SYLLABUS
BCA 106 : OFFICE MANAGEMENT TOOLS

Max Marks : 100 (Main University Exam : 80 Internal Assessment : 20)

Question Paper pattern for Main University Examination   **Max Marks : 80**

Part-I (Very short answer) consists 10 questions of one mark each with two questions from each unit. Maximum limit for each question is upto 20 words.

Part-II (short answer) consists 5 questions of four marks each with one question from each unit. Maximum limit for each question is upto 80 words.

Part-III (Long answer) consists 5 questions of ten marks each with one question from each unit with internal choice.

UNIT- I

Introduction to Operating System: Introduction to Operating system, FAT and NT file systems, file and directory structures and naming rules of files, booting process, system files. Dos Commands (internal & external)

Windows 7/8. Windows concept, features, Desktop, Taskbar, Start menu, My Computer, Recycle bin, Windows Accessories(Calculator, Notepad, Paint, Word Pad, Character Map, Windows Explorer, Entertainment, System Tools, Communication), Sharing information between programs, Smart devices tools and applications.

CONTENTS

Unit 1

Introduction to Operating Sysem

1.1 Introduction

Personal computers have become an integral part of modern world. We use computers in every field of our daily life. Use of modern Information Technology has changed the way of computing by not limiting it to only personal computers. Today computers are used in many different electronic gadgest from mobile, tablets, laptops, i-pods to many other gadgets.

All these different electronic gadgets interacts with human. This interaction of human with machine is done through a medium which is known as Operating System.

All computers are combination of two basic components Hardware and Software. All those parts of machine user can physically touch and feel are Hardware components like keyboard, mouse, monitor etc.

All those parts which user can not touch physically but can only feel are known as Software like M.S. Office, Internet Browser, Photo editor etc

To interact with hardware user requires operating system which is part of software.

Operating system controls all the available hardware in the system and allocates require hardware to required process of the system thus operating system acts as Resource Manager in computer.

An operating system is a set of software program that contrls a computer and provides user an interface through which interaction with hardware is made possible.

Now a days may types of operating system are available in market having different features. Some of most common operating system are Microsoft Windows 8, 7, XP, Windows server, Linux, Unix, Android, Ubuntu, Macintosh osx, Fedora, DOS etc.
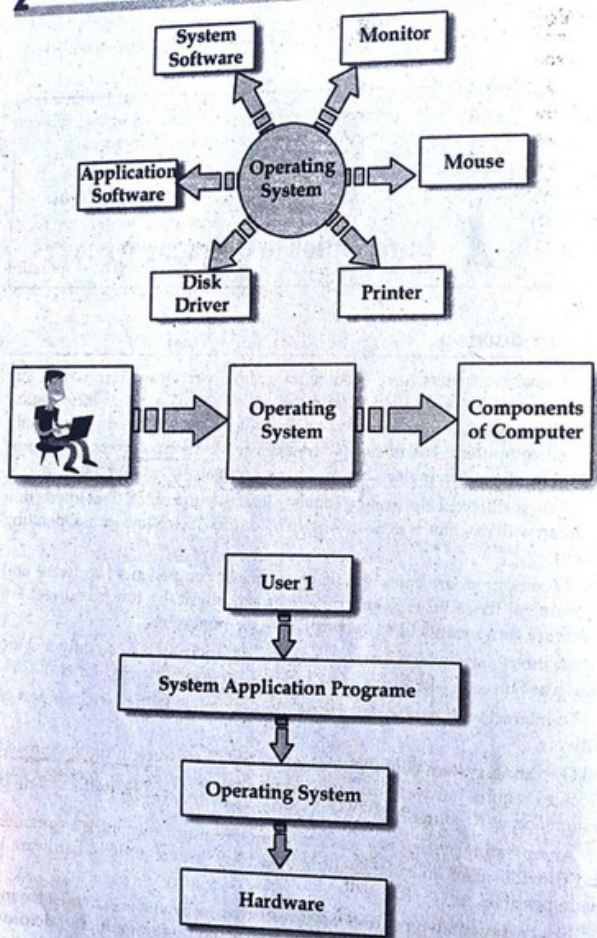
Fig. 1 : Operating System

1.2 Works of Operating System

(a) Resource Manger :

As a resource manager Operating System controlls all the available hardware in the computer system and allocate them to required process of system. It maintains proper allocation of resources to all process.

(b) Provides interface

Operating System prvides interface to the user through which user give commands to the computer and performs desired action. It is the job of Operating System to provide easy and interactive interface to the user. All other application of user runs on this Operating System. Thus Operating System is the first software which is installed on computer on which all other application softwares runs.

Operating System provides two types of user interface

(i) C.U.I. (Character User Interface)

(ii) G.U.I (Grphical User interface)

1.3 Classification of Operating System

On the basis of work performed we classify operating systems in following categories.

(i)　Batch Processing

(ii)　Single user Single Tasking

(iii)　Single user multi Tasking

(iv)　Multi user Multi Tasking

(v)　Embedded System

(vi)　Real Time

(vii)　Client Server

1.4　Functions of Operating System

Although Operating System performs many functions in the system but following are the main function of Operating System.

(i)　Process Management

(ii)　Memory Management

(iii)　Input/Output Device Management

(iv)　Dead lock Management

(v)　File Management

(vi)　Security Management

1.5 File System : FAT and NTFS

While working on computer are need to store data in memory for future use. We require some mechanism to store these data on memory. This mechanism of storing data on memory is called file system. Without this file system, any data placed on memory will become single huge data from which it would not be possible to tell where a particular piece of information stops and next starts. Therefore separating each piece of data individually and giving it a name will help us to identify data. This individual data which is given name is called "FIIE". The structure and logic rules used to manage the groups of Information and their names is called a "File System".

There are many different types of file system having different structure and logic, properties of speed, flexibility security, size and many more. The file system manages access to both content of files and the meta data about those files. It is responsible for arranging storage space, reliability, efficiency and tuning with regard to the physical storage medium.

A file system thus is structure that computer uses to organize data on storage medium (Hard disk). Therefore when we instal new hard disk in computer we need to format it using a file system which would be used for data storage mechanism.

In Windows family operating system there are normally three types of File systme for data storage in memory.

(i) FAT 16 or FAT (File Allocation Table)

This is the initial level mechanism that was used in older computers and nwo a days mdoer computer does not use this file storage mechanism.

(ii) FAT 32 (File Allocation Table)

This file system was used in older versions of windows operating system such Win 98, Win Me etc. In this file system files upto 4 GB capacity could be stored. Security was major issue in this file system. In this file system, file name have a limit of 8 characters and 3 characters extension which commonly known as 8.3 file name limit. FAT is used in older versions of Windwos OS.

(iii) NTFS (New Technology File System)

NTFS is a file system that was introduced by microsoft in 1993 that could support hard drives size upto 256 Tera byte. NTFS has features to improve reilability. Such as transaction logs to help recover from disk failure. It include fault tolerance, which automatically repairs hard drive errors without displaying error message. It also keeps detail transaction logs which are helpful to prevent hard disk failures and make it possible to recover files. It also allows permission (such as read write and execute) to be set for individual directories

and file. NTFS provides Active directories and domain based security issues to users, thus making it safer and eaiser file system.

