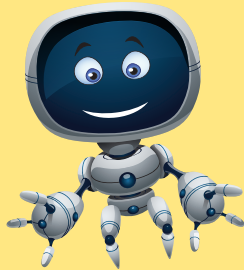




MS DOS (An Operating System)



In this chapter, you will learn about :

- *Operating system : Why do we need an operating system, Classification of Operating system*
- *Booting : Types of booting*
- *Introduction to MS DOS : Features of MS DOS, MS DOS Files, Working with MS DOS*
- *MS DOS commands: Internal commands, External commands, Internal DOS commands, External DOS commands*
- *Creating files in MS DOS*
- *To see the content of a file*
- *Modification in a text file*

Today, the technologies are changing at a fast speed where computers are widely used. It is very difficult to find out a field where computers are not being used.

On the other hand, we will have to think what makes the computer functional. Obviously, there must be some system, which makes the computer to work. This may not be visible from outside. You must have got an idea that we are talking about a system which makes the computer functional.

OPERATING SYSTEM

An **operating system** is an integrated set of programs that manages the various resources and overall operations of a computer system. It is designed to support the various activities of the computer system. Its prime objective is to improve the performance and efficiency of a computer system. It makes the computer system user-friendly.

It is believed that one of the first operating system was developed in early 1950s by International Business Machine (IBM). This operating system was elementary in nature and was not as powerful as the operating system of today's computers. A lot of research work has been undertaken in this direction with the result that today we have a powerful **operating system**. This system is machine-independent and can execute several jobs at a time on the same machine. The main idea of all the researches involved in the development of operating system was to minimize the idle time of the computer system.

An **operating system** is referred by many names by different manufacturers of computers. Other terms used to describe the Operating System are Executive, Supervisor, Controller and Master Control Programs etc.

Why do we need an Operating System?

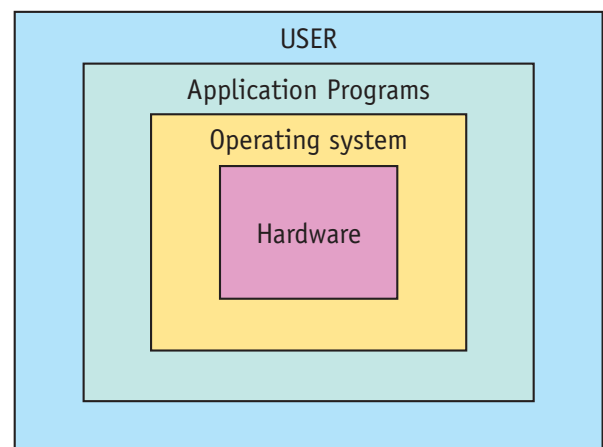
Suppose a parent/a guardian wants to meet the Principal of the school, then he/she adheres to the following norms of the school to meet the Principal :

- At first he/she goes to the office.
- He/She asks the person concerned for an appointment with the Principal.
- He/She takes the note/instruction and reports to the Personal Assistant (PA) of the Principal.
- As per the instruction of PA, he/she meets the Principal and interacts with the Principal regarding the performance of his/her child.
- With thanks, he/she leaves the Principal's Office.

From the above sequence, you must have noticed the system of the school. It provides smoother functioning of an organization rather giving importance to an individual. Though, every individual of an organization is equally important but the system is even more important. In the same way, it is applicable in the field of computers. Thus, an Operating System provides a routine and the user works on the machine with some features provided by the processor, arithmetic and logic unit (ALU), Control Unit etc.

Functions of Operating System

- It interprets the commands and instructions to perform the specified tasks.
- It co-ordinates and assigns the compilers, assemblers and other softwares.
- It loads the programs itself into memory so that the user will be able to interact with hardwares as well as softwares.
- It also detects the errors present in the hardwares and softwares. However, it also tries to correct the errors up to some extent.
- It also maintains the internal time clock.



An operating system provides a platform for the user to work effectively on the system. The figure shown beside shows how an operating system maintains a link between the hardware and the user to get the desired results.

Classification of Operating System

Operating System can be classified into two categories :

