D-Computers, Computer Networks & Broadband, Application Packages & Web Based Services.

Computer Fundamentals

Fundamentals of Personal Computers use of Windows operating systems & introduction to software packages like MS Word, MS Excel, and MS PowerPoint. Use of Internet for office works like E-mail & Web browsing etc. The feature of Linux Operating system, Basic & Advance Commands, Graphical User Interface (KDE & GNOME, Open office etc. Client Server Architecture, Local Area Networking, Wide Area Networking, Internet working, Router frame relay, I-net and asynchronous Transfer Mode (ATM) etc.

Computer Fundamentals

Fundamentals of Personal Computers

Introduction to Computers

Computer is a machine that can solve problems by accepting data. Performs operation and present results under step by step instructions.

What is Computer?

Computer is an advanced electronic device that takes raw data as input from the user and processes these data under the control of set of instructions (called program) and gives the result (output) and saves output for the future use. It can process both numerical and non-numerical (arithmetic and logical) calculations.

Identify the functions of the PC

The basic function of Computer.
- Input
- Process
- Output
- Store

Basic Organization of Computer
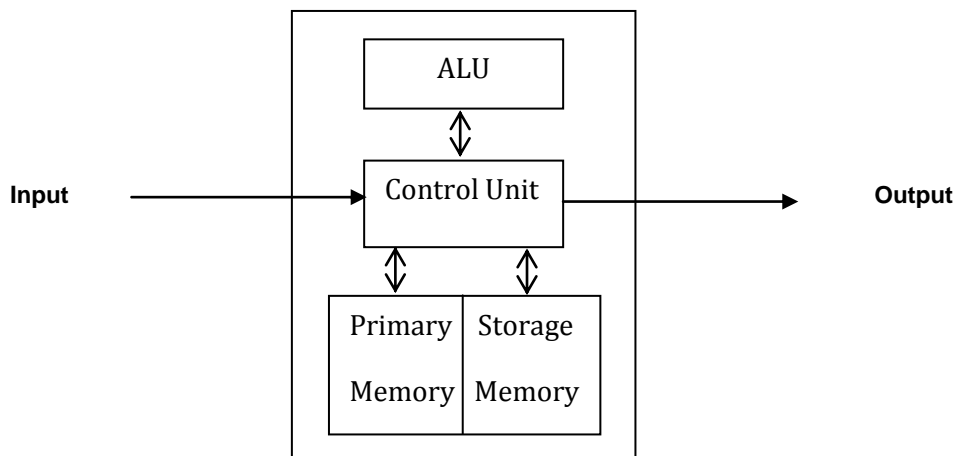
Functions of a PC

- Accepts data input from user
- Stores data
- Processes the input using instructions
- Displays processed data on output devices

| MEA - Mumbai

Main Characteristics of Computer

1) Accuracy
2) Diligence
3) Speed
4) Reliability

Evolution of computer- Computer evolution based on the term generation.

Different Generation of Computer

First generation. (1951–1959)

- Electronic circuitry had vacuum tube.
- Punch card and paper were used for getting results.
- Assembly language used.

Second generation. (1959–1965)

- Electronic circuitry used transistors.
- Magnetic tape was used for putting in data.
- Punch card and magnetic tape were used for output.
- Magnetic core storage was used as permanent memory.
- High level languages were used, COBOL, BASIC, FORTRAIN etc.

Third generation. (1965–1971)

- Electronic circuitry was characterized by integrated circuit.
- Monitors and keyboards were introduced.
- Magnetic disks were used for external storage.
- High language used as RPG PASCAL etc.

Fourth generation computers. (1971–till date)

- Miniaturization of circuitry into microscopic size.
- Introduction of microcomputers.
- Beginning use of special software.

- **Fifth generation. (Future)**
- Super computers capable of performing billions calculation per second with artificial Intelligence.

Explain the different types of computers

Types of Computers

1- Microcomputer 2-Minicomputer 3-Mainframe 4-Supercomputer

Microcomputer – I

1. Digital computer that works on a microprocessor
2. Used in homes and offices
3. Performs tasks such as word processing, desktop publishing, and accounting

Microcomputer – II

1. Small size
2. Low cost
3. Portability
4. Low processing speed

Minicomputer – I

1. Known as the mid-range server
2. Medium sized multiprocessing and multi-user computer
3. Used by small sized companies

Minicomputer – II

1. Cater to multiple users
2. Lower costs than mainframes
3. Large
4. Bulky

Mainframe – I

1. Known as enterprise servers
2. Occupies entire rooms or floors
3. Used for centralized computing
4. Serve distributed users and small servers in a computing network

Mainframe – II

1. Supports many users and instructions
2. Large memory
3. Huge size
4. Expensive

Supercomputer

1. Fastest and expensive
2. Used by applications for molecular chemistry, nuclear research, weather reports, and advanced physics
3. Speed
4. Generate a large amount of heat during operation

Classification of Computers.

Computers are classified into different heads as follows:

- Applications

- Principle of operation
- Handling word size.

On the basis of application.

- Special purpose computers.
- General-purpose computers.

Special purpose computers

Performs special task such as launching of space vehicle and operation of Telephone Exchange. Special operation in production in factory.

On the basis of Principle of operation:

- Analog computers: Mainly used in scientific design and production environment.
- Digital computer: Operates on discrete input i.e. ON/OFF quantities. Common used Computer today.
- Hybrid computer

ON THE BASIS OF HANDLING WORD SIZE AND COMPUTING POWER

- Microcomputer–ALU and control unit combined in a single chip called Microprocessor. Personal computer – smallest
- Minicomputer – More powerful than microcomputer. It is multi-user system.
- Mainframe computer – It is a large computer and multi-user.
- Supercomputer – It uses Non–Von Newman design and multi–user system.

Types of personal computers

PCs can be classifying according to number of disk drives and type of microprocessor chip used.

- PC – I – Uses Intel 8088 microprocessor with singles floppy, speed 4.77 MHz, RAM Capacity 640 KB.
- PC – II – It uses double floppy disk drive. RAM 640 KB.
- PC XT – Computer with extended technology. 2 floppy disk drive and one hard disk drive. Hard disk capacity 20 MB each. RAM capacity 640 KB.
- PC AT – It uses microprocessor 80286 16 bits, 80386, and 80486 uses 32-bit processor.
- Pentium I., II microprocessor is 64-bit processor Pentium IV uses 2 GHz.

Components of a PC

1. Input Devices
2. Output Devices
3. Storage Devices
4. Processing Devices
5. Communication Devices
6. Infrastructure

Input Devices

Used to enter data in computer.

Different types are:

- Keyboard
- Pointing Devices
- Scanner

Keyboard: Generally used to type or select an option on the screen. It is an input device.

Mouse: It is an input device which is used to point and select some option on VDU.

Floppy Disk Drives: It is a common form of removable storage, floppy disk are extremely inexpensive and easy to save information.

Scanner: It is an input device. A scanner scans an image and transform the image to ASCII Graphics . These codes can be edited, manipulated & than printed.

Cd-Rom Drive: It is an input device. To read a Cd-Rom disk a Cd-Rom drive is required . One can only read from it and cannot write on it.

Dvd-Rom: DVD-Rom is similar to Cd-Rom but is capable of holding much more information.

Cd-Writer: It is input device. To write from other CD to your CD , writer is used.