NTFS is primary file system used in Microsoft Windows 7, Windows Vista, Windows XP, Windows 2000 and above versions.

Table 1.1 : Comparison between NTFS and FAT

| NTFS	FAT 16/32
• Default File system In Windows XP, 2k and NT	• Fat 16 not compatible with XP, FAT is more compatible with other operating Systems (Windows 95, etc)
• Support For Drives over 40gb, Files over GB	
• Allows extended file names, foreign characters	• FAT 16 has 8.3 character limitation
• Has a severely crippled maintenance system in CHKDSK	• Has better, more and interactive recovery utilities (scandisk)
• CKHDSK is notoriously slow	• Scandisk is very quick
• Increased security with file encryption	• Just a space for the OS to read files
• Smaller file clusters, 4kb	• Faster on drives less than 10 GB.
• Compression to reduce disk space	• FAT 16 cluster size is 32kb
• User permissions for files and folders	• Cluster chains containing data from interrupted copies are marked as damaged
• File copies are "undone" if interrupted, cluster chains is cleaned	
• Small files are kept in Master File Table at the beginning of the drive	• Master File Table are separate from files
• Not compatible with different operating systems on the same computer	
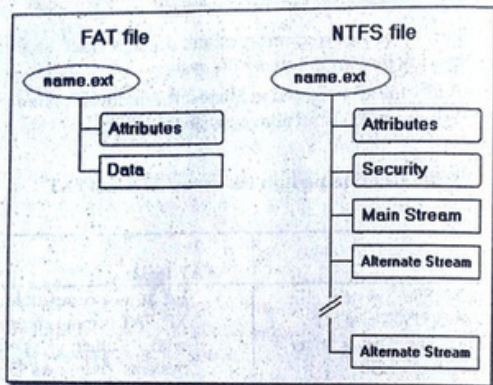
Fig. 2 : FAT and NTFS structure

1.6 Directory and File Structure

1.6.1 Directry System

In computing we need to store various data as per the requirement of users. These data are stored in Files. While working on computer users creates many files as per his needs. So to keep track of related files we catalogue
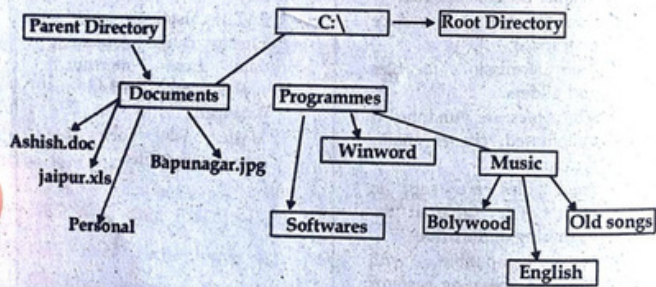

Fig. 3 : Directory Structure

these files in the Directories. On many computers directories are als known as **Folders**. While working on microsoft windows the term Folders and Directories are used interchangebly. Files are organised by storing related files in hierarchical manner, which means one directory can store may sub-directories and files and so on. The top most directory in such file a file system, is called

Root Directory.

A directory which is inside another directory is called sub-directory or child directory and directory in which this sub-directory is placed is called **Parent Directory.**

1.6.2 File System

While working on computer file system is used to control the data storage and retrival. Without file system it is not possible to retrieve right information from huge data on time. By separating data into small pieces and giving each piece a proper name, infrormation can be easily separated. This each named piece of data is known as File. The structure are logic rules used to manage the groups of information and their names is called a File system. With the change in technology many kind of file system has evolved having different structure logic, properties, securities etc. but more or less they all follow same majority of rules.

A file name is used to identify a storage location in the file system. Most of the file systems have restruction or file names. Most modern file system allow file name contain a wide range of characters from unicode charater set.

Types of various file system are as follows :

(i)	Disk File System	(ii)	Flash File System
(ii)	Tape File System	(iv)	Database File System
(v)	Transaction File System	(vi)	Network File System
(vii)	Shared disk File System	(viii)	Special File System
(ix)	Minimal File System	(x)	Flat File System

1.6.3 File Naming Conventions

All file systems follow the same general naming conventions for an individual file, a base file name and an optional extension, separated by a period(.).
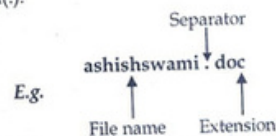
In this example ashishswami is base file name seprated by period(.) and doc extension of file indicating that this file belong to a particular software used in the computer this is extension of MS word software.

However, each file system, such as NTFS, CDFS, exFAT, UDFS, FAT, and FAT32, can have specific and differing rules about the formation of the individual components in the path to a directory or file.

Note that a *directory* is simply a file with a special attribute designating it as a directory, but otherwise must follow all the same naming rules as a regular file.

The term *path* refers to one or more directories, backslashes, and possibly a volume name.

Character count limitations can also be different and can vary depending on the file system and path name prefix format used. For example, the older MS-DOS FAT file system supports a maximum of 8 characters for the base file name and 3 characters for the extension, for a total of 12 characters including the dot separator. This is commonly known as an *8.3 file name*. The Windows FAT and NTFS file systems are not limited to 8.3 file names, because they have *long file name support*, but they still support the 8.3 version of long file names.

The following fundamental rules enable applications to create and process valid names for files and directories, regardless of the file system:

- Use a period to separate the base file name from the extension in the name of a directory or file.
- Use a backslash (\) to separate the *components* of a *path*. The backslash divides the file name from the path to it, and one directory name from another directory name in a path. You cannot use a backslash in the name for the actual file or directory because it is a reserved character that separates the names into components.
- Use a backslash as required as part of volume names, for example, the "C:\" in "C:\path\file" or the "\\server\share" in "\\server\share\path\file" for Universal Naming Convention (UNC) names.
- Do not assume case sensitivity. For example, consider the names OSCAR, Oscar, and oscar to be the same, even though some file systems (such as a POSIX-compliant file system) may consider them as different. Note that NTFS supports POSIX semantics for case sensitivity but this is not the default behavior.
- Volume designators (drive letters) are similarly case-insensitive. For example, "D:\" and "d:\" refer to the same volume.
- Use any character in the current code page for a name, including Unicode characters and characters in the extended character set (128–255), except for the following:
    - o The following reserved characters:
        - < (less than)
        - > (greater than)

- : (colon)
- " (double quote)
- / (forward slash)
- \ (backslash)
- | (vertical bar or pipe)
- ? (question mark)
- * (asterisk)

- Integer value zero, sometimes referred to as the ASCII *NUL* character.
- Characters whose integer representations are in the range from 1 through 31, except for alternate data streams where these characters are allowed.
- Any other character that the target file system does not allow.
- Use a period as a directory *component* in a path to represent the current directory, for example ".\temp.txt".
- Use two consecutive periods (..) as a directory *component* in a path to represent the parent of the current directory, for example "..\temp.txt".
- Do not use the following reserved names for the name of a file:

  CON, PRN, AUX, NUL, COM1, COM2, COM3, COM4, COM5, COM6, COM7, COM8, COM9, LPT1, LPT2, LPT3, LPT4, LPT5, LPT6, LPT7, LPT8, and LPT9. Also avoid these names followed immediately by an extension; for example, NUL.txt is not recommended.

- Do not end a file or directory name with a space or a period.