1. Single User Operating System
2. Multi User Operating System

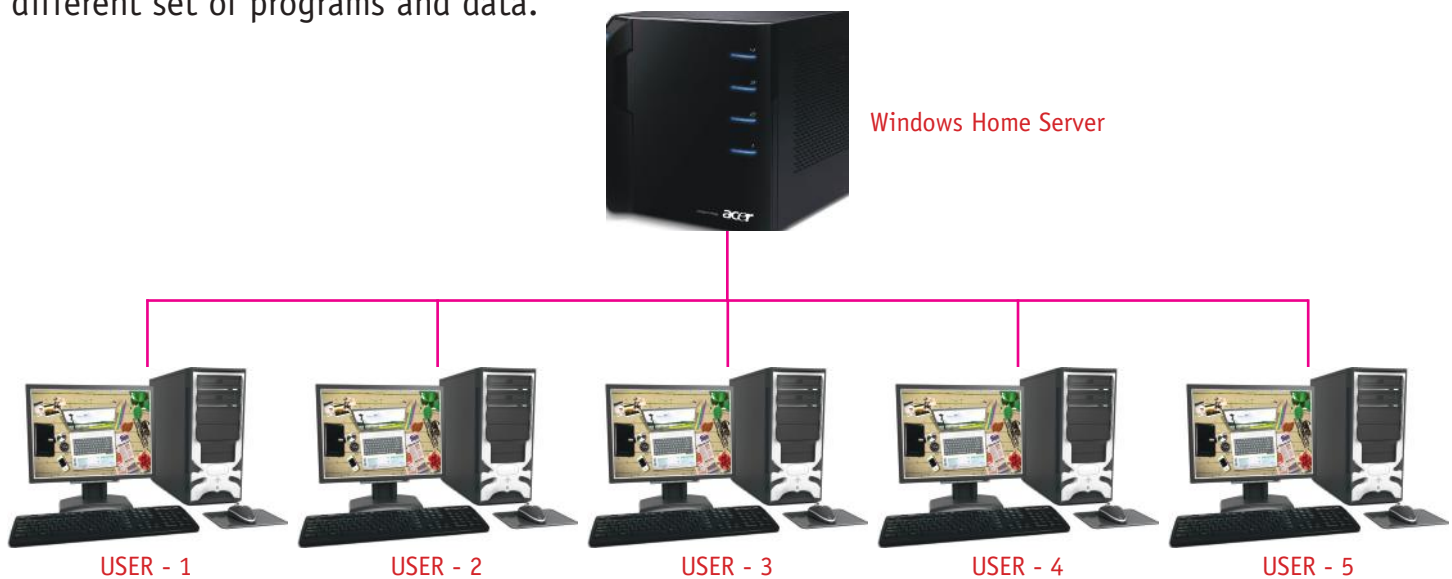
Single User Operating System

Single User Operating System has a CPU, one set of input and output devices. It supports only one user at any point of time and only a particular job or program is loaded in memory for execution. The most popular Single User Operating System is MS DOS.



Multi User Operating System

Multi User Operating System caters to the need of more than one user. Each user works on a different set of programs and data.



In this environment, programs and data of more than one user is loaded into the memory and processed by the Operating System. There is a central computer that acts as a '**Server**' and all other computers are connected to the server with the help of terminals as shown in the above figure. The examples of multi-user operating systems are UNIX, XENIX, LINUX, OS2 etc.

BOOTING

The process of turning-on the computer and loading operating system in the primary memory (RAM) is known as **booting**. In the case of DOS, it involves loading of three essential files viz. **IO.SYS**, **MS DOS.SYS** and **COMMAND.COM** into the main memory. During booting of a computer, the following actions automatically take place by the computer system.

- Power on self-test (POST) : Checking of all components and peripheral.
- The execution of ROM-BIOS (Read Only Memory Basic Input Output System) takes place. It also checks the presence of DOS in the drives. By default, the DOS files are present in C-drive.

Note : If DOS is not found in C-drive, then an error message is displayed on the screen. No system disk or disk error. Replace and press any key when ready.

- If the default drive is C and the user wants to work on D-drive, then type as :


```
C: /> D: ↵
```

```
D: />
```

Types of Booting

Cold Booting

It is a normal procedure of starting a computer system. As soon as we turn-on the computer, it activates ROM and then checks the RAM part. It also performs a test on the peripherals to ensure



that all peripheral devices are working properly. If anything is wrong, it displays an appropriate message otherwise it displays “The system is ready for the user”.

Warm Booting

Sometimes, it so happens that the computer stops working or does not respond to the commands given by the users. In such cases, we need not switch-off the power to shut down the system. We can restart the system by using the restart button or by pressing CTRL, ALT and DEL keys together. This process is known as *warm/hot booting*. In warm booting, it ignores the routine check-up of the peripherals. It restores the programs, which are present in RAM part.

INTRODUCTION TO MS DOS

An operating system is the basic software, which is essentially needed to control a computer. It acts as an interface, which is loaded in the computer’s memory to regulate the functions of entire computer system. In the year 1980, **International Business Machine** (IBM) approached Microsoft (a software manufacturing company) to develop an operating system for the IBM personal computers. By 1984, Microsoft had licensed **MS DOS** to 200 personal computer manufacturers, making MS DOS as the standard operating system for personal computers. Since then, MS DOS is popularly known as *Single User Operating System*. At present, MS DOS version 6.2 is used in most of the personal computers.

Features of MS DOS

Some of the features of MS DOS are mentioned below :

- It is a portable operating system.
- It may be contained in a floppy disk, hard disk or pen drive.
- It is a single user operating system.
- It also supports in other environment e.g., windows. It means that the user can perform all types of tasks of MS DOS while on WINDOWS.

MS DOS Files

DOS is a collection of programs stored in **files**. The program means a sequence of instructions given to a computer to get a task completed and the DOS file denotes the collection of all such numerous programs. MS DOS consists of three main files :

1. IO.SYS
2. MS DOS.SYS
3. COMMAND.COM

IO.SYS and MS DOS.SYS are hidden system files so we cannot see these files on the directory list. IO.SYS file handles the input/output operations of the system and MS DOS.SYS takes care of the software operations. COMMAND.COM file is visible in directory listing which has the programs for the DOS commands.