Output Devices

a) Used to display or produce processed data
b) Monitors and printers used to display output

Different types of output devices are:

1. Display Card
2. Sound Card
3. Printers
4. Fax

Monitor (Visual Display Unit): It is an output device where the output of any command is displayed ie. The screen.

AGP (Accelerated Graphics Port):It is a very high speed connection used by the graphic card to interface with the computer.

Graphics Card: This translates image data from the computer in to a format that can be displayed by the monitor.

Sound Card: This is used by the computer to record and play audio by converting analog sound in to digital information and back again.

Printer: Is the output device .

Different type s of printer.

Names of major classes of printers.

a) Character Printers.
b) Line printers.
c) Page printers.

Character printers.

a) Continuous character Printer. (Golf ball printer and Daisy wheel printers)
b) Dot matrix printer.

Dot matrix printer.

a) Dot matrix printer prints a character as a set of dots.
b) It prints in various languages. Letters, size bold, italic and graphic.
c) It improves print quality to Near Letter Quality (NLQ) but speed reduced.

Inkjet printers.

a)   Prints by spraying ink droplets on paper.

Line printer

a) Line printer is a very fast but expensive device.
b) Prints one line at a time.

Laser printers (Page Printer)

a) Laser printers are page printers.
b) They print 20,000 pages per minute.

Storage Devices

Used to store data in the computers in

Bits and Bytes

Storage capacity of main memory is expressed in Kilobytes or Megabytes expressed as follows**:**

1 Bytes	=	8 bits
1 Kilobyte	=	1024 Bytes
1 Megabyte	=	1024 Kilobytes or 1048576 Bytes
1 Gigabyte	=	1024 Megabyte.

Hard Disk: This is large-capacity permanent storage used to hold information such as programs and documents.

Different types of storage devices are:

1. Magnetic Devices
2. Optical devices
3. Solid-State Storage devices
4. Digital Audio Tape

There is two type of secondary memory. Sequential access memory and random access memory.

Floppy Disk

a) The floppy disks are made up of thin, flexible Mylar plastic coated with magnetic material.
b) Protected by an envelope.
c) Floppy disk consists of track
d) One sector stores 512 byte.
e) Disks are available in two type (5.25 inch FDD and 3.5 inch FDD)

Most commonly used Floppy diskettes

SN	Floppy	Size	Capacity
1	DSDD– Double sided double density	5.25"	40x9 = 360KB
2	DSHD– Double sided high density	5.25"	80x15 = 1.2MB
3	DSDD– Double sided double density	3.5"	80x9=720 KB
4	DSHD– Double sided high density	3.5"	80x18=1.44 MB

Hard Disk

a) Hard disk can not be inserted or removed.
b) Hard disk can store more information than a floppy disk.
c) The Hard disk is the largest external memory of a PC system.

CD – ROM

CD–ROM drives are of the size 5.25-inch.

Processing Devices

Computer main function is to process data

Various types of processing devices are:

1. Microprocessor
2. Chipset
3. BIOS

Central Processing Unit (CPU): The "microprocessor" brain of the computer system is called the central processing unit. Everything that a computer does is overseen by the CPU.

Memory: This is very fast storage used to hold data. It has to be fast because it connects directly to the microprocessor. There are several specific types of memory in a computer.

RAM (Random Access Memory):It is used to temporarily store information that the computer is currently working with. ROM (Read Only Memory): A permanent type of memory storage used by the computer for important data that does not change.

BIOS(Basic input/output system): A type of ROM that is used by the computer to establish basic communications when the computer is first turned on caching-The storing of frequently used data in extremely fast RAM that connects directly to the CPU.

Mother Board: This is the main circuit board that all of the other internal components connect to. The CPU and memory are usually on the motherboard.

Processor

CENTRAL PROCESSING UNIT (CPU)

The main unit inside the computer is the CPU. This unit is responsible for all events inside the computer. It controls all internal and external devices, performs arithmetic and logic operations. The CPU (Central Processing Unit) is the device that interprets and executes instructions.

Memory

- Main Primary memory (RAM).
- Secondary memory (Storage).
- Primary memory consists of Semi conductor memory chips and used to store the data and program currently in use.
- Access time is the time taken by CPU to access the data. This will expressed in nanosecond.
- The lower the access times faster the speed.
- RAM is a volatile memory.

Types of semiconductor memory

Semiconductor memories are of two types

i)   RAM −   Random Access Memory − Volatile memory.
ii) ROM −   Read only memory − Non-volatile memory.

What is ROM

ROM is mainly of three types

PROM − Programmable Read only memories.
UVEPROM − Ultraviolet erasable programmable ROM.
EEPROM − Electrically erasable Programmable ROM.

- ROM is non volatile.
- ROM chip contains control instruction that causes the machine to perform initial operation such as starting computer.
- ROM chip can be read only.

Cache Memory

- The CACHE memory is placed between the CPU and main memory .
- The CACHE memory is not accessible to the user.

Communication Devices

Establish communication between computer using different cables, interfaces and wireless devices

Various types of communication devices are:

- Interfaces
- I/O Ports and Cables
- LAN Card
- Modem
- Network Cables

Parallel: This port is commonly used to connect a printer.

Serial: This port is typically used to connect an external modem, mouse etc.

USB(Universal Serial Bus): This port is becoming most popular external connection, USB ports offer power and versatility and are incredibly easy to use.

Modem: This is the standard method of connecting to the Internet.

LAN (Local Area Network) card: This is used by many computers, particularly those in an Ethernet office network to connected to each other.

Cable modem: Some people now use the cable –television system in their home to connect to the internet.

DSL (Digital Subscriber Line) modem: This is a high speed connection that works over a standard telephone line.

VDSL (Very high bit- rate DSL) modem: A newer variation of DSL , VDSL requires that your phone line have fiber optic cables.

Various types of components are:

- System Case
- Power Supply
- Motherboard
- Expansion Boards

Introducing the Front and Back Side of the PC

Front Side of PC contains:

- Power switch to turn on the PC
- Insert CDs and DVDs in CD/DVD drive
- Use floppy disks with the help of floppy drive
- LED display indicates status of system

Back side of PC contains:

- Power supply and the cooling fan
- Input and output ports of the PC
- Connect devices to the ports at back of the PC

Booting System

The process of loading the system files of the operating system from the disk into the computer memory to complete the circuitry requirement of the computer system is called booting. The system files of MS. DOS are:

Types of Booting:
There are two types of booting:

| MEA - Mumbai

Cold Booting: If the computer is in off state and we boot the computer by pressing the power switch 'ON' from the CPU box then it is called as cold booting.

Warm Booting: If the computer is already '**ON'** and we restart it by pressing the '**RESET'** button from the CPU box or CTRL, ALT and DEL key simultaneously from the keyboard then it is called warm booting.

Starting a PC for the First Time – I

Basic Input Output System (BIOS) checks all peripheral devices, memory and hardware of the PC

Power on Self test (POST) is performed before the PC boots operating system

Starting a PC for the First Time – II

Functions performed by POST:

- Checking power supply and motherboard
- Comparing system configuration with PC Configuration Program
- Checking memory devices and drives
- Checking system memory
- Starts display and audio devices

How to start the Computer in Ms. Windows mode?
There is nothing special you need to start this system. Just,

1. Switch ON the Power Supply.
2. Switch ON the CPU and,
3. Switch ON the Screen (Monitor).

How to Shutdown (Turn Off) the Computer?
Before shutting down the Computer, close all opened windows at first. Then,
1. Click on **Start** button.
2. Click on **Shutdown** (Turn Off Computer).
Then, Computer asks you:
What do you want the Computer to do?