Best Practices:

  1. Be consistent :-

- Have conventions for naming (1) Directory structure, (2) Folder names, (3) File names
- Always include the same information (eg. date and time)
- Retain the order of information (eg. YYYYMMDD, not MMDDYYYY)

  2. Be descriptive:- so others can understand your meaning.

    Try to keep file and folder names under 32 characters

  3. Others :-

    Within reason, Include relevant information such as:

- Unique identifier (ie. Project Name or Grant # in folder name)
- Project or research data name
- Conditions (Lab instrument, Solvent, Temperature, etc.)
- Run of experiment (sequential)

- Date (in file properties too)
- Use application-specific codes in 3-letter file extension and lowercase: mov, tif, wrl
- When using sequential numbering, make sure to use leading zeros to allow for multi-digit versions. For example, a sequence of 1-10 should be numbered 01-10; a sequence of 1-100 should be numbered 001-010-100.
- No special characters: & , * % # ; * ( ) ! @$ ^ ~ ' { } [ ] ? < > -
- Use only one period and before the file extension (e.g. name_paper.doc
- NOT name.paper.doc OR name_paper..doc)

example: Project_instrument_location_YYYYMMDD[hh][mm][ss][_extra].ext

Here are ten basic rules that could serve as a general guideline in structuring folder and file naming conventions:

1. Avoid extra long folder names and complex hierarchical structures but use information-rich filenames instead.
2. Put sufficient elements in the structure for easy retrieval and identification but do not overdo it.
3. Use the underscore (_) as element delimiter. Do not use spaces or other characters such as: ! # $ % & ' @ ^ ` ~ + , . ; =) (
4. Use the hyphen (-) to delimit words within an element or capitalize the first letter of each word within an element.
5. Elements should be ordered from general to specific detail of importance as much as possible.
6. The order of importance rule holds true when elements include date and time stamps. Dates should be ordered: YEAR, MONTH, DAY. (e.g. YYYYMMDD, YYYYMMDD, YYYYMM). Time should be ordered: HOUR, MINUTES, SECONDS (HHMMSS).
7. Personal names within an element should have family name first followed by first names or initials.
8. Abbreviate the content of elements whenever possible.
9. An element for version control should start with V followed by at least 2 digits and should be placed as the last most element.
10. Prefix the names of the pertinent sub-folders to the file name of files that are being shared via email or portable storage devices.

1.7 Booting Process

Booting (or booting up) is the initialization of a computerized system. The system can be a computer or a computer appliance. Booting is complete when

the normal, operative, runtime environment is attained. In order for a computer to successfully boot, its BIOS, operating system and hardware components must all be working properly; failure of any one of these three elements will likely result in a failed boot sequence.

When the computer's power is first turned on, the CPU initializes itself, which is triggered by a series of clock ticks generated by the system clock. Part of the CPU's initialization is to look to the system's ROM BIOS for its first instruction in the startup program. The ROM BIOS stores the first instruction, which is the instruction to run the power-on self test (POST), in a predetermined memory address. POST begins by checking the BIOS chip and then testsCMOS RAM. If the POST does not detect a battery failure, it then continues to initialize the CPU, checking the inventoried hardware devices (such as the video card), secondary storage devices such as hard drives and floppy drives, ports and other hardware devices such as the keyboard and mouse, to ensure they are functioning properly.

Once the POST has determined that all components are functioning properly and the CPU has successfully initialized, the BIOS looks for an Operating System to load.

General Booting sequence comprises of the following steps:

- Turn on the Power button.
- CPU pins are reset and registers are set to specific value.
- CPU jump to address of BIOS (0xFFFF0).
- BIOS run POST (Power-On Self Test) and other necessary checks.
- BIOS jumps to MBR(Master Boot Record).
- Primary Bootloader runs from MBR and jumps to Secondary Bootloader.
- Secondary Bootloaders loads Operating System.

These are the tasks that are carried during booting process.

1.8 System file

A system file in computing is a critical computer file without which a computer system may not operate correctly. A file that is in use by an operating system and cannot be deleted or modified without causing the operating system to no longer work. Often these files cannot be deleted because they are in use by the operating system. These files may come as part of the operating system, a third-party device driver or other sources

A system file is any file with the system attribute turned on. Most Windows computers are configured by default not to display system files in normal file searches or in folder views.

The most popular system files you might encounter on a Windows computer include msdos.sys, io.sys, ntdetect.com and ntldr.

Following system files are example of MS DOS operating system files which are commonly used.

MS-DOS / PC DOS and some related disk operating systems use the files mentioned here.

System File

- IO.SYS (or IBMBIO.COM): This contains the system initialization code and builtin device drivers.
- MSDOS.SYS (or IBMDOS.COM): This contains the DOS kernel.

Command line interpreter (Shell):

- COMMAND.COM: This is the command interpreter.

User configuration files:

- AUTOEXEC.BAT: This is run by the default shell (usually COMMAND.COM) to execute commands at startup.
- CONFIG.SYS: This contains statements to configure DOS and load device drivers.

1.9 Disk Operating System (DOS)

DOS (Disk Operating System) was the first widely-installed operating system for personal computers. DOS provides CUI(Character User Interface) to the users.

MS-DOS is an operating system for x86-based personal computers. It was the most commonly used member of the DOS family of operating systems and was the main operating system for IBM PC compatible personal computers during the 1980s to the mid-1990s, until it was gradually superseded by operating systems offering a graphical user interface (GUI).

The first personal computer version of DOS, called PC-DOS, was developed for IBM by Bill Gates and his new Microsoft Corporation. He retained the rights to market a Microsoft version, called MS-DOS. PC-DOS and MS-DOS are almost identical and most users have referred to either of them as just "DOS." DOS was (and still is) a non-graphical line-oriented command or menu-driven operating system, with a relatively simple interface but not overly "friendly" user interface.

The first Microsoft Windows operating system was really an application that ran on top of the MS-DOS operating system. Today, Windows operating systems continue to support DOS (or a DOS-like user interface) for special purposes by emulating the operating system.

Nowadays with the growing use of GUI Operating systems DOS is becoming obsolete. However the only versions of MS-DOS currently

recognized as stand-alone OSs, and supported as such by Microsoft are MS-DOS 6.0 and 6.2.2, both of which remain available for download via their MSDN, volume license, and OEM license partner websites, for customers with valid login credentials.

1.9.1 DOS System Files

As we have discussed in earlier that there are 3 main files with the help of which DOS runs in the system. These files are

- IO.sys
- MSDOS .sys
- Command.com

Out of these first two files are hidden files which exist in the system and user is not allowed to view them. Third file Command.com is loded in main memory whenerver we run DOS, this is the file in which DOS commands exists. We can classify DOS commands in following categories.

1.9.2 DOS Commands

(i) Internal command : An internal command is a MS-DOS command that is stored in the system memory and loaded from the command.com. The illustration shows how commands contained within command.com are part of the command.com file. However, with the external commands, each of the commands are their own separate files.

Below are examples of internal commands in MS-DOS and the Windows command line currently listed in the Computer database.
Date, Time, Delete, Exit, Mkdir, MD, CD, Chdir, Ren, Copy, Move, Break etc.

(ii) External command : An external command is a MS-DOS command that is not included in command.com. External commands are commonly external either because they require large requirements or are not commonly used commands. The illustration shows each of the external commands are their own separate files. However, the internal commands are all included in the command.com file.