Working with MS DOS

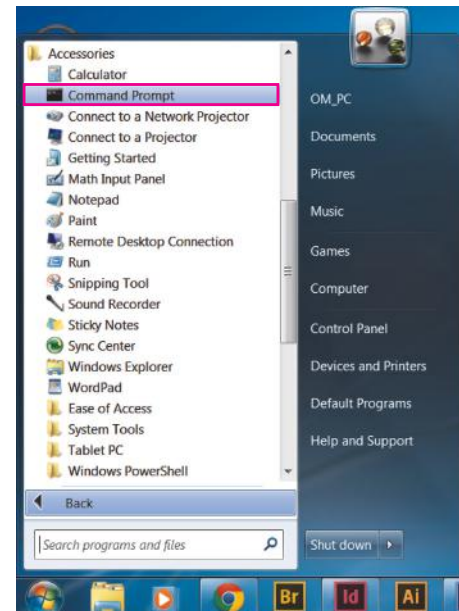
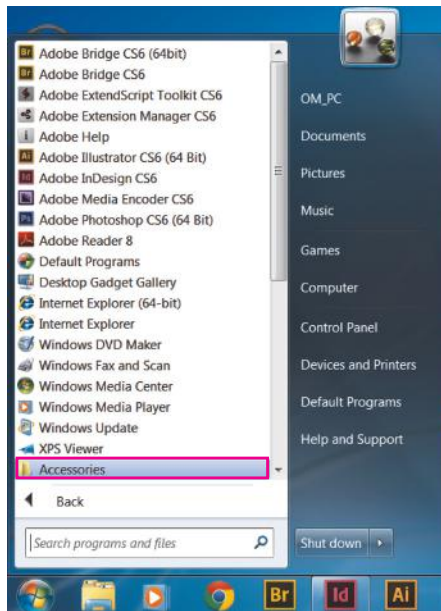
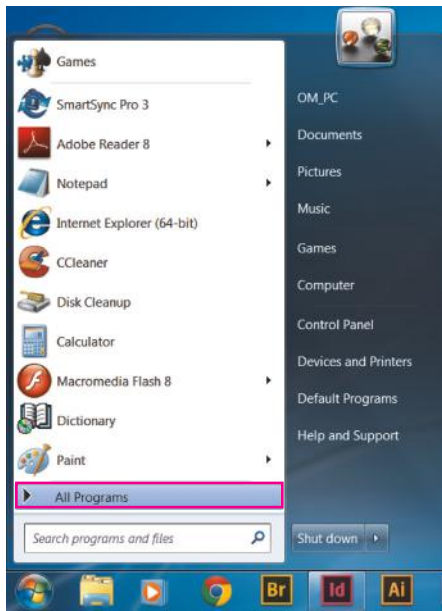
Perform these steps to go to Command (MS DOS) Prompt :

Step 1 : Click on **Start** button.

Step 2 : Select and click on **All Programs**.

Step 3 : Click on **Accessories** from the pop-up menu.

Step 4 : Select and click on **Command** prompt.

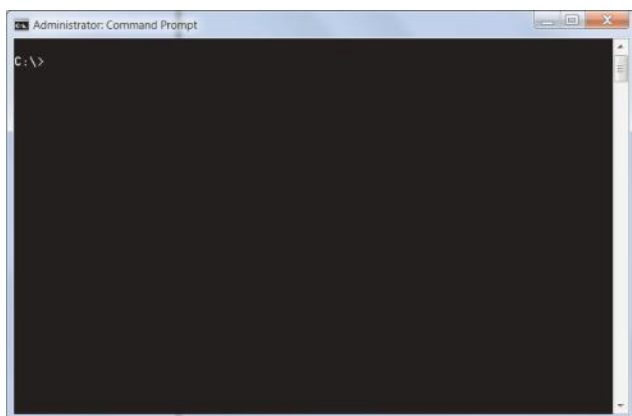
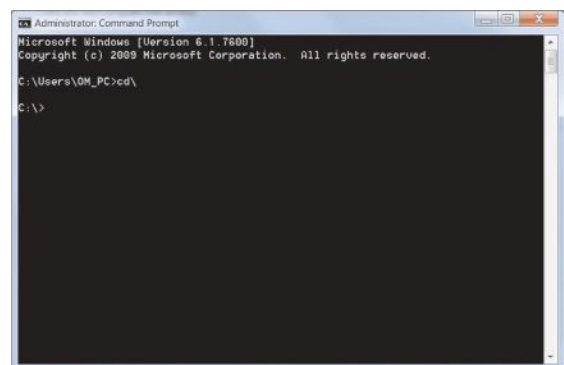
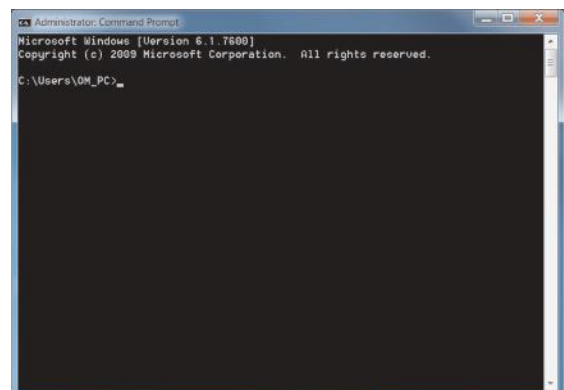


Thus, Command windows appear on the screen.

Alternatively, click on **Command Prompt** icon (if present on the desktop). It displays Command Prompt windows.

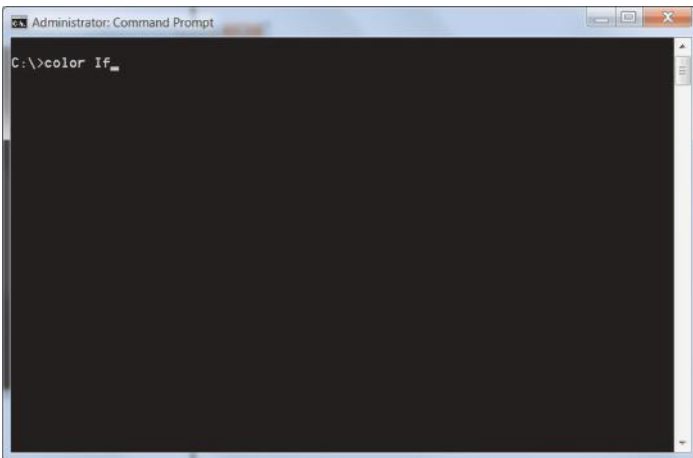
Generally, the command prompt is indicated by C:/ (C-Prompt). You can go back to C-prompt by using the MS DOS command as CD/ (CD back slash) and press enter key. By default, MS-DOS prompt appears with black background with white foreground.

