

TRAINING COURSE

ON

RESERVOIR OPERATION

(UNDER WORLD BANK AIDED HYDROLOGY PROJECT)

Module B

MS - DOS

Operating System

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MS-DOS OPERATING SYSTEM

1.0 INTRODUCTION

A computer system is a combination of a number of individual components, namely hardware, operating system, application programs and the user. Every component has its own set of duties to handle. Operating system being the component which is in direct interaction with the hardware, is responsible for allocating the hardware to the application programs.

An operating system (O/S) is an integrated set of specialized programs that is used to manage resources and overall operations of a computer system without user-intervention. It acts as an interface between the computer hardware and computer user. The purpose of the operating system is to provide an environment in which the user can execute programs.

2.0 FEATURES OF AN OPERATING SYSTEM

2.1 Operating System As A Resource Allocator

A computer system has a number of resources, namely peripherals, file storage space, memory space and CPU time. There has to be some component in the system which manages these resources and allocates them to different users and programs depending upon the requirements. Operating system is the one which does the proper scheduling of these resources and manages them a such a manner that resources are effectively utilised. Therefore an operating system is also referred to as a resource allocator.

2.2 Operating System As A Control Program

An operating system can also be viewed as a control program since it controls the execution of the user programs such that any error(s) and improper use of the hardware can be minimized.

2.3 Single-user/multi-user Operating Systems

All the application program consist of two parts - input/output and processing. The I/O devices perform input/output while CPU is busy in the processing. While a user is busy with the input/output, the CPU at that time will be idle. Once the program is finished with the I/O, CPU will be allocated to it for the processing. This type of environment is known as a single-user environment, where the entire CPU is dedicated to a single user.

The only limitation of a single-user system is that the CPU is not utilized fully. To minimize such a wastage of CPU, another type of operating system is introduced, which is known as a multi-user environment. Here one CPU is connected to a number of users who have the independent I/O devices. Initially, all the users are doing I/O and whenever one of the programs sends a request for the CPU, it is allocated to that program. In such a manner, a queue of these requests is made and CPU caters to each of these requests one by one. In this way, the CPU time, which was getting

wasted earlier in the single-user system, is being utilized now in a proper manner.

The operating system DOS provides a single-user environment for the user, whereas some other operating systems like UNIX and XENIX are multi-user systems.

3.0 FUNCTIONS PERFORMED BY AN OPERATING SYSTEM

An operating system is an irreplaceable part of a computer system. A number of important functions are handled by an operating system, some of which are listed as follows:

3.1 Memory Management

Memory is one of the important components of the computer system. A program must be loaded in the memory for execution. As the program executes, it accesses program instructions and data from memory. When the program terminates, the memory space occupied by it is cleared and is marked as available. The operating system is responsible for the memory management. A number of memory management schemes are available but a suitable scheme is adopted by the o/s depending on the hardware design of the system.

3.2 Device Management

A number of devices are connected to the computer system. In case of a multi-user system a device is allocated to a user when his job is finished, the device is released. Other operations like read, write, etc. are also performed on the devices. It is the Operating system which is responsible for the proper scheduling and management of these devices.

3.3 Process Management

An operating system enables a running program (also referred to as a process) to call other programs abort itself, to create a new process, etc. All these operations are performed by the system calls of the operating system.

3.4 Information Management

The operating system keeps information about all its processes, using system calls to access this information. Transfer of information takes place between the user programs and the operating system with the help of these system calls. They return information about time, date, system information system.

4.0 MS-DOS

MS-DOS or the Micro Soft Disk Operating System consists of a group of programs which perform the following functions:

- to monitor commands given by the user to the computer,
- to load and execute programs specified by the user,
- to manage the devices attached to the computer,
- to manage the files of data and programs that the computer will work with.

The MS-DOS is a single users OS which means that only one user can use the computer at a time. It allows the user to enter the commands in upper case letters, lower case letters or a combination of both. All the DOS commands are terminated by [Enter] key. The important commands of DOS are described below :

4.1 ATTRIB Command

This command allows to set the read attributes of a file to read-only or to display the attributes of a file. The syntax is:

[path]ATTRIB [+R| -R] [+A| -A] [+S| -S] [+H| -H] [path] filename.ext /S

where,

[path] before ATTRIB specifies the path of the ATTRIB command file.

+	Sets an attribute.
-	Clears an attribute
R	Read-only file attribute
A	Archive file attribute
S	System file attribute
H	Hidden file attribute
/S	Processes files in all directories in the specified path
filename.ext	File whose attributes are to be modified.