Below are examples of MS-DOS and Windows command line external commands currently listed on Computer.
ChkDsk, Format, Ping, Edit, Scandisk, Doskey, Deltree, DiskCopy etc

(iii) Recovery console : An available mode for Microsoft Windows 2000 and Windows XP users that can be accessed by booting from the Windows 2000 or Windows XP CD. The recovery console enables users to recover their Windows computer from any serious issues.

Below is a listing of some of the available recovery console commands listed on our database. These commands can only be accessed through the recovery console and are not available through the standard MS-DOS prompt.

Systemroot, Format, Logon, Fixboot, Bootcfg

1.9.3 General DOS Commands

(a) DATE : This command will display the current date of the system. If we press again the enter key it will prompt us for entering new date, again pressing enter key will set the command line to accept new command.

<p style="text-align:center">C:\> date :</p>

(b) Time : This command will display current time of the system. . If we press again the enter key it will prompt us for entering new time, again pressing enter key will set the command line to accept new command.

<p style="text-align:center">Fig. 4 : Use of Date and Time command</p>

(c) CLS : This command will clear the screen of command prompt

<p style="text-align:center">C:\>users\vijayta\cls</p>

<p style="text-align:center">Fig. 5 : Use of CLS command</p>

(d) CHDIR (CD) Change Directory Command :

Once you have located the directory you want, you may move from directory to directory using the CD command (change directory)

Example:

- C:\> cd Ashish

  Moves you to the directory called 'ASHISH'

- C:\> cd \Ashish\Swami

  Moves you to the sub-directory called 'SWAMI' under the directory called 'ASHISH'.

- C:\> cd ..

  Moves you up one level in the path.

- C:\> cd \

  Takes you back to the root directory (c: in this case).

(e) MKDIR (MD) Make Directory Command

This command creates a new directory.

Example:

- C:\> mkdir Vijayta

  Creates a directory called 'VIJAYTA'

(f) DIR (Directory) Command

The DIRECTORY command lists the names and sizes of all files located on a particular disk.

<p style="text-align:center">C:\> Users\Vijayta\dir</p>

<p style="text-align:center">Fig. 6 : Use of DIR command</p>

Some other Example:

- C:\> dir a:
  Shows directory of drive A
- C:\> dir b:
  Shows directory of drive B
- C:\> dir \agis
  Shows files in a subdirectory on drive C (default)
- C:\> dir
  Shows directory of drive C
- C:\> dir /w
  Shows directory in wide format, as opposed to a vertical listing.
- C:\>dir/p
  Shows all the directories page wise on screen. When we press space bar next page having directing listing will be displayed.

All the files are listed at the screen, you can stop the display by typing CTRL-BREAK. If you ask for a directory on the A or B drives, be sure there is a diskette in the drive and that the diskette has been formatted. If the drive is empty, or if the diskette is unformatted, the DOS will respond with an *error message.*

(g) DIR Options (Wild Card Characters)

Two little characters, '*' and '?', will make your life with computers much easier. Their use is illustrated below.

Example:

- C:\> dir a:*.ex
  Lists all files on the A drive with an extension of 'EXE'.
- C:\> dir b:ashish.*
  Lists all files on the B drive with a filename of 'ASHISH'.

The asterisk (*) is a wild-card character which allows the user to enter only a limited part of a file specification to find a file. It is useful when you wish to locate a group of files with the same filename or the same extension. On other occasions you may have forgotten part of a file specification. You can use '*' in place of the parts of the specification you have forgotten.

Similarly, '?' permits wild-card searches keyed to single characters.

Example:

- C:\> dir a:labe?.com
  Lists all five-letter files with the first four letters 'LABE' and an extension of 'COM'.
- C:\> dir b:format.c??
  Lists all files with a filename of 'FORMAT' and an extension beginning with 'C'.

Wild-card characters can be used in combination.

(h) COPY Command

The COPY command can be used both to copy files from one disk to other disk or to create a second copy of a file on a single disk.

C\>: Copy <source File> <destination path>

Example:

- C:\> copy C:ashishswami.exe E:
  Copies the file 'ASHISHSWAMI.EXE' from the C drive to the E drive and gives it the same name.
- C:\> copy a:bca.dat b:\jaipur\bca.dat
  Creates a copy of 'BCA.DAT' from drive A on drive B, putting it in the 'JAIPUR' subdirectory and renaming it 'BCA.DAT'.

The key to use this command correctly is to remember that the first file specified after the COPY command is the *source* file, the second is the *target* file or destination path. The *source* is the file to be copied. The *target* will be the location and name of the new file. If the file name and extension are omitted after the target's drive specification, the new file will have exactly the same name as the source file.

Example:

- C:\> copy a:myfile.txt b:
- C:\>copy c:command.com b:com.com
- C:\> copy b:golly.gee a:whao.boy
- C:\> copy command.* a:
- C:\> copy a:mymap.dwg c:\maps

Note: it is always good practice to us the complete file specifications for both source and target files, Be sure of yourself before you accept defaults or wild-card characters. Otherwise you may end up with some interesting results. Incomplete or incorrect source names may result in errors, such as the command: copy edlin a:myomy.bat.

(i) RENAME (REN) Command

The RENAME command permits users to change the name of a file without making a copy of it.

Fxample:

- C:\> ren a:aditya.txt priyansh.txt
  Changes the name of 'ADITYA.TXT' on the A drive to 'PRIYANSH.TXT'.

This command is very simple to use, just remember two points: the file name and extension must be complete for the source file and no drive specification is given for the target. Renaming can only occur on a single disk drive (otherwise COPY must be used).

(j) RMDIR (RD) Remove Directory Command

This command removes a directory. It is only possible to execute this command if the directory you wish to remove is empty.

Example:

- C:\> rd vijayta

    Removes directory called 'VIJAYTA'.

These are some of the commonly used DOS commands apart from these there are many more DOS commands available.

1.10 Windows Operating System

Microsoft Windows is a series of graphical interface operating systems developed, marketed, and sold by Microsoft.

1.10.1 Introduction

Microsoft introduced an operating environment named Windows on November 20, 1985 as a graphical operating system shell for MS-DOS in response to the growing interest in graphical user interfaces (GUIs). Microsoft Windows came to dominate the world's personal computer market with over 90% market share.

The next major consumer-oriented release of Windows, Windows 95, was released on August 24, 1995. While still remaining MS-DOS-based, Windows 95 introduced support for native 32-bit applications, plug and play hardware, preemptive multitasking, long file names of up to 255 characters, and provided increased stability over its predecessors. Windows 95 was followed up with the release of Windows 98 on June 25, 1998, which introduced the Windows Driver Model, support for USB composite devices, support for ACPI,hibernation, and support for multi-monitor configurations. Windows 98 also included integration with Internet Explorer 4 through Active Desktop and other aspects of the Windows Desktop Update.

On September 14, 2000, Microsoft released Windows ME (Millennium Edition), the last DOS-based version of Windows. Windows ME incorporated visual interface enhancements from its Windows NT-based counterpart Windows 2000, had faster boot times than previous versions (which however, required the removal of the ability to access a real modeDOS environment, removing compatibility with some older programs), expanded multimedia functionality (including Windows Media Player 7, Windows Movie Maker, and theWindows Image Acquisition framework for retrieving images from scanners and digital cameras), additional system utilities such as System File Protection and System Restore, and updated home networking tools.