• **Standby**
• **Shutdown (Turn Off)**
• **Restart**
• **Restart in MS-DOS mode.**

Note: The options will be different from one OS to another.

3. Choose 2nd option (i.e. **Shutdown**/Turn Off).
4. Click on OK.
Then, wait until the message "**It's now safe to turn off your Computer**".
5. Then, Switch Off the screen.
6. Switch Off the CPU.
7. At last, Switch Off the power supply.

What is a hardware ?

Hardware is best described as a device that is physically connected to your computer or something that can be physically touched. A CD-ROM, Monitor, Printer, and video card are all examples of computer hardware. Without any hardware your computer would not exist and software would have nothing to run on. The image to the right is of a web cam, an example of an external hardware peripheral that allows users to make basic videos, transmit videos of themselves over the Internet, and take pictures.

Core Hardware

- Motherboard
- Processors
- RAM
- Hard Disk
- Floppy Drive
- Optical Drives (CD-ROM)
- Power Supply Unit
- Mouse
- Keyboards
- Monitors
- Graphics Cards
- Sound Cards
- Speakers and Headphones

BIOS / CMOS

BIOS (Basic Input Output System) refers to a set of instructions that are critical for the functioning of the system. These instructions include information about the components connected to the motherboard, like the hard disk, RAM, and the configuration of .the many onboard subsystems.

CMOS (Complementary Metal Oxide Semiconductor) refers to the chip on which the BIOS instructions are stored. CMOS is the name of the technology behind the chip that stores the BIOS.


Chipset

Refers to a set, usually a pair, *of* microprocessors that are present on the motherboard; and which controls the communication between every component *of* the system-the CPU, the RAM, the expansion cards, and other peripherals plugged into the system.

The Northbridge is near the CPU here, and the Southbridge is just below the PCI-E Slot
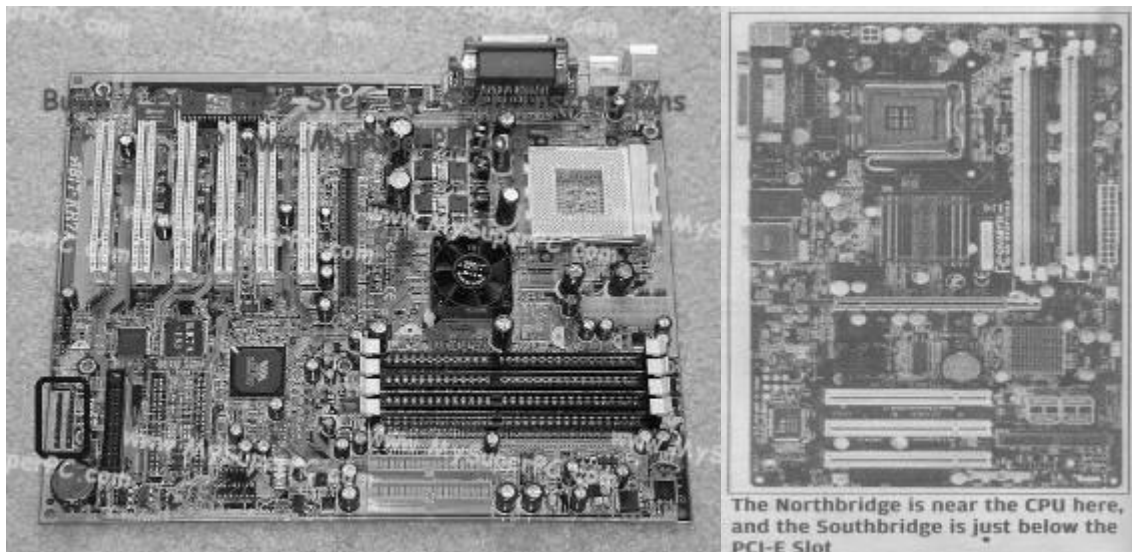
CPU Socket

The motherboard carries the interface to connect the CPU. This is referred to as a Socket. There are many socket types, with no dear naming scheme, though most are named after the number of pin sockets they con- Intel's Socket 775
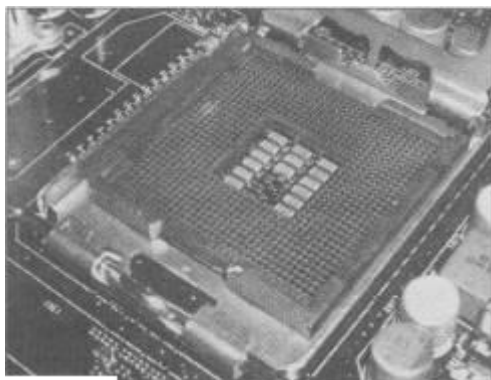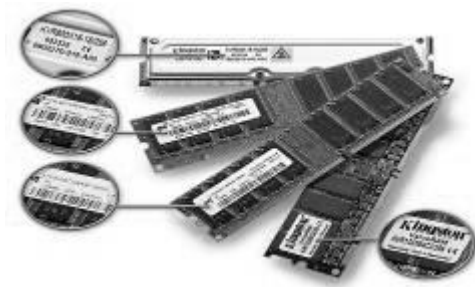

RAM Slots

These refer to the interface to connect RAM modules. Memory is organized in the form of banks, with one or more slots constituting a bank. Each bank has a dedicated channel to the memory controller.
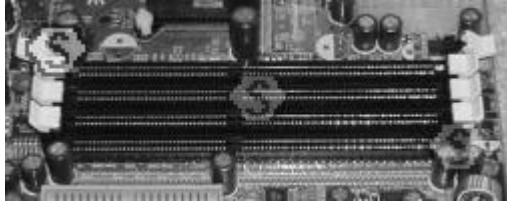
RAM

Display Port

AGP

The Accelerated Graphics Port is present only in very few new motherboards.

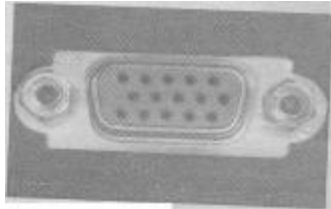**PCIE**

Motherboards usually carry two types of pcm slots-PCIE X16 and PCIE X2.

The 15-pin, mini DB 15 port, also called the VGA / Display port is used to connect an analogue monitor. With LCD monitors becoming popular, the DVI (Digital Video Interface) port is also frequently seen. Today, expansion slots on motherboards are mostly PCI, PCIE, and AGP.

Audio

Audio connections are color-coded with Green for speaker output, Red for Microphone input, and Blue for other line input.