However, you can change the background and foreground colours by using COLOR command.



The COLOR command can be used as :

Syntax : COLOR <Foreground Color>< background Color>



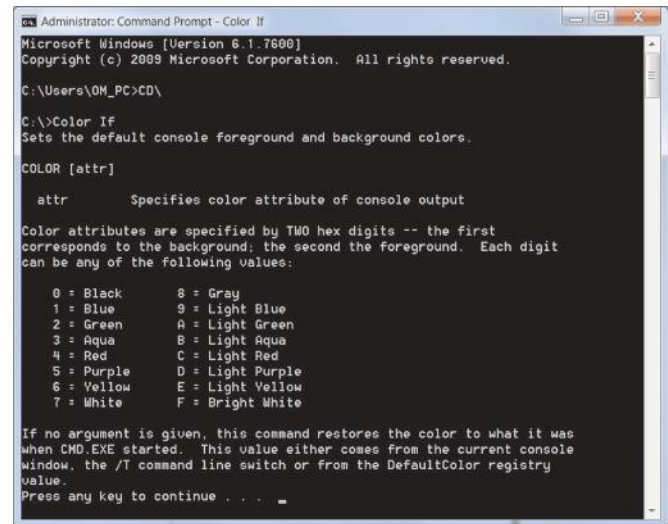
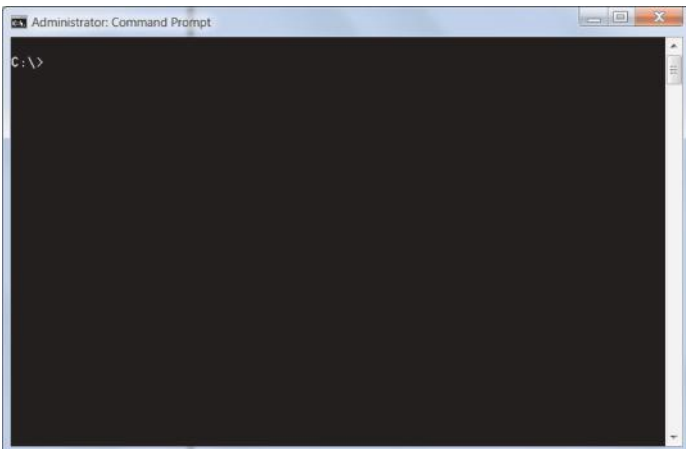
The ranges of these colours varies between 0 and 9, a and f.

For example, C:/> Color 1f

It displays blue background with white foreground.

Similarly, you can obtain many more combinations of background and foreground colours.

Type CLS and press **enter** key.



Now, you can perform various tasks on this screen.

MS DOS COMMANDS

There are two different types of DOS commands :

1. Internal Commands
2. External Commands

Internal Commands

Internal commands are available in command.com file. At the time of booting, these commands are loaded in the memory. Hence, internal commands are also known as *memory resident commands*. Commonly used internal commands are :

CLS, DATE, TIME, REN, DEL, ERASE, DIR, MD, CD, RD, PROMPT, COPY, COPY CON, PATH, VER and TYPE etc.

External Commands

To execute these commands, we have to provide the programs from outside. These commands enable us to work on any application software package on our computer. Commonly used **external commands** are :

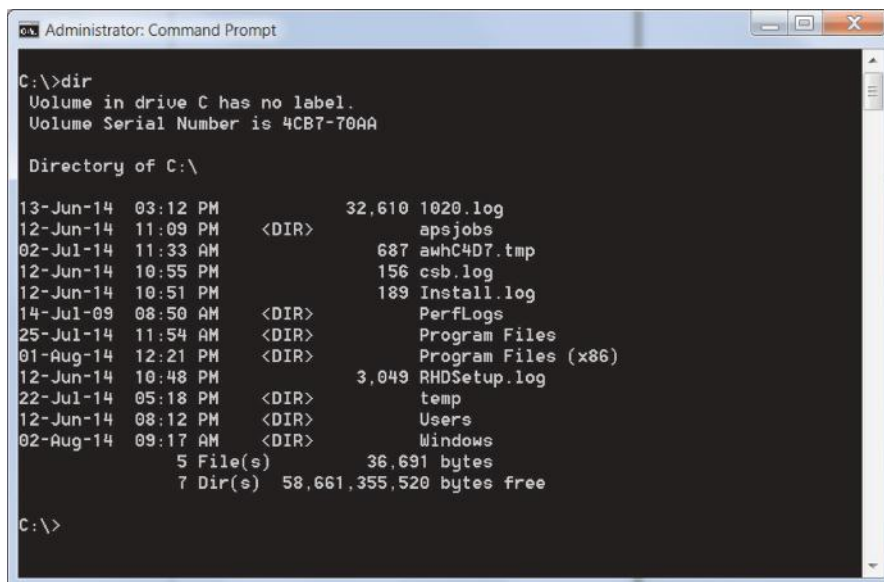
FORMAT, LABEL, TREE, DELTREE, EDIT, ATTRIB, MOVE, CHKDSK, SCANDISK, DISKCOPY etc.

Directory (DIR)

DIR is a very important internal DOS command. It includes the information regarding the file size, time, date, number of files stored on the disk and the free space (i.e. the memory bytes free on the disk). It also displays files and the subdirectories. Thus, we can say that directory is an index table of the contents of the disk.