After that in coming years new versions of windows were launched Windows NT, Windows XP, Windows Vista.

On July 22, 2009, Windows 7 and Windows Server 2008 R2 were released as RTM (release to manufacturing).

Windows 8, the successor to Windows 7, was released generally on October 28, 2012. Number of significant changes were made on Windows 8, including the introduction of a user interface based around Microsoft's Metro design language with optimizations for touch-based devices such as tablets and all-in-one PCs. These changes include the Start screen, which uses large tiles that are more convenient for touch interactions and allow for the display of continually updated information, and a new class of apps which are designed primarily for use on touch-based devices. Other changes include increased integration with cloud services and other online platforms (such as social networks and Microsoft's own SkyDrive and Xbox Live services), the Windows Store service for software distribution, and a new variant known as Windows RT for use on devices that utilize theARM architecture. An update to Windows 8, called Windows 8.1, was released on October 17, 2013, and includes features such as new live tile sizes, deeper SkyDrive integration, and many other revisions.
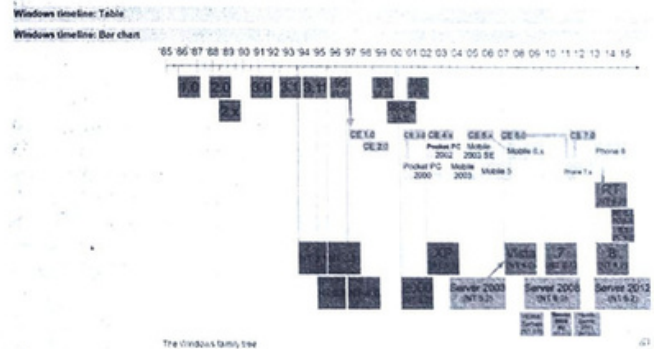

Fig. 7 : Release years of major windows versions

1.10.2 Features of Windows latest versioins

Windows 7

1. Speed
2. Compatibility
3. Lower hardware requirements
4. Search and organisation
5. TaskBar/Start menu
6. Aero-shake

7. Stacking
8. Peace from UAC
9. Gamma curve
10. Touch

Windows 8

1. Support for both x86 PCs and ARM tablets
2. Touch-centric, Tiles-based User Interface (UI)
3. Charms
4. Snap Multi-tasking
5. Windows 8 Control Panel
6. Web Navigation by Touch
7. Two Touch Keyboards
8. "Enhanced Copy Experience"
9. Native USB 3.0 Support
10. Better Support for Multiple Monitors

1.10.3 Components of Windows

1.10.3.1 DeskTop : Desktop is the main screen which is displayed as soon as windows operating system is installed on computer. It contains various icons, folders, shortcut of programms, Gadgets, Themes and other utility tools through which we can enter into desired program.
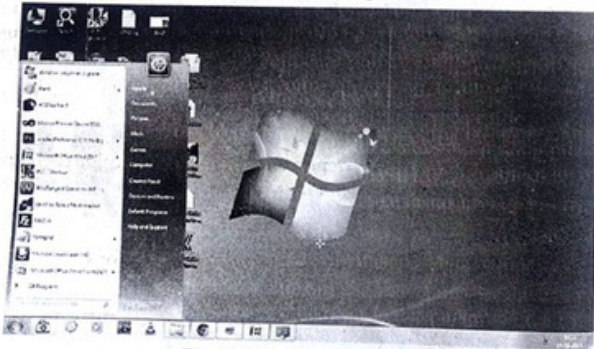

Fig. 8 : Windows Desktop

To change the desktop background : 1. Open Desktop Background by clicking the **Start** button and clicking **Control Panel**. In the search box, type **desktop background**, and then click **Change desktop background**.

2. Click the picture or color that you want to use for your desktop

background.

If the picture you want to use isn't in the list of desktop background pictures, click an item in the **Picture location** list to see other categories, or click **Browse** to search for the picture on your computer. When you find the picture that you want, double-click it. It will become your desktop background.

Look for pictures in other locations on your computer

1. Under **Picture position**, click the arrow and choose whether to crop the picture to fill the screen, fit the picture to the screen, stretch the picture to fit the screen, tile the picture, or center the picture on the screen, and then click **Save changes**.

Note

- If you choose to have a fitted or centered picture as your desktop background, you can also frame your picture with a color background. Under **Picture position**, click Fit or Center. Click Change background color, click a color, and then click OK.

Tip

- To make any picture stored on your computer

  (or a picture you are currently viewing) your desktop background, right-click the picture, and then click **Set as Desktop Background**.
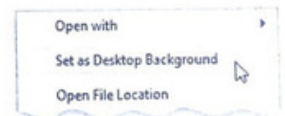
You can add more desktop backgrounds to your collection from the **Personalization Gallery** on the Windows website.

(a) Desktop Themes : The default theme is titled "Windows 7", which consists of a single desktop background named "Harmony" and the same sound scheme, desktop icons and mouse pointers as Windows Vista. Six new "Aero Themes" are included: Architecture, Characters, Landscapes, Nature, Scenes, and an additional country-specific theme that is determined based on the defined locale when the operating system is installed. Windows 7 includes themes for the United States, United Kingdom, Germany, Canada, Japan, South Africa and Australia, and while the theme for the user's home country is the only one displayed in the user interface, the files for all these themes are included in the operating system installation

(b) Desktop Slideshow : Windows 7 includes a desktop slideshow that changes the desktop background in a designated amount of time with a smooth fading transition. This feature supports pre-downloaded sets of wallpapers and also supports photo RSS feed.

1.10.3.2 Gadgets : In Windows 7, the sidebar has been removed, while gadgets can still be placed on the desktop. Gadgets snap to certain positions on the desktop and from each other; dragging with the Shift key held down prevents gadgets from automatically snapping into position. Windows 7 adds a Windows Media Center gadget to the default collection while removing the Contacts and Notes gadgets. The Desktop context menu includes a new "Gadgets" menu option to access the gadget gallery, and a "View" sub-menu option to show or hide gadgets. Hiding gadgets results in the sidebar.exeprocess being unloaded, which Microsoft says is a power-saving practice.

1.10.3.3 Windows Explorer : Windows Explorer in Windows 7 supports file libraries that aggregate content from various locations – including shared folders on networked systems if the shared folder has been indexed by the host system – and present them in a unified view. The libraries hide the actual location the file is stored in. Searching in a library automatically federates the query to the remote systems, in addition to searching on the local system, so that files on the remote systems are also searched. By default, a new user account in Windows 7 contains four libraries for different file types: Documents, Music, Pictures, and Videos. They are configured to include the user's profile folders for these respective file types, as well as the computer's corresponding Public folders.

Search Filter : Search Filter Suggestions are a new feature of the Windows 7 Explorer's search box. When the user clicks in the search box, a menu shows up below it showing recent searches as well as suggested Advanced Query Syntax filters that the user can type. When one is selected (or typed in manually), the menu will update to show the possible values to filter by for that property, and this list is based on the current location and other parts of

the query already typed. For example, selecting the "tags" filter or typing "tags:" into the search box will display the list of possible tag values which will return search results.