PCI

Peripheral Component Interconnect is still widely seen in motherboards, though it is older than AGP. The wide availability of PC I cards is one reason for this. This bus is 32 bits wide and operates at 33 MHz, and has a maximum data transfer speed of 132 Megabytes per second. This bandwidth is divided between all slots and also the storage devices, like the hard disks.
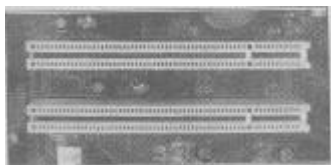
This is a six-pin socket used to connect PS/2-compatible mice and keyboards.
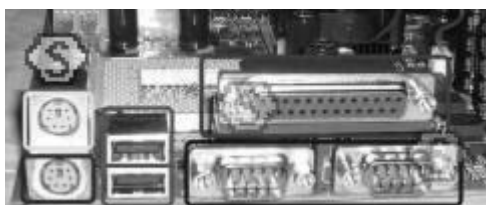
SATA

Serial ATA is still only commonly seen on hard disks, though other devices like optical drives are also supported.
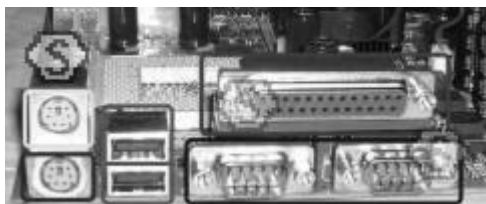

RJ 45/ LAN (LAN Port)

RJ-45, or the LAN port, allows the PC to be connected to a network, whether to a LAN or to the Internet via a broadband modem. This is the socket to connect a LAN cable (used for networking).
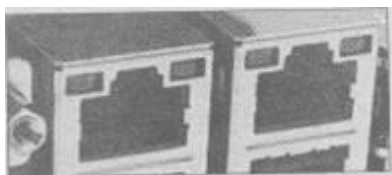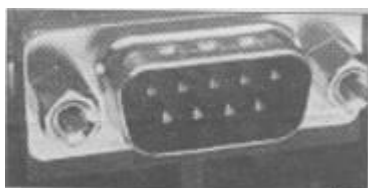

PS2 Port

The PS2 port is used to connect PS2 compatible keyboard and mouse. The violet-colored port is usually for the keyboard, and the green one is for the mouse.

Serial

Its importance has declined after USB d@vices became abundant,. Presently, mostly used to connect. devices like external modems.

FireWire Port

FireWire ports are not as common as USB, but do make an occasional' appearance on the back panel. FireWire exists in two versions: FireWire 400, which offers a maximum data transfer rate of 400 Mbps, and FireWire 800, which offers double that.

Parallel Port

The DB 25 or Parallel port is the traditional port for older printers. These are rarely seen today.
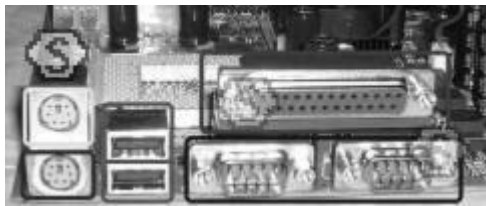
USB

Abundant in every system, with up to 10 USB connections (not all of them are on the back panel) per motherboard.

Monitor

Hard disk
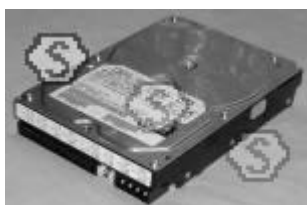
The CD-ROM

The speed of the CD-ROM drive is not that big a concern, but with a Lite-On drive you can be sure you're getting what you paid for. The Lite-On 52x CD-ROM looks like this in its retail box.

Modem

Keyboard & Mouse

Basic Computer Literacy
Quiz One

1. Which one is not an output device?
- Printer
- Monitor
- Keyboard
- Modem

2. Which one works as an output and input device?
- Modem
- Scanner
- Mouse
- Monitor

3. All computers must have:
- Word processing software
- An operating system
- A printer attached
- A virus checking program

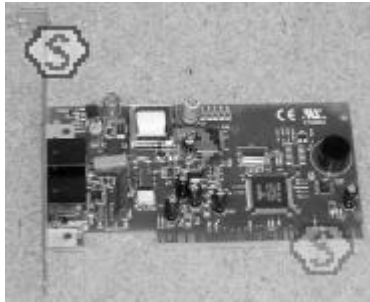**4. The brain of the computer is called:**
- Random Access Memory or RAM
- Central Processing Unit or CPU
- Read Only Memory or ROM
- BIOS

5. An operating system is:
- Integrated software
- CD-ROM software
- Application software
- System software

6. Software is:
- A computer program
- A set of instructions
- All of the above
- Only in operating systems

7. One MB is equal to:
- The amount of RAM in every computer
- 1 billion bytes
- 1024KB
- 1 thousand bytes

8. The resolution of a printer is measured in:
- Megabits
- Hz
- Dots per inch (DPI)
- Inches (diagonal)

9. Windows and Macintosh computers:
- Are both manufactured by Motorola
- Both use Intel microprocessors
- Use the same operating system
- Are not compatible

10. A computer port is used to:
- Communicate with other computer peripherals

- Download files from the web
- Communicate with all hard drives
- Connect computers together

Quiz Two

11. Which computer is the fastest?
- PII 600MHz
- PIII 600MHz
- Pentium 600MHz
- 486 Turbo

12. Which hard disk will be able to store more information?
- 24MB
- 2400KB
- 24Gig
- 240MB

13. In order for your computer to play music you need:
- A network card and speakers
- A sound card and speakers
- Nothing more than the internal speaker
- A CD-ROM drive

14. In order to access the World Wide Web you need:
- An Internet connection, an Internet Service Provider and browser software
- Only Internet Explorer or Netscape Navigator
- A modem and a browser
- Nothing. All computers can access the Internet

15. If you have two different printers attached to your computer:
- It is not possible to have two printers attached to a single computer
- You need to install a single printer driver
- You need to use application software that can recognize both printers
- You need to install two different printer drivers in order to be able to print to either printer

16. Which file extensions indicate only graphics files?
- BMP and DOC
- JPEG and TXT
- TXT and STK
- BMP and GIF

17. Which Windows program do you use to manage folders and files?
- Windows Explorer
- Windows Accessories
- Microsoft Office
- Windows Control Panel

18. What is a URL:
- An email address

- The title of a web site
- The address of a page on the World Wide Web
- A communication method between computers and printers

19. Which media holds more information?
- Floppy diskette
- DVD
- CD-ROM
- Zip drive

20. Which one is an email address:
- http://vianet.com/index.htm
- D:\\Email\Standard
- joesmart@billme.com
- Chaminade.org/teachers/mailaddresses

Quiz Three

21. CPU means (1 point)
- Central Processing Unit
- Controlled Program Utilization
- Computer Programming Unit
- Computerized Processing Unit

22. Computers use a special code for representing letters and numbers, known as the (1 point)
- processing code
- binary code
- CRX code
- integrated code

23. The main circuit board in the computer that connects the parts of the computer is the (1 point)
- hard drive
- motherboard
- fatherboard
- main board

24. The part of the computer that processes the information is the (1 point)
- floppy disk
- CD-ROM drive
- monitor
- microprocessor

25. Which of these is not an example of an input device? (1 point)
- keyboard
- mouse
- hard drive
- scanner

26. Processing speed in computers is measured in (1 point)
- milli volts (mV)
- hertz (Hz)

- megahertz (MHz)
- rpm's

27. External devices such as printers and scanners plug into ___ in the back of the computer. (1 point)
- RX-5's
- expansion slots
- outlets
- ports

28. Windows is (1 point)
- a kind of operating system.
- a graphics display device.
- a monitor display system.
- a video game.