Syntax: C:/> DIR < Press Enter key>

It shows all the files, directory and sub directory of C-drive. Similarly, you can also see the contents of other drives.



```
Administrator: Command Prompt
C:\>dir
Volume in drive C has no label.
Volume Serial Number is 4CB7-70AA

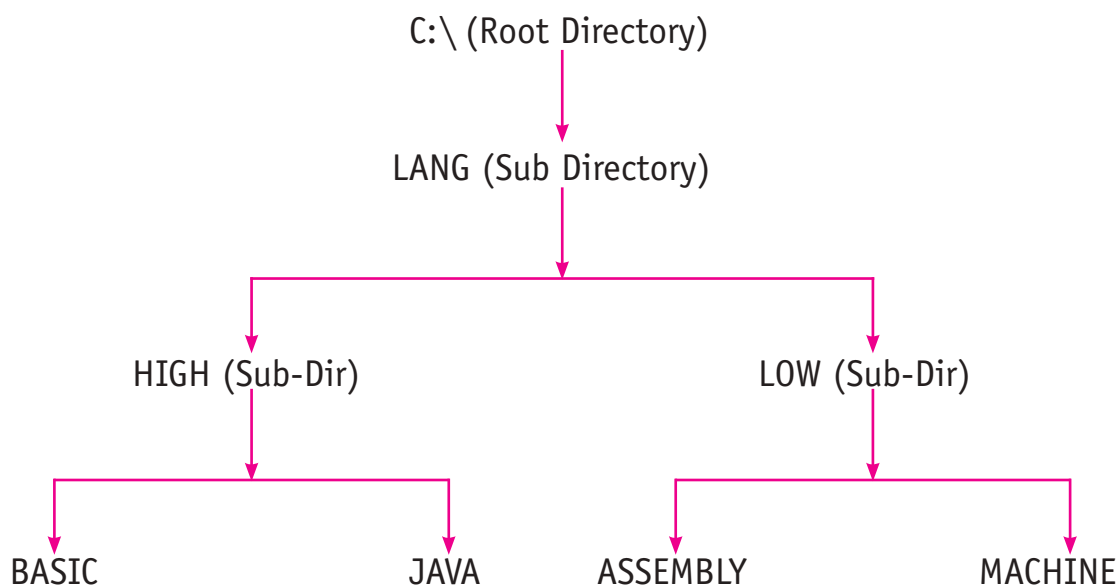
Directory of C:\

13-Jun-14 03:12 PM          32,610 1020.log
12-Jun-14 11:09 PM          <DIR>      apsjobs
02-Jul-14 11:33 AM          687 awhC4D7.tmp
12-Jun-14 10:55 PM          156 csb.log
12-Jun-14 10:51 PM          189 Install.log
14-Jul-09 08:50 AM          <DIR>      PerfLogs
25-Jul-14 11:54 AM          <DIR>      Program Files
01-Aug-14 12:21 PM          <DIR>      Program Files (x86)
12-Jun-14 10:48 PM          3,049 RHDSetup.log
22-Jul-14 05:18 PM          <DIR>      temp
12-Jun-14 08:12 PM          <DIR>      Users
02-Aug-14 09:17 AM          <DIR>      Windows
                    5 File(s)      36,691 bytes
                    7 Dir(s)  58,661,355,520 bytes free

C:\>
```

There are two types of directories :

- 1. Root Directory :** It is created automatically when you format a disk and start keeping files in it. You can also create new directories in it. Root directory is the highest-level directory and this is the directory you see when you start MS DOS.
- 2. Sub Directory :** It is a directory inside the root directory which is created by the user. It can also have another sub directory in it.
 - (i) Parent directory :** A parent directory contain a sub directory in it.
 - (ii) Working directory :** The directory, in which you are working, is known as current directory or the working directory.



- C:/ is the Root Directory
- LANG is the Sub Directory of Root Directory
- HIGH and LOW are the Sub Directories of LANG
- BASIC and JAVA are the Sub Directories of HIGH
- ASSEMBLY and MACHINE are the Sub Directories of LOW
- HIGH is the Parent Directory of BASIC and JAVA
- LOW is the Parent Directory of ASSEMBLY and MACHINE

Make Directory (MD)

This command helps us to create a sub directory in our working directory.

Syntax: MD <Dir Name>

Suppose, you want to create a new directory (say CLASS) under working directory, then you will give command as :

C:\> MD CLASS ↵

This will create a new directory named CLASS in your working directory. You can see it by using DIR command.

C:\> DIR ↵

```

Administrator: Command Prompt
C:\>dir
Volume in drive C has no label.
Volume Serial Number is 4CB7-70AA

Directory of C:\

13-Jun-14  03:12 PM          32,610  1020.log
12-Jun-14  11:09 PM          <DIR>      apsjobs
02-Jul-14  11:33 AM           687    awhC4D7.tmp
12-Jun-14  10:55 PM           156    csb.log
12-Jun-14  10:51 PM           189    Install.log
14-Jul-09   08:50 AM          <DIR>      PerfLogs
25-Jul-14  11:54 AM          <DIR>      Program Files
01-Aug-14  12:21 PM          <DIR>      Program Files (x86)
12-Jun-14  10:48 PM       3,049    RHDSetup.log
22-Jul-14   05:18 PM          <DIR>      temp
12-Jun-14   08:12 PM          <DIR>      Users
02-Aug-14   09:17 AM          <DIR>      Windows
                    5 File(s)      36,691 bytes
                    7 Dir(s)  58,661,355,520 bytes free

C:\>

```

Change Directory (CD)

When you want to change from one directory to another directory then you can do the same by using CD command i.e. CD command will change from one directory to another.