1.10.3.4 Taskbar : Task bar is the strip at the bottom of desktop which contains the information regarding all the programmes which are currently running on the computer along with some default icons and gadgets which are used frequently. User can customise them as per their requirement.

The Windows Taskbar has seen its most significant revision since its introduction in Windows 95 and combines the previous Quick Launch functionality with open application window icons. The taskbar is now rendered as an Aero glass element whose color can be changed via the Personalization Control Panel. It is 10 pixels taller than in Windows Vista to accommodate touch screen input and a new larger default icon size as well as maintain proportion to newer high resolution monitor modes. Running applications are denoted by a border frame around the icon. Within this border, a color effect (dependent on the predominant RGB value of the icon) that follows the mouse also indicates the opened status of the application. The glass taskbar is more translucent than in Windows Vista. Taskbar buttons show icons by default, not application titles, unless they are set to 'not combine', or 'combine when taskbar is full.' In this case, only icons are shown when the application is not running. Programs running or pinned on the taskbar can be rearranged. Items in the notification area can also be rearranged.

Fig. Task Bar

1.10.3.5 Start Menu : The start orb now has a fade-in highlight effect when the user moves the mouse over it. The Start Menu's right column is now the Aero glass color. In Windows Vista, it was always black.

Windows 7's Start menu retains the two-column layout of its predecessors, with several functional changes:

- The "Documents", "Pictures" and "Music" buttons now link to the Libraries of the same name.
- A "Devices and Printers" option has been added that displays a new device manager.
- The "shut down" icon in Windows Vista has been replaced with a text link indicating what action will be taken when the icon is clicked. The default action to take is now configurable through the Taskbar and Start Menu Properties window.
- Taskbar Jump Lists are presented in the Start Menu via a guillemet; when the user moves the mouse over the guillemet, or presses the right-arrow

key, the right-hand side of the Start menu is widened and replaced with the application's Jump List.

- Links to the "Videos", "Downloads", and "Recorded TV" folders can now be added to the Start menu.

The Start Search field, introduced in Windows Vista, has been extended to support searching for keywords of Control Panel items. For example, clicking the Start button then typing "wireless" will show Control Panel options related to configuring and connecting to wireless network, adding Bluetooth devices, and troubleshooting. Group Policy settings for Windows Explorer provide the ability for administrators of an Active Directory domain, or an expert user to add up to five Internet web sites and five additional "search connectors" to the Search Results view in the Start menu. The links, which appear at the bottom of the pane, allow the search to be executed again on the selected web site or search connector.
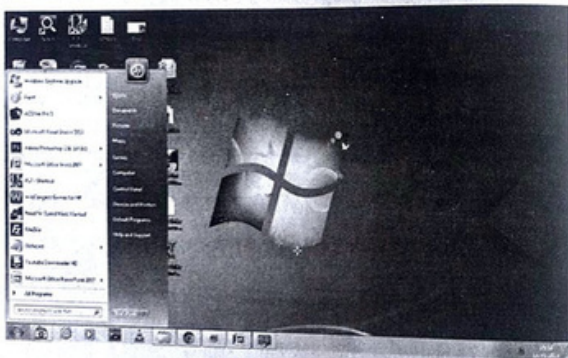

Fig. 9 : Start Menu

1.10.3.6 My Computer

The my computer icon is used to access files folders and prgrammes all over your computer. It allows access to all files and programmes that make

your machine work. It can also be used to obtain certain files and other information about other users. When user double click on my computer icon it will open an window displaying all the root drives and on left hand side favourite icons are displayed as shown in following figure.

My computer screen

1.10.3.7 Recycle Bin : An icon on the Windows desktop that represents a directory where deleted files are temporarily stored. This enables you to retrieve files that you may have accidentally deleted. From time to time, you'll want to purge

Recycle bin icon

the recycle bin to free up space on your hard disk. You can also configure Windows so that it doesn't use the recycle bin at all, but then you won't be able to retrieve accidentally deleted files.

1.10.3.7 Windows Accessories & Tools : MS Windows has many accessories for day to day use and tools for maintaining computer in good shape. Some important accessories and tools available in Windows latest version are :
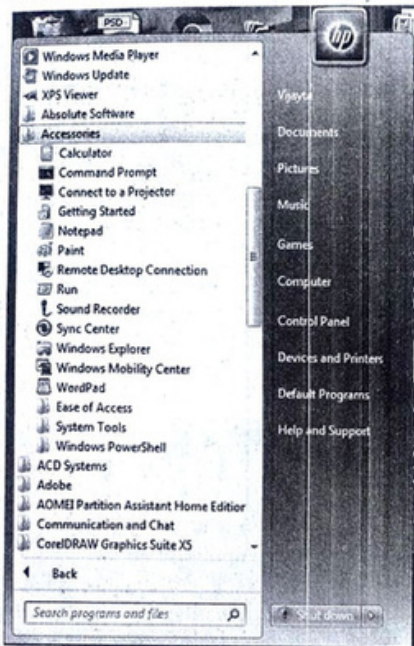
16

Fig. Windows Accessories

Following are some of the accessories available in windows operating system

(a) Narrater :

It reads out the on screen text. This utility is useful if you prefer to listen than to read a long text from the screen.

(b) Network Connections :

Displays available Network and Internet Connections available on the computer. You can change settings of available connections by right click on a connection and selecting properties. You can also open wizard to create a new dial up or other connection by a click on 'Create a new connection'. The new connection wizard can also be opened directly by

(c) Windows Media Player :

You can play audio and video files by using Windows Media Player. You can choose different skins for the player from the available list or download more skins from Microsoft Windows site.
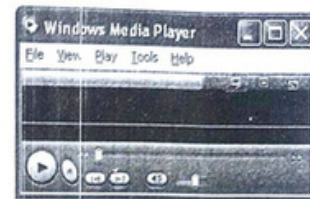
Windows Media Player

(d) Volume Control :

Enables to adjust master volume and balance of your audio speakers. You can set different volumes for different file formats wave and midi and also for music played from CD Rom. By default an icon of 'Volume Control' is also placed in 'System Tray' for easy access. Right click on the icon in Notification Area opens full volume control window and a left click opens a small volume controller from which you can control the master volume of audio speakers. The volume can also be controlled by the software of your sound card installed.
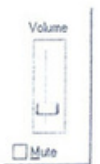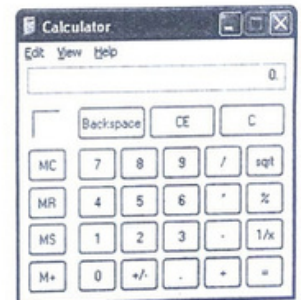

Volume Controller

(e) Calculator :

Window provides a simple calculator for doing arithmetic calculations. If you are required to use calculator frequently, you can create its

icon on your desktop or in Quick Launch area by dragging the icon by holding the mouse on it from above location to your desired location for prompt and convenient access to this tool.