29. To "boot a computer" means to (1 point)
- add extra drives.
- turn on the sound.
- turn it on.
- throw it out - it's outdated.

30. The hard drive in the computer is usually (1 point)
- Drive A.
- Drive B.
- Drive C.
- Drive H.

31. A "byte" is (1 point)
- found in the upper right corner of a window screen.
- a group of 8 bits of code.
- the capacity of a sound card.
- the part that moves on a disk drive.

32. When you click SAVE on the monitor, and there is no floppy disk in a drive, the document or application you're using is stored (1 point)
- on the RAM chips.
- on the CD-ROM drive.
- in ROM memory.
- on the hard drive.

33. Pictures on the display screen (monitor) are made up of (1 point)
- pixels.
- layers of color.
- bits.
- video "packets"

34. Temporary memory is called (1 point)
- RAM
- CAD
- DOS

- ROM

35. Which of these is not one of the three main functions of a microprocessor? (1 point)
- fetch
- store
- decode
- execute

36. Which of these is not an example of computer hardware? (1 point)
- video card
- mouse
- CD-ROM drive
- Windows

37. To "debug" the system means to (1 point)
- clean it.
- find and correct errors.
- decode it.
- set up icons.

38. A megabyte is (1 point)
- 1,000 bytes
- 1 byte
- 1 million bytes
- 1 trillion bytes

39. Formatting a disk means (1 point)
- installing an operating system on it.
- setting up sections on the disk to store the files in.
- cleaning the disk from any dust contaminates.
- programming the disk so data on it can't be erased.

40. A system that connects individual computers together is a(n) (1 point)
- operating system.
- network.
- tape drive system.
- partnered path.

41. When you use a PC, you are using a (1 point)
- programmable console.
- powered calculating machine.
- personal computer.
- processing contraption.

42. VDU stands for:
- Video Display Unit
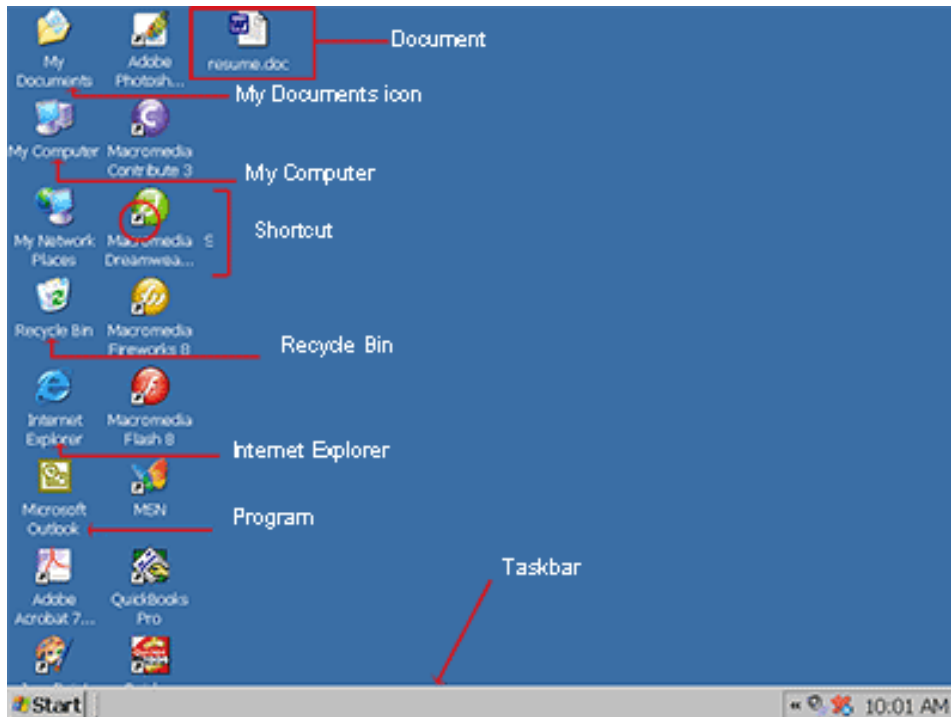- Visible Display Unit
- Visual Display Unit
- Video Diode Unit

Windows operating systems

WINDOWS-XP

What is a window?

A window is an area on your desktop within which all Windows-based programs run.

What is a desktop?

When you start your computer, the first thing you see is the desktop. The desktop is your work area.

Taskbar	By default, the taskbar is located on the bottom edge of the desktop. You can click the taskbar and drag it to other locations. The Start button, active program buttons, icons for quick access to programs, and the current time are located on the taskbar.
My Computer	The My Computer icon provides access to the resources on your computer. You can access your drives and other peripherals by clicking on the My Computer icon.
Internet Explorer	The Internet Explorer icon launches the Internet Explorer browser.
The Recycle Bin	When you delete an object, Windows XP sends it to the Recycle Bin. You can restore objects that are located in the Recycle Bin or you can permanently delete them.
Shortcut icon	Icons with an arrow in the lower left corner are shortcut icons. Click the icon for quick access to the object they represent (program, document, printer, and so on).
Program, folder, and document icons	Program, folder, and document icons do not have an arrow in the lower left corner. They represent the actual object and provide direct access to the object.

How to shut down computer?

To shut down your computer:

Start

- Click the Start button. The Start menu will appear.
- Click Turn Off Computer. The Turn Off Computer dialog box will appear.
- Click the Turn Off icon. Your computer will shut down.

How to restart my computer?

You may need to shut down and restart your computer after installing a new program or if your system becomes unstable. To shut down and immediately restart your computer:

1. Click the Start button. The Start menu will appear.
2. Click Turn Off Computer. The Turn Off Computer dialog box will appear.
3. Click the Restart icon. Your computer will restart.

What is Standby mode?

When your computer is in the Standby mode, your computer consumes less electricity, but is ready for immediate use. However, if the computer loses electrical power while in the standby mode, any information you have not saved will be lost.

How to start a program?

To start a program:

- Click the Start button, located in the lower left corner of your screen.
- Highlight Programs. The Program menu will appear.
- Move to the Program menu and highlight the program you want to start. If you see a right pointer next to your selection, a submenu will appear. Refine your choice by highlighting the appropriate selection on the submenu. Continue until you get to the final submenu.`
- Click the program name to start the program.

Note: A chevron ⌄ at the bottom of the list of options means that there are additional options. To view the additional options, click the chevron.

How to add an item located on desktop to the Start or to a Program menu?

To add an item on the desktop to the Start or to a Program menu:

- Click and drag the item on top of the Start button.
- Release the mouse button when the Start menu appears.
- The item will appear on the Start menu.

- If you would prefer to have the item on a Program menu or submenu of the Start menu, drag the item from the Start menu to the Program menu or submenu.

What is Windows Explorer?

Windows Explorer is a place where you can view the drives on your computer and manipulate the folders and files. Using Windows Explorer, you can cut, copy, paste, rename, and delete folders and files.

How to Open Windows Explorer?

To open Windows Explorer:

- Click the Start button, located in the lower left corner of your screen.
- Highlight programs.
- Highlight Accessories.
- Click Windows Explorer.

Alternatively, you can open Windows Explorer by holding down the Windows key and typing e (Windows-e).

How to add an item located in Windows Explorer to the Start menu or to a Program menu?