Syntax: C:\>CD <Dir Name>

Suppose, you are in root directory and you want to go to another directory (say "FIRST"), then just type as :

```

Administrator: Command Prompt
C:\>MD FIRST
C:\>CD FIRST
C:\FIRST>

```

C:\>CD FIRST ↵ Computer will display as

C:\FIRST>_

Note : Whenever you change directory, you have to make sure that the directory already exists in your root/parent directory otherwise it shows invalid directory.

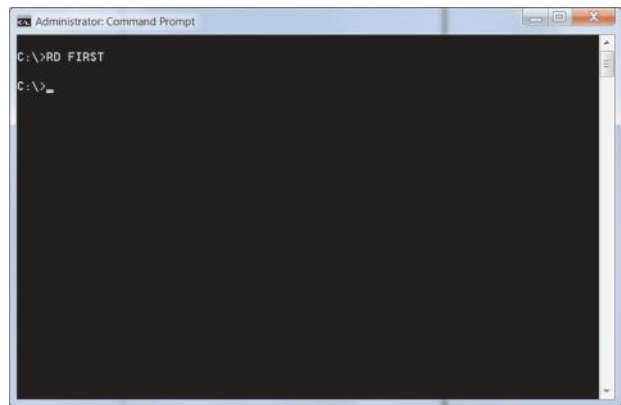
Remove Directory (RD)

When you want to remove a particular directory, then you can do the same by using RD command from multilevel directory structure.

Syntax: RD <Dir Name>

```
C:\>RD FIRST ↵
```

It will remove FIRST directory from your root directory.



Internal DOS Commands

Copy Command

It is an **internal DOS command**, which creates the duplicate of the original file but does not remove the original file. It allows us :

- To copy one or more files to another disk with the same file name.
- To copy one or more files to another disk with different file names.
- To append two files.

Syntax: C:\>COPY <Source> <File Name> <Target> <File Name>

This is illustrated on the next page.

- Suppose, you want to copy CLASS.TXT file from root C drive to A drive (i.e., Hard disk to a Floppy disk), then the command will be written as :
- C:\>COPY C:\CLASS.TXT A: ↵
- Suppose, you want to copy SCHOOL.TXT which is in the RV directory of root directory to RVS sub directory of the root directory, then the command will be written as :

```
C:\> COPY C:\RV\SCHOOL.TXT C:\RVS ↵
```

Del Command

This is an internal DOS command used to remove unwanted files from your disk.

Syntax: C:\> DEL <File Name>

For example, if you want to delete CLASS.TXT file from the RV sub directory of the root directory, then the command will be written as :

```
C:\>DEL C:\RV\CLASS.TXT ↵
```

Ren Command

This is an internal DOS command and it is used to change the name of any existing file.

Syntax: C:\>REN <Old file name> <New file name>

Suppose, you want to change the name of the file PASS.TXT to RESULT.TXT of the root directory then the command will be written as :

```
C:\> REN PASS.TXT RESULT.TXT ↵
```



Type Command

It is an internal DOS command and is used to display the contents of specified file.

Syntax: C:\> TYPE <File Name>

For example, if you want to display the contents of CLASS.TXT file then the command will be written as :

```
C:\> TYPE CLASS.TCT ↵
```

It displays the content of the file CLASS.TXT.

Date Command

It is an internal DOS command, which is used to display the system date.

Syntax: C:>DATE ↵

It displays the systems date. However, the user can set a new date as per the requirement. It is also important to know that the system displays the date in **(mm-dy-yy)** format. It means that the month is followed by date and year. It is used as :

```
C:\> DATE ↵
```

Current date is 09/04/2013

Enter new date (dd-mm-yy) _____

If you want to change the date in the above format, then enter an appropriate date. Thus, the new date is set.

Time Command

It is an internal DOS command, which displays the time as and when required by the user.

The system displays the time in the format.

(hours : minutes : seconds. hundredth)

The ranges of the above format :

Hours : 0 hour to 23 hours

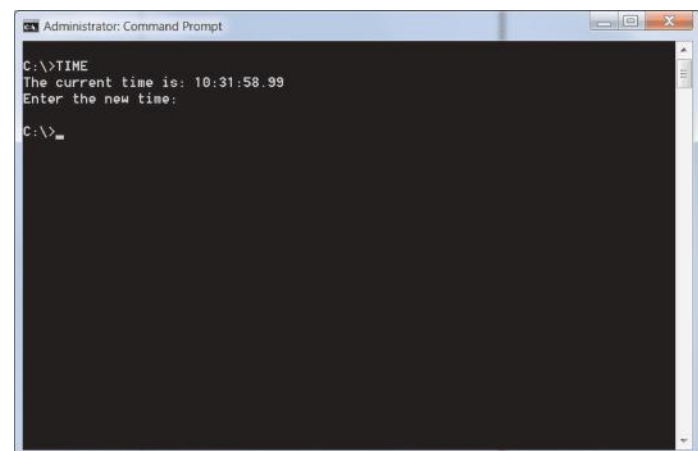
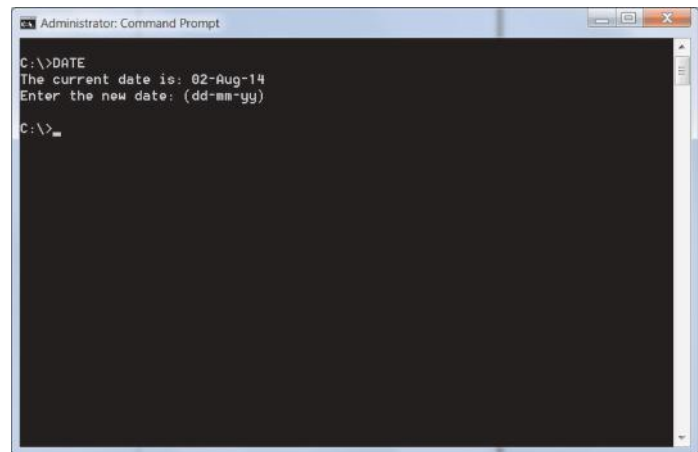
Minutes : 0 minutes to 59 minutes

Seconds : 0 second to 59 seconds

Syntax: C:\> TIME ↵

Current time is 21:02:17.72

Enter new time _____



If you want to reset the time, then enter the time in the above format. Thus, the time is set.