4.2 BACKUP Command

This command backs up one or more files from a disk to another disk. The drive specifiers of the disks must be different. The syntax is :

[path]BACKUP d:[path]filename d: [/S]/[M]/[D:mm-dd-yy]

where,

[path] before BACKUP specifies the path of the BACKUP command file.

d:[path]filename specifies the filenames to be backed up.(Source)

d: specifies the drive that will contain the backed up files.(Destination)

/S is used to backup all the files in all the subdirectories in addition to the files in the specified directory.

/M is used to backup files that have been modified since the last backup.

/D is used to back up files that have been modified on or after the specified date. The format of the date specified will be mm-dd-yy.

4.3 CD Command

This command changes the working directory. The syntax is :

CD <directory_name>

e.g. CD \IRCC

will set the working directory as \IRCC.

4.4 CHKDSK Command

It shows the space available on a hard disk or floppy. The syntax is:

CHKDSK

4.5 CLS Command

This command clears the screen.

4.6 COPY Command

This command copies the contents of one file to the other file. The syntax is:

COPY <file_one> <file_two>

e.g. COPY ABC.EXT XYZ.EXT

As a result of the above command there will be two files in the directory with same contents but with different names ABC.EXT and XYZ.EXT.

4.7 DATE Command

This command is used to change the date known to the DOS. The syntax is:

DATE [mm-dd-yy]

where mm-dd-yy specifies the date in month-day-year format.

4.8 DEL or ERASE Command

It deletes selected files. The syntax is:

DEL <filename.ext>

or ERASE <filename.ext>

e.g. DEL RAJEN.BAK

will delete the file RAJEN.BAK from the current directory.

4.9 DELTREE Command

This command can be used to delete a directory along with all the files and subdirectories.

The syntax is :

DELTREE c:\fortran

4.10 DIR Command

It gives the information about the file like, file name, extension, size of the file in bytes and date and time the file was last edited. e.g.

DIR

will display all the file in current directory.

DIR/P

will display directory, pausing after every screenful to enable the user to examine the list.

4.11 DOSKEY Command

This command loads the DOSKEY (a memory resident program) in the memory. Doskey can be used to recall/ edit the previously used commands by using the arrow keys on the keyboard. To load Doskey, at the DOS prompt type :

[path]DOSKEY

4.12 MD Command

This command is used for creating a directory in the current directory. The syntax is:

MD <Directory name>

e.g. MD IRCC

will create a subdirectory IRCC in the current directory.

4.13 PATH Command

This command sets specified directories for commands or batch files that were not found by a search of the current directory. The syntax is :

PATH [path1;path2.....]

A list of drives and path names, separated by semicolons can be specified.

4.14 PRINT Command

This command prints a file. The syntax is :

PRINT <filename >

4.15 PROMPT Command

This command is used to set a new DOS prompt. The syntax is :

PROMPT [prompt text]

4.16 RD Command

This command is used for deleting a directory or sub directory. The directory being deleted should not contain any file, i.e., it should be empty. The syntax is:

```
RD <directory name>
```

4.17 RENAME Command

It changes the name of specified file. The syntax is:

```
RENAME <oldfile_name> <newfile_name>
```

e.g. RENAME ABCD.FOR KKK.FOR
will rename the file ABCD.FOR to KKK.FOR.

4.18 RESTORE Command

This command restores one or more backup files from a disk to another disk. The syntax is:

```
[path]RESTORE d:[/S]
```

where,

[path] is the path of the RESTORE command file.

d: is the drive that contains the backup files.

/S is used to restore all files in all the subdirectories besides the files in the specified directory.

4.19 SYS Command

This command transfers the operating system files from the first drive specified to the second drive specified. The syntax is :

```
[path]SYS d:
```

where,

[path] before SYS specifies the path of the SYS command file and

[d:] specifies the disk drive where the operating system files are to be transferred

4.20 TIME Command

Whenever any file is created or modified, the time of creation/modification is recorded in the system. This command permits to change the time known to the system. The syntax is :

```
TIME [hh:mm:ss]
```

where, hh specifies the hours, mm specifies the minutes and ss specifies the seconds.

4.21 TREE Command

This command displays all of the directory paths found on the specified drive, and optionally lists the files in each subdirectory. The syntax is:

[path]TREE d:][/F]

where,

[path] before TREE specifies the path of the tree command file

[d:] specifies the drive whose directory paths are to be displayed and

[/F] is optionally used to display the names of the files in the subdirectories.