To add an item located in Windows Explorer to the Start menu or to a Program menu:

- Click the Start button. The Start menu will appear.
- Highlight Settings. A submenu will appear.
- Click Taskbar and Start Menu. A dialog box will appear.
- Click the Start Menu tab.
- Click the Customize button.
- Click Add.
- Type the path to the item you want to add, or use Browse to navigate to the item.
- Click Next.
- Double-click an appropriate folder for the item.
- Click Finish.
- Click OK.
- Click OK again. The item will appear on the menu.

How to remove an item from the Start menu or from a Program menu?

To remove an item from the Start menu or from a Program menu:

- Click the Start button. The Start menu will appear.
- Highlight Settings. A submenu will appear.
- Click Taskbar and Start Menu. A dialog box will appear.
- Click the Start Menu tab.
- Click Customize.
- Click the Remove button.
- Find and click the item you want to remove.
- Click the Remove button. You will be prompted.

- Click Yes.
- Click Close.
- Click OK.
- Click OK again.

How to copy an item that is located on the Start menu or on a Program menu?

To copy an item located on the Start menu or on a Program menu:

- Highlight the item.
- Right-click. A context menu will appear.
- Click Copy.

How to rename an item on the Start menu or on a Program menu?

To rename an item on the Start menu or on a Program menu:

- Highlight the item.
- Right-click the item.
- Click Rename. The Rename dialog box will appear.
- Type the new name in the New Name field.
- Click OK.

How to delete a file from the Start menu or from a Program menu?

To delete a file from the Start menu or from a Program menu:

- Highlight the item.
- Right-click.
- Click Delete. You will be prompted.
- Click Yes.

How to re-sort the Start or a Program menu?

To resort a menu:

- Go to the menu.
- Right-click.
- Click Sort By Name.

Note: Some menus cannot be re-sorted.

How to quickly find files and folders?

Windows XP enables you to quickly locate files and folders on your drives. The search option provides you with four search options: Pictures, music, or video; Documents; All files and folders; and Computers and people. To quickly find a file or folder:

- Click the Start button. The Start menu will appear.
- Highlight Search.

- Click Files or Folders. The Search Results dialog box will open.
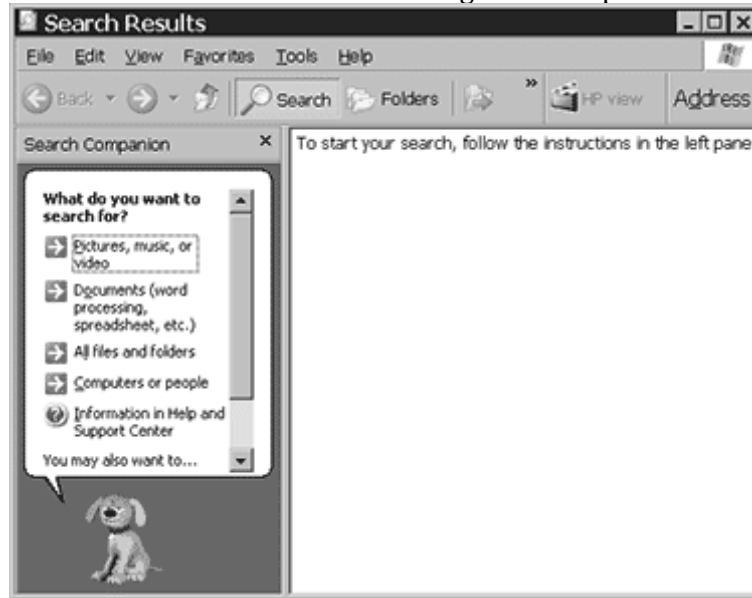
- Choose an option.
- Enter your search criteria. Use the table that follows to help you.
- Click search. The results of your search will appear in the right pane.

Field	Entry Type
All or part of the file (document) name: Computer name:	Enter the filename, the first few letters of the filename, or any letters found in the filename. Use the * as a wild card. For example, to find all of the files that begin with r and end in the extension .doc, enter r*.doc. To find files that begin with resume and have any extension, enter resume.*.
A word or phrase in the file:	If you are looking for a file that has a specific word or phrase in the file, enter the word or phrase in this field.
Look In:	Select the drive or folder you want to search.
Specify Dates:	Select from Modified, Created, or Last Accessed. Select Modified to find all files modified since the date criteria you enter, select Created to find all files created since the date criteria you enter, or select Last Accessed to find all files accessed since the date criteria you enter.
Between/During the Previous	Specify the date search criteria you want to use. Between allows you to search for files modified, created, or accessed between two dates. During allows you to search for files modified, created, or accessed during the previous number of days or months you specify.

What is the Most Recently Used Document list?

As you work, Windows XP tracks the last 15 files you used. It lists these files on the Most Recently Used Document list. To view the Most Recently Used Document list:

- Click the Start button.
- Highlight Documents. The most recently used documents will display.
- To open a file listed on the Most Recently Used Document list, click the file name.

**How to clear Most Recently Used Document list?**

To clear the Most Recently Used Document list:

- Click the Start button. The Start menu will appear.
- Highlight Settings.
- Click Taskbar and Start menu. A dialog box will appear.
- Click the Start Menu tab.
- Click Customize.
- Click Clear.
- Click OK.
- Click OK again.

How to change the date and/or time?

To change the date and/or time:

- Click the Start button, which is located in the lower left corner of the screen. The Start menu will appear.
- Highlight Settings. A submenu will appear.
- Click Control Panel. The Control Panel will open.
- Click Date/Time. The Date/Time Properties dialog box will appear.
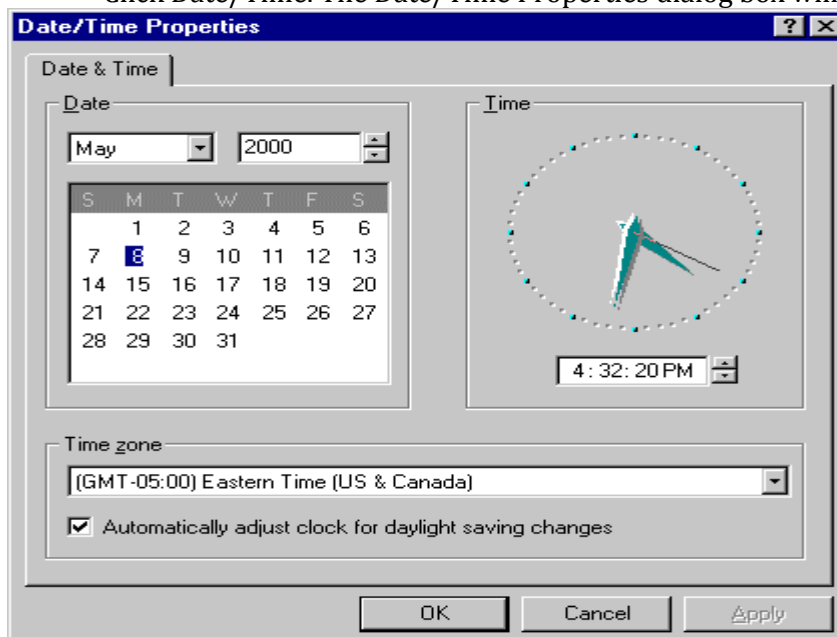
- In the Date frame, select the month and year.
- In the Month field, click to open the drop-down menu and select the current month.
- Type the year in the Year field or use the arrows next to the field to move forward or backward until you get to the current year.
- The Time field is divided into four segments: hour, minutes, seconds, and AM and PM. To make an adjustment:
- Click in the segment and either type in the correct information or use the arrow keys on the right side to select the correct hour, minute, second or AM or PM.
- Time Zone:
- Click the Time Zone tab.
- Choose the correct time zone from the drop-down menu.
- If you want the clock to automatically adjust to daylight saving time, check the box on the screen.
- Click the Apply button.
- Click OK.