External DOS Commands

Edit Command

It is an **external DOS command** and it is used to modify the contents of the specified files.

Syntax: C:\> EDIT <File Name>

For example, if you want to modify the contents of the specified file, then the command will be written as :

```
C:\> EDIT BIODATA.TXT ↵
```

It helps to modify the content of the specified file.

CREATING FILE IN MS DOS

Files are the collection of data/records, which are kept in the system for the future use. Every file has a name with an extension. The first part of the name is referred as the **primary name** and the extension is known as the *secondary name*. The file name and the extension are separated by a (.). The primary name may have maximum 8 characters whereas the secondary name has a maximum 3 characters. It is advised to give a meaningful name to the files.

To create a file in MS DOS, we use a DOS command COPY CON.

Syntax: C:\> COPY CON <Primary Name. Extension>

Suppose, you want to create a file named BIODATA, then it can be created as :

```
C:\> COPY CON BIODATA.TXT ↵
```

Name : Vidhan Aggarwal

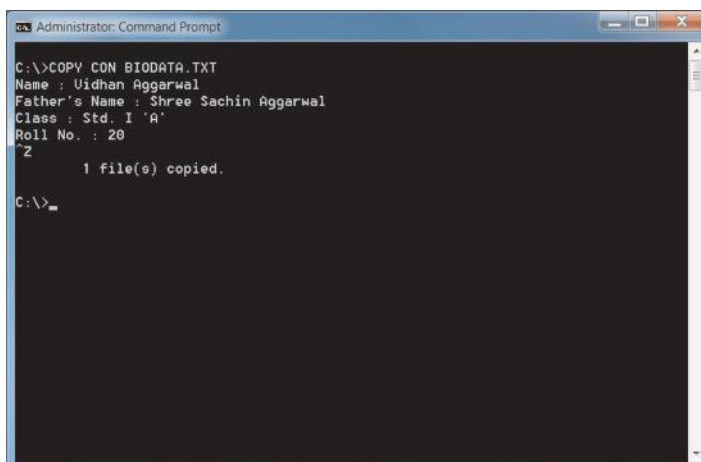
Father's Name : Shree Sachin Aggarwal

Class : std. I 'A'

Roll No. : 20

Ctrl + z

1 file(s) copied



```
Administrator: Command Prompt
C:\>COPY CON BIODATA.TXT
Name : Vidhan Aggarwal
Father's Name : Shree Sachin Aggarwal
Class : Std. I 'A'
Roll No. : 20
^Z
1 file(s) copied.
C:\>_
```

Thus, the content of the specified file is saved.

Note: • When we create a file using COPY CON command, we can move the cursor only on the left or the right side, as it is a line editor. We cannot take the cursor up.

- Save your file by pressing (Ctrl + Z) together.

TO SEE THE CONTENT OF A FILE

When you have created a file (say, BIODATA.TXT) in MS DOS and you want to see the contents of the specified file on the screen, then you have to use the DOS command TYPE.

This can be done as shown below :

```
C:\> TYPE BIODATA.TXT ↵
```

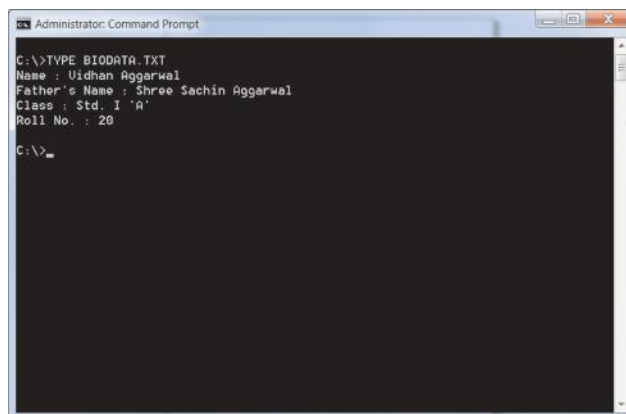
Name : Vidhan Aggarwal

Father's Name : Shree Sachin Aggarwal

Class : std. I 'A'

Roll No. 20

Thus, it displays the contents of the specified file.



```
Administrator: Command Prompt
C:\>TYPE BIODATA.TXT
Name : Vidhan Aggarwal
Father's Name : Shree Sachin Aggarwal
Class : Std. I 'A'
Roll No. : 20
C:\>
```

MODIFICATION IN A TEXT FILE

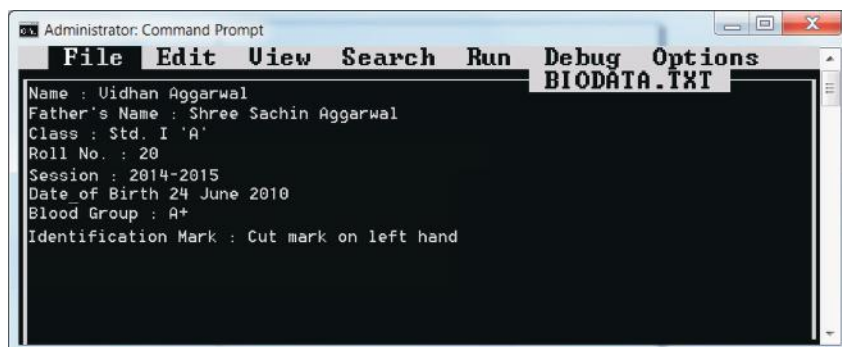
When you want to make any modification in the content in your file, then use **EDIT** command to perform the task. It is an external DOS command, which has the facility to modify the content of a file.