4.22 TYPE Command

It displays the contents of an ASCII file on the screen. The syntax is :

TYPE < filename.ext >

e.g.

TYPE RAJEN.DAT

will display the contents of file RAJEN.DAT on screen.

4.23 XCOPY Command

This command copies files (except hidden & system files) and directory trees. The syntax is:

XCOPY source [destination] [/D:date] [/P] [/S [/E]] [/V] [/W]

where,

source the files to copy,

destination the location of new files,

/D copies files changed on or after the specified date,

/P prompts before creating each destination file,

/S copies directories and subdirectories except empty one,

/E copies any subdirectories, even if empty,

/V verifies each new file, and

/W prompts the user to press a key before copying.

4.24 Changing the Drive

To change the drive type the drive name followed by colon (:) sign (without any blank). e.g.

A:

The default drive will be A: now.

4.25 Halting the rushing text

When a program puts out many lines of data in rapid succession the user need a way to stop the flow of text so that it can be read before it rolls off the screen. Press [Ctrl] and [S] keys simultaneously for halting the flow of text. Press any key to restart the flow of text.

4.26 Copying file from one floppy to other floppy

When system contains only one floppy drive, floppy swapping is necessary, e.g. if a file is

to be copied from 'X' floppy to 'Y' floppy, with floppy "X" is in drive A, type the following :

COPY A: <filename> B:

As a result the file <filename> will be copied from floppy X to floppy Y.

For copying the whole floppy, DISKCOPY command is used which also formats the target floppy. The syntax is:

DISKCOPY A: B:

It will format the target floppy and copy all the files from A drive to B drive.

4.27 Copying file from floppy to directory on hard disk

Insert floppy in drive A and type:

COPY A: <filename> c: <directory name>

e.g. COPY A:*. * c: IRCC

will copy all the files of floppy to IRCC directory.

The user may note that the exact command syntax and behaviour may slightly change from one version of the DOS to other.

4.28 MS-DOS Diagnostics and MS-DOS Antivirus Utilities

MS-DOS Diagnostics (MSD) provides the detailed technical information about the computer. MS-DOS Antivirus (MSAV) can protect the data by detecting more than 800 different viruses and removing them from the system. It also includes VSAFE, a memory resident program that monitors the computer and warns of changes that might have been caused by a virus.

4.29 Configuring the System

The user sets up or configures the system so that MS-DOS, hardware and the applications work in the preferred way. Most of the system's configuration information is stored in two files: *config.sys* and *autoexec.bat*. These files are typically located in the root directory of the boot disk.

CONFIG.SYS is a text file that contains commands that configure the computer's hardware components (Memory, keyboard, mouse, printer and so on) so that MS-DOS and other applications can use them. Just after booting, the MS-DOS carries out the commands in CONFIG.SYS file.

AUTOEXEC.BAT file is a batch program that MS-DOS runs immediately after carrying out the commands in the *config.sys*. The *autoexec.bat* can contain DOS commands (e.g. commands that define the path, run your favourite menu program) that are to be executed when the system is started.

Some commonly used commands of the CONFIG.SYS are as follows :

<u>Command</u>	<u>Purpose</u>
break	Specifies whether MS-DOS should check periodically for the CTRL+C or CTRL+BREAK key combination.
buffers	Specifies how much memory MS-DOS reserves for transferring information to and from disks.
country	Sets the language conventions for your system.
device	Loads an installable device driver program that controls a hardware component, such as a mouse or memory board.
devicehigh	Loads an installable device driver into the upper memory area.
dos	Specifies whether MS-DOS will use the high memory area (HMA) and whether it will provide access to upper memory blocks (UMBs).
files	Specifies how many files can be open at a time.
install	Loads a memory-resident program (also called a terminate-and-stay-resident program, or TSR).
lastdrive	Sets the number of valid drive letters.
numlock	Specifies whether the Num Lock setting of the numeric keypad is initially on or off.
rem	Indicates that the text that follows is a descriptive remark, not a command. It can also be used to disable a command.
set	Sets the value of environment variables such as PROMPT or TEMP
shell	Configures COMMAND.COM or specifies that a command interpreter other than COMMAND.COM should be used.

The following is a typical CONFIG.SYS file for a 80386 computer with 2 MB or more of extended memory :

```

device      = c:\dos\setver.exe
device      = c:\dos\himem.sys
device      = c:\dos\emm386.exe ram
devicehigh  = c:\mouse\mouse.sys
buffers     = 20
files       = 40
break       = on
dos         = high, umb

```