How to install a new printer?

To install a new printer:

- Make sure your printer is plugged in, connected to your computer, turned on, and has paper in it.
- Click the Start button. The Start menu will appear.
- Highlight Settings. A submenu will appear.
- Click Printers and Faxes. The Printers and Faxes control panel will appear.
- Double-click on Add Printer. The Add Printer Wizard will open.
- Follow the onscreen instructions.

How to cancel a print job?

To cancel a print job:

- Click the Start button. The Start menu will appear.
- Highlight Settings. A submenu will appear.
- Click Printers and Faxes. The Printers and Faxes control panel will appear.
- Double-click the printer to which you sent the print jobs. The Printer window will open.
- Click the job you want to stop. If you want to stop more than one job, hold down the Control key while you click the additional jobs.
- Click Document, which is located on the menu bar.
- Click Cancel.

How to restart print jobsI temporarily stopped?

To restart a print job you temporarily stopped:

- Click the Start button. The Start menu will appear.
- Highlight Settings. A submenu will appear.
- Click Printers and Faxes. The Printers and Faxes control panel will appear.
- Double-click the printer to which you sent the print job. The Printer window will open.
- Click the documents you paused. If more than one document has been paused, hold down the Ctrl key as you click the additional documents.

- Click Document, which is located on the menu bar.
- Click Pause. The checkmark next to Pause should disappear.

What is a desktop shortcut?

A desktop shortcut, usually represented by an icon, is a small file that points to a program, folder, document, or Internet location. Clicking on a shortcut icon takes you directly to the object to which the shortcut points. Shortcut icons contain a small arrow in their lower left corner. Shortcuts are merely pointers�deleting a shortcut will not delete the item to which the shortcut points.

How to create a desktop shortcut?

To create a shortcut to an item located on the Start menu:

- Click Start. The Start menu will appear.
- Locate the item to which you want to create a shortcut. If the item is located on a submenu, go to the submenu.
- Click and drag the item to your desktop.

How to turn a Web link into a desktop shortcut?

To turn a Web link into a desktop shortcut, click the link in your browser window (usually underlined text) and drag it to the desktop. An icon will appear on your desktop. When you click the icon, your browser will open and you will go directly to the Web page.

How to rename a desktop shortcut?

To rename a shortcut:

- Right-click the shortcut.
- Click Rename.
- Type the new name.

How to delete a desktop shortcut?

To delete a shortcut:

- Click the shortcut.
- Press the Delete key.
- Click Yes.

What is wallpaper?

Wallpaper is the background that displays on your desktop.
How to change my wallpaper?
To change your wallpaper:
- Right-click your desktop.
- Highlight Properties.
- Click the Desktop tab.

- Select the wallpaper you want from the list that appears in the Background box.

Note: If you would like to display an image you created, you can click Browse to find the image.

Select how you want your image to appear on the screen. Choose from the following:

Center	Place the image in the center of the screen.
Tile	Have the image display as tiles across and down the screen.
Stretch	Stretch the image so the image covers the entire screen.

What is a font?

A font is a set of characters represented in a single typeface. Each character within a font is created by using the same basic style.

Explain font size?

Fonts are measured in points. There are 72 points to an inch. The number of points assigned to a font is based on the distance from the top to the bottom of its longest character.

How to install a new font?

To install a new font:

- Click the Start button.
- Highlight Settings.
- Click Control Panel.
- Click Fonts. The Fonts window will open.
- Click File, which is located on the menu bar.
- Click Install New Font.
- Specify the drive and folder where the font you want to install is currently located.
- Select the font you want to install from the fonts listed in the List of Fonts box.
- Select Copy Fonts to Fonts Folder (this will put a copy of the font you are installing in the Fonts folder).
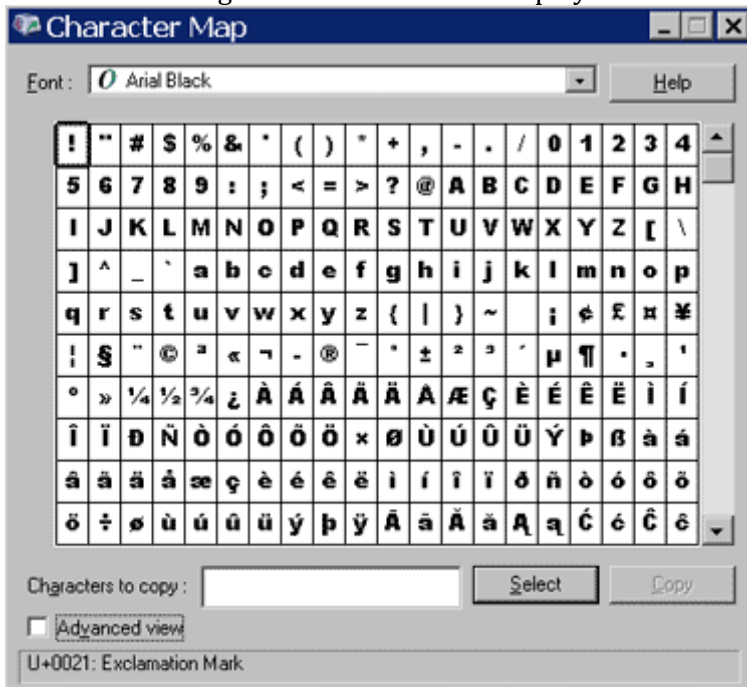- Click OK.

What is the Character Map?

The Character Map displays the characters available in a selected font. To view the Character Map dialog box:

- Click the Start button.
- Highlight Programs.
- Highlight Accessories.
- Highlight System Tools.

| MEA - Mumbai

- Click Character Map.
- The dialog box shown here will display.

What are folders?

Folders are used to organize the data stored on your drives. The files that make up a program are stored together in their own set of folders. You will want to organize the files you create in folders. You will want to store files of a like kind in a single folder.

How does Windows XP organize files and folders on drives?