Syntax: C:\>EDIT <File Name>

Suppose, you want to modify the file by adding more information (say Phone number, Address) then, it can be done as :

```
C:\> EDIT BIODATA.TXT ↵
```

When you press enter key, an edit window appears where the content of the file is displayed as given below :



```
Administrator: Command Prompt
File Edit View Search Run Debug Options
BIODATA.TXT
Name : Vidhan Aggarwal
Father's Name : Shree Sachin Aggarwal
Class : Std. I 'A'
Roll No. : 20
Session : 2014-2015
Date of Birth 24 June 2010
Blood Group : A+
Identification Mark : Cut mark on left hand
```

Step 1

After performing the modification perform the following steps :

Step 1 : Click on **File** menu.

Step 2 : Select **Save** option from the drop down list to save the file with modification.



```
Administrator: Command Prompt
File Edit View Search Run Debug Options
BIODATA.TXT
Na New
Fa Open...
Cl Save
Ro Save As...
Se Print...
Da
Bl Edit
Id mark on left hand
```

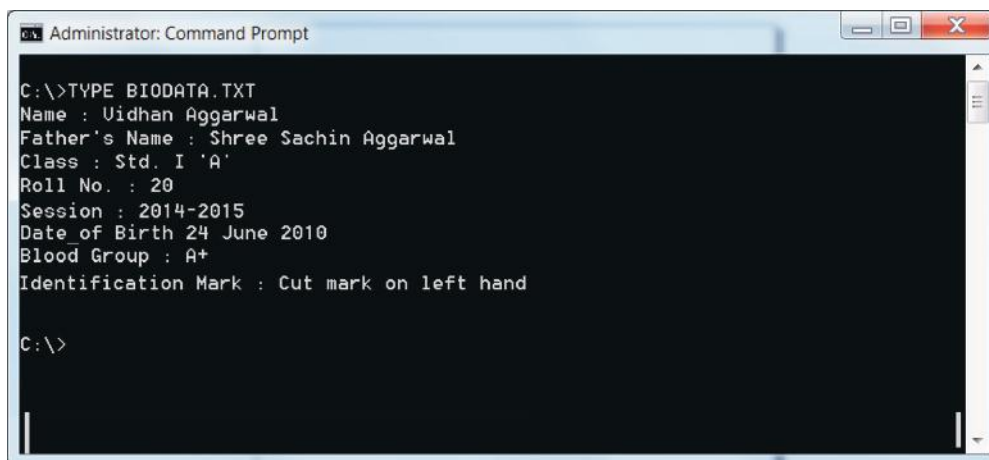
Step 2

Step 3 : After saving the file click **Exit** from the file menu to go back to DOS mode.



Step 3

Step 4 : Write TYPEE BIODATA.TXT and press **Enter** key.



Step 4

Thus, the modified content appears on the screen.

Points to Remember

- An operating system is an integrated set of programs that manages the various resources and overall operations of a computer system.
- Operating system can be classified into two categories :
 - Single User
 - Multi User
- The process of turning on and loading operating system is known as booting.
- DOS is a collation of programs stored in files.
- Two types of DOS command are : Internal and External.
- DIR is a very important internal DOS command.

EXERCISE



A. Tick (✓) the correct option :

1. The first operating system was developed in early :

(a) 1950s



(b) 1960s



(c) 1970s



2. IO.SYS and MS DOS.SYS are _____ system files.
- (a) open (b) close (c) hidden
3. A _____ directory contain a sub directory in it.
- (a) working (b) parent (c) root
4. Edit command is a _____ DOS command.
- (a) external (b) internal (c) both

B. Fill in the blanks :

- _____ is a collection of programs stored in files.
- At present, MS DOS version _____ is used in most of the personal computer.
- Internal commands are available in _____ file.
- _____ is a very important internal DOS command.
- _____ is the Parent Directory of BASIC and JAVA.

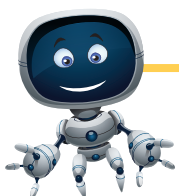
C. Write (T) for true and (F) for false statements :

- MD DOS is a Single User Operating System.
- The primary file name of MS DOS contains a maximum of 8 characters.
- The secondary file name of MS DOS contains a maximum of 11 characters.
- The first level of hierarchical directory structure is a Root directory.
- EDIT is used in MS DOS to modify the content in a text file.

D. Answer the following Questions :

- What do you understand by the term booting ? Explain the two types of booting.
- Define each of the following :

(i) Single User Operating System	(ii) Multi User Operating System
(iii) Cold Booting	(iv) Warm Booting
- What is a directory? What do you understand by Root directory and Parent directory? Explain with the help of an example.
- What are the functions of an operating system? Explain.
- What is an operating system? Give an example.
- Why do we need an operating system?
- What are the rules to name a file in MS DOS?
- Name five commonly used internal commands.



ACTIVITY

- Create a file PRODUCT.TXT in MS DOS which contains company name, product name, quantity, unit price, manufacturing date and expiry date.