Calculator

(f) Command Prompt : Enables use of DOS commands required for a program/application.
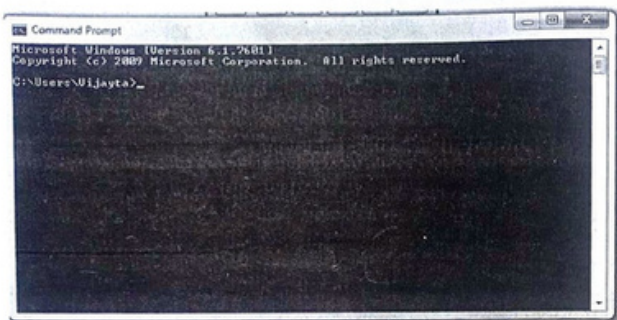

Fig. 10 : Command Prompt

(g) Paint : Paint is a simple drawing tool and can be used for simple drawings using Lines, Curves, Rectangles, Circles etc. It can also be used to add text to images. It is not a very effective tool for editing pictures.
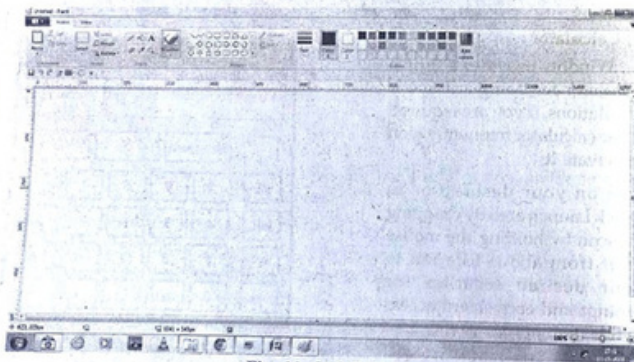

Fig. 11 : MS Paint

(h) Notepad : Notepad creates and edits text and performs basic functions of a text editor without much formatting options.

Fig. 12 : Notepad

(i) Wordpad : Wordpad is better text editor than Notepad as it provides more formatting options.
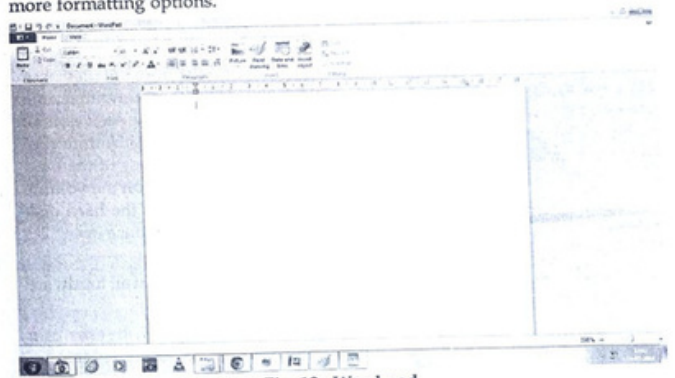

Fig. 13 : Word pad

(j) Sound Recorder : It is used for recording user sound and palay back it again.
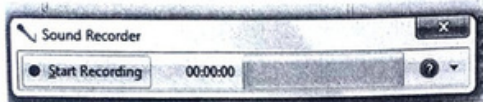
Fig. 14 : Sound Recorder
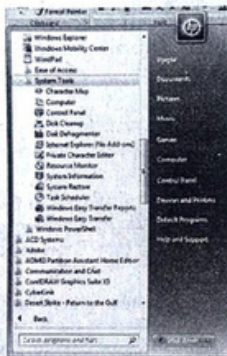
1.10.3.9 System Tools

Fig. 15 : System Tools

(a) **Disk Defragmenter :** With continuous use of computer, the files used again and again become fragmented as these are written and rewritten on a very fast revolving hard disk. Due to fragmentation of files, the seek time of the hard disk increases and its efficiency comes down. Defragmentation of files results in reducing the seek time and restoring the efficiency of the hard disk. Defragmentation of a drive may take hours depending upon the volume of data stored on the disk. However, to maintain efficiency of the hard disk and computer it is recommended to defragment the hard disk once every 2-3 months.

(b) **System Information :** This tool provides information about all hardware and other available resources in the computer.

(c) **System Restore :** Enables setting up of a restore point. In case of a problem with the system, you can restore the system to the position obtaining at the time of setting the restore point.

(d) **Disk Cleanup :** Over a period of time due to internet surfing and use of other applications and programs a large number of files are created in the system, which have not been used by the system for long. This tool deletes such unnecessary files from the hard disk and creates space for other useful data/information. On left click on the icon a small window asking you to select

the drive for cleanup is opened. After you select a drive, the tool opens another window displaying the maximum space that can be cleared from your hard disk and asks you to select the type of files to be deleted. You should be careful while selecting the files to be deleted so that no file types which are likely to be used by you in future are deleted.

1.10.3.10 Control Panel :

Control panel provides options to customize the appearance and functionality of computer, add hardware, add or remove programs/applications, set up user accounts, set up network connections, set properties of hardware devices etc.

We use Control Panel to change settings for Windows. These settings control nearly everything about how Windows looks and works, and you can use them to set up Windows so that it's just right for you.

By default, the Control Panel is displayed in Category view, which is separated into eight categories, ranging from System and Security to Ease of Access. To open a window with the Control Panel options for any one of these categories, simply click the category's hyperlink.

The Control Panel is used to make changes to nearly every aspect of Windows including keyboard and mouse function, passwords and users, network settings, power management, desktop backgrounds, sounds, hardware, program installation and removal, speech recognition, parental control, etc.

Open Control Panel by clicking the Start button 🜂 , and then clicking **Control Panel**. Following window will appear.

Fig. 16 : Control Panel

The following table gives you a description of all the Control Panel categories, including the various programs you can find by clicking each category's hyperlink.

Click This Category Link ...	... To Display These Groups of Links
System and Security	Action Center, Windows Firewall, System, Windows Update, Power Options, Backup and Restore, BitLocker Drive Encryption, and Administrative Tools
User Accounts	User Accounts, Windows Cardspace, Credential Manager, and Mail (32-bit)
Network and Internet	Network and Sharing Center, Homegroup, and Internet Options
Appearance and Personalization	Personalization, Display, Desktop Gadgets, Taskbar and Start Menu, Ease of Access Center, Folder Options, and Fonts
Hardware and Sound	Devices and Printers, AutoPlay, Sound, Power Options, Display, and WindowsMobility Center
Clock, Language, and Region	Date and Time, and Region and Language
Programs	Programs and Features, Default Programs, and Desktop Gadgets
Ease of Access	Ease of Access Center and Speech Recognition

Icon views : The Control Panel's other two views are Large Icons view and Small Icons view. When the Control Panel is in one of the icon views, Windows displays an alphabetical listing of the more than 50 Control Panel programs on your system, ranging from Action Center to Windows Update. To view (and possibly change) the settings for a particular Control Panel option in one of the icon view modes, you need to double-click the Control Panel program icon.

