http://www.qsc.edu.to is available on all networked computers at Queen Salote College.