Windows XP organizes folders and files in a hierarchical system. The drive is the highest level of the hierarchy. You can put all of your files on the drive without creating any folders, but that is like putting all of your papers in a file cabinet without organizing them into folders. It works fine if you have only a few files, but as the number of files increases, there comes a point at which things become very difficult to find. So you create folders and put related material together in folders.
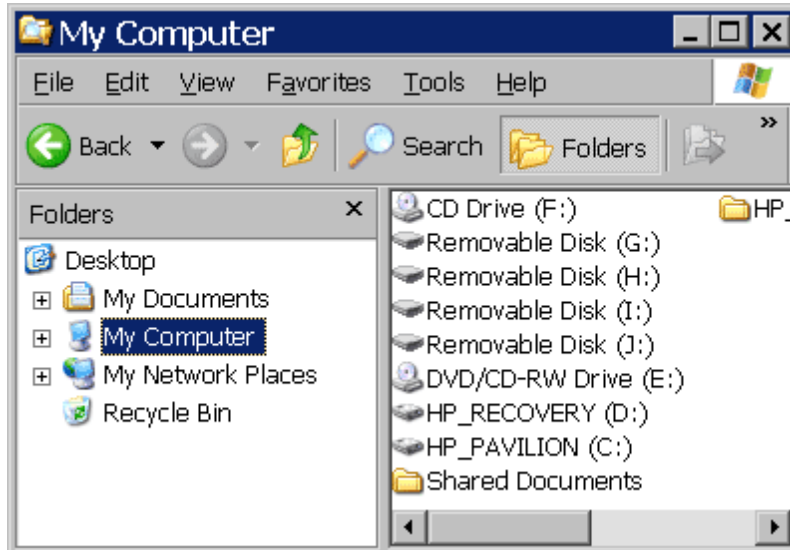
A diagram of a typical drive and how it is organized is shown here.
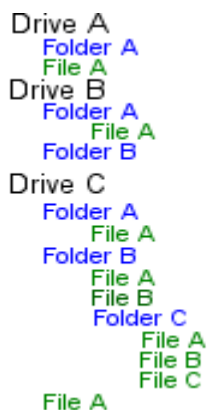
At the highest level, you have some folders and perhaps some files. You can open any of the folders and put additional files and folders into them. This creates a hierarchy.

Explain the Windows Explorer window?

Yes. When you open Windows Explorer, the screen shown here will appear.

Windows XP separates the window into two panes. If you click an object in the left pane, the contents of the object display in the right pane. Click Desktop and the contents of the Desktop folder display on the right. Click My Computer and your computer resources display on the right. To see the contents of a drive, click the drive. To see the contents of a folder, click the icon for the folder in the left pane.

How to create a new folder when in Windows Explorer?

To create a new folder:

- In the left pane, click the drive or folder in which you want to create the new folder.
- Click any free area in the right pane. A context menu will appear.
- Highlight New.
- Click Folder.
- Type a name for the folder.

Explain Windows Explorer views?

Windows Explorer displays information in the right pane. Windows Explorer provides you with the following choices: Thumbnails, Tiles, Icons, List, and Details.

Thumbnails view displays images. These images represent the contents of folders and files. For example, if a folder contains pictures, up to four of the pictures in the folder will be displayed on the folder icon.

Tiles view and Icons view display icons to represent drives, folders, and the contents of folders. The icons displayed when you choose Tiles view are larger than the icons that display when you choose Icon view.

List view displays all of the files and folders without supplying the size, type, or date modified.

Details view displays the size, type, and date modified.

To change the view:

- Right-click any free area in the right pane. A context menu will appear.
- Highlight View.
- Select the view you want from the drop-down menu.

How do I delete a file or folder?

- To delete a file or folder:
- Right-click the file or folder you want to delete. A context menu will appear.
- Click Delete. Windows Explorer will ask, "Are sure you want to send this object to the recycle bin?"
- Click Yes.

How do I copy a file or folder?

To copy a file or folder:

- Right-click the file or folder you want to copy. A context menu will appear.
- Click Copy. The file or folder should now be on the Clipboard.

How do I rename a file or folder?

To rename a file or folder:

- Right-click the file or folder. A context menu will appear.
- Click Rename.
- Type the new name.

Switch between windows.

If you have several windows open at the same time, the window on top is the window with focus. You can only interact with the window with focus. To change windows, do one of the following:

Click anywhere on the window you want to have focus.

Hold down the Alt key and press the Tab key (Alt-Tab) until you have selected the window to which you want to change.

All active files display on the taskbar. Click the taskbar button for the window you want to have focus.

What are scrollbars?

In many programs, if the contents of the work area do not fit in the window, scrollbars will appear. A vertical scrollbar will appear at the right side of the window and a horizontal scrollbar at the bottom of the window, depending on the fit. The vertical scrollbar provides a way to move up and down. The horizontal scrollbar provides a way to move from left to right.

The scroll box indicates where you are in your document. If the scroll box is at the top of the scrollbar, you are at the top of the document. If the scroll box is in the center of the scrollbar, you are in the center of the document.

How do the scrollbars work?

To move up and down one line at a time:

- Click the arrow at either end of the vertical scrollbar.
- To move from side to side one character at a time:
- Click the arrow at either end of the horizontal scrollbar.
- To move approximately one window at a time:
- Click above the scroll box to move up.
- Click below the scroll box to move down.
- To scroll continuously:
- Click the appropriate arrow and hold down the mouse button.
- To move to a specific location:

Left-click the scrollbar and hold down the left mouse button until you arrive at the location. For example, if you want to go to the center of the document, click the center of the scrollbar and hold down the left mouse button.

Or, drag the scroll box until you arrive at the desired location.

What is an icon?

An icon is a graphic image. Icons help you execute commands quickly. Commands tell the computer what you want the computer to do. To execute a command by using an icon, click the icon.

What is a menu?

Menus provide a way for you to send commands to the computer (tell the computer what you want the computer to do). When you open a window, menu options are listed from left to right just below the title bar on the menu bar. When you click a menu item, a drop-down menu appears. Select the command you want to execute from the drop-down menu. An ellipsis after a drop-down menu item signifies that there are additional options; if you select that option, a dialog box will appear.

What is a shortcut key?

You can use shortcut keys to execute a command quickly by pressing key combinations instead of selecting the commands directly from the menu or clicking on an icon. When you look at a menu, you will notice that most of the options have one letter underlined. You can select a menu option by holding down the Alt key and pressing the underlined letter. You can also make Alt-key selections from drop-down menus and dialog boxes.

Explain cut, copy, and paste.

The Cut, Copy, and Paste commands are nearly universal. These three functions are used by almost every Windows program and perform more or less the same function in each of them. You can cut, copy, and paste programs, disks, and text, to name just a few things.

Cut: When you cut something, it is deleted from its current location and saved to the Clipboard. Information saved to the Clipboard stays there until new information is either cut or copied. Each time you execute Cut or Copy, you replace the old information on the Clipboard with whatever you just cut or copied. You can paste the same Clipboard information as often as you like.

Copy: Copy is similar to Cut except the original item is not deleted. When you copy something, a copy of the item is saved to the Clipboard. Information stored on the Clipboard stays there until new information is either cut or copied. Each time you execute Cut or Copy, you replace the old information on the Clipboard with whatever you just cut or copied. You can paste Clipboard information as often as you like, until you replace it with something else.

Paste: You can place information on the Clipboard wherever you like. Execute the Paste command and information you have cut or copied is placed wherever your cursor is located.

Clipboard: The Clipboard is the storage area for items that have been cut or copied. Each time you execute Cut or Copy, you replace the old information on the Clipboard with whatever you just cut or copied. You can paste Clipboard information as often as you like, until you replace it with something else.

There are three major methods of cutting, copying, and pasting. The three methods are using the menu, using keyboard shortcuts, and using icons. We will review all of them. In most programs, they will work exactly as described here.

Using Keyboard Shortcuts:

Cut

Select what you want to cut.

Press Ctrl-x.

Paste

Place the cursor at the point where you want to place the information that is currently on the Clipboard.