Here are a few of the thousands of individual changes that are possible from within Control Panel:

- Change Your Password
- Change Another User's Password
- Change AutoPlay Settings
- Create a Password for Your Account
- Change Your Monitor's Refresh Rate
- Adjust Keyboard and Mouse Settings
- See the Windows Service Pack You Have Installed
- Create a Password Reset Disk
- Change Background, Screensaver, and Windows Sounds Settings
- Show Hidden Files
- Add a Printer
- Configure the Start Menu and Taskbar
- Configure Windows Firewall Settings
- Hide Hidden Files
- Change Your Product Key
- Manage Windows Gadgets
- See if You're Running a 32-bit or 64-bit Version of Windows
- Change the Default Program for a File Extension
- Disable Error Reporting
- Reinstall a Program

Display

Using display settings we can adjust the look and feel of windows. We can perform all the left hand side listed options for changing the appearance of windows.
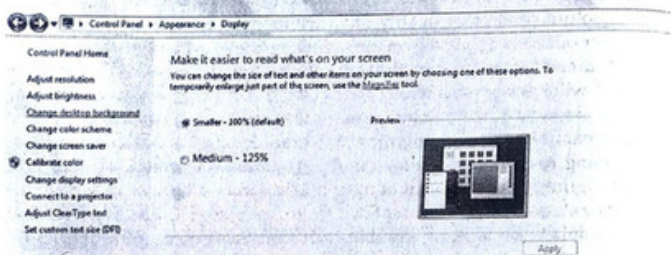
A click on this menu item or a right click anywhere in the blank area of the desktop opens a window from where you can change display settings of your computer.

- **Theme :** Theme refers to a unified look for computer desktop. A theme determines the look of various graphic elements of the desktop, such as the windows, icons, fonts, colors, and the background and screen saver pictures. It can also define sounds associated with events such as opening or closing a program. Windows XP and Classic Themes are the two choicesthemes available in Windows XP. You can download and use more themes from Microsoft's site or any other site.

  If there are more than one user on a computer, each user with his or her own user account can choose a different theme.

- **Desktop background :** This enables you to change the background image called wallpaper of the desktop. You can choose the image from the available wallpapers in Windows or download a wall paper or use an image of your choice as wallpaper by browsing and pointing to the image file.

- **Screen Saver :** In a CRT monitor if same picture is displayed for long periods of time, the properties of the exposed areas of phosphor coating on the inside of the screen gradually and permanently change, eventually leading to a darkened shadow or ghost image on the screen. Screen saver programs are designed to help avoid these effects by automatically changing the images on the screen during periods of user inactivity.

This menu item enables to install a screen saver from the available screen saver in Windows or use a screen saver of your choice and make setting

for idle time for screen saver to start and also settings relating to screen saver software.

- **Appearance :** Enables you to customize style, color and fonts of windows and its components.

- **Settings :** A click on 'Settings' opens a window from where you can select the resolutionand color quality of your monitor screen. Resolution is the number of pixels displayed on the screen. A higher resolution will display larger area of the picture on the screen and therefore the size of picture on screen will become smaller. Higher color quality displays true colors of images.However, the resolution and color quality selection is limited by the capabilities of your monitor and graphic adaptor/ Video card. On changing resolution or color quality, the monitor screen will blink to reconfigure (required restart of computer in earlier Windows versions) and display a dialogue box to accept or decline the change. The settings window also display two buttons 'Troubleshoot' and 'Advanced'. While a click on 'Troubleshoot' button starts interactive trouble shooting application of Windows XP, a click on Advanced button will display settings and properties of your monitor and graphic adaptor/video cards. These settings should not be changed without reference to the settings manual of your monitor and/or graphic adaptor/video card.

Following are some more display functions which can be performed using control panel

- Adjust resolution
- Adjust brightness
- Change Color Scheme
- Change display settings
- Connect to projector
- Adjust Clear Type text
- Set custom text size (DPI)

1.11 Sharing Information Between Programs

Office can convert data or text from one format to another using a technology known as object linking and embedding (OLE). OLE allows you to move text or data between programs in much the same way as you move them within a program. The familiar cut and paste or drag and drop methods work between programs and documents just as they do within a document. In addition, all Office programs have special ways to move information from one program to another, including importing, exporting, embedding, linking, and hyperlinking.

1.11.1 Importing and Exporting

Importing and exporting information are two sides of the same coin. **Importing** copies a file created with the same or another program into your open file. The information becomes part of your open file, just as if you created it in that format. Some formatting and program-specific information such as formulas may be lost. **Exporting** converts a copy of your open file into the file type of another program.

In other words, importing brings information into your open document, while exporting moves information from your open document into another program file.

Embedding

Embedding inserts a copy of a file created in one program into a file created in another program. Unlike imported files, you can edit the information in embedded files with the same commands and toolbar buttons used to create the original file. The original file is called thesource file, while the file in which it is embedded is called the destination file. Any changes you make to an embedded object appear only in the destination file; the source file remains unchanged.

For example, if you place an Excel chart into a PowerPoint presentation, Excel is the source program, and PowerPoint is the destination program. The chart is the source file; the document is the destination file.

Linking

Linking displays information from one file (the source file) in a file created in another program (the destination file). You can view and edit the linked object from either the source file or the destination file. The changes are stored in the source file but also appear in the destination file. As you work, Office updates the linked object to ensure you always have the most current information. Office keeps track of all the drive, folder, and file name information for a source file. However, if you move or rename the source file, the link between files will break.

Once the link is broken, the information in the destination file becomes embedded rather than linked. In other words, changes to one copy of the file will no longer affect the other.

1.12 Smart Devices tools and applications

A smart device is an electronic device, generally connected to other devices or networks via different protocols such as Bluetooth, NFC, WiFi, 3G, etc., that can operate to some extent interactively and autonomously. It is widely believed that these types of devices will outnumber any other forms of smart computing and communication in a very short time, in part, acting as a useful enabler for the Internet of Things. Several notable types of smart device at the time of

writing are smartphones like the Apple iPhone or most of the devices running Android operating system, phablets and tablets, like the Apple iPad or Google Nexus 7. The term can also refer to a ubiquitous computing device: a device that exhibits some properties of ubiquitous computing including,but not necessary, artificial intelligence. Smart devices can be designed to support a variety of form factors, a range of properties pertaining to ubiquitous computing and to be used in three main system environments: physical world, human-centred environments and distributed computing environments.

Smart Devices

These smart devices are becoming part of our daily life and are extensively being use in our daily life. In coming years we would see more and more smart devices in our daily life. Now a days while watching TV we can record our favourite programs to view them later on. With smart mobile phones we can access our mails and other important documents instantly. These smart gadgets have changed the way of our life and will continue to do so in coming years as the technology advances.

Exercises

Very Short Questions (upto 20 words)   *(2 marks each)*

1. What is full form of FAT ?
2. What is NTFS ?
3. What is file ?
4. What do you mean by folder ?
5. What is desktop ?

6. What is icon ?
7. What is task bar ?
8. What is recycle bin ?
9. What do you mean by booting ?
10. What is full form of DOS ?

Short Questions (upto 80 words)   (4 marks each)

1. What is operating system ?
2. Name different types of operating system.
3. Define the Directory structure ?
4. Define the booting process ?
5. What do you mean by external Commands in DOS ?
6. What do you mean by Internal Commands in DOS ?
7. What is role of Windows Accessries.
8. What do you mean by sharing information between programs.
9. What is different between CUI and GUI ?
10. Explain any 5 DOS commands ?

Long Answer Questions   (12 marks each)

1. What do you mean by operating system ? Explain Work, classification and functions of operating system ?
2. What do you mean by FAT and NTFS. Explain their functions and compair them ?
3. What do yu mean by control panel in Windoes ? Explain various options available in control panel.
4. What do you mean by GUI operating system ? Give example with salient features of GUI operating system. How it is better than CUI operating system.
5. What do you mean by directing and file structure ? Explain various naming rules for files.

■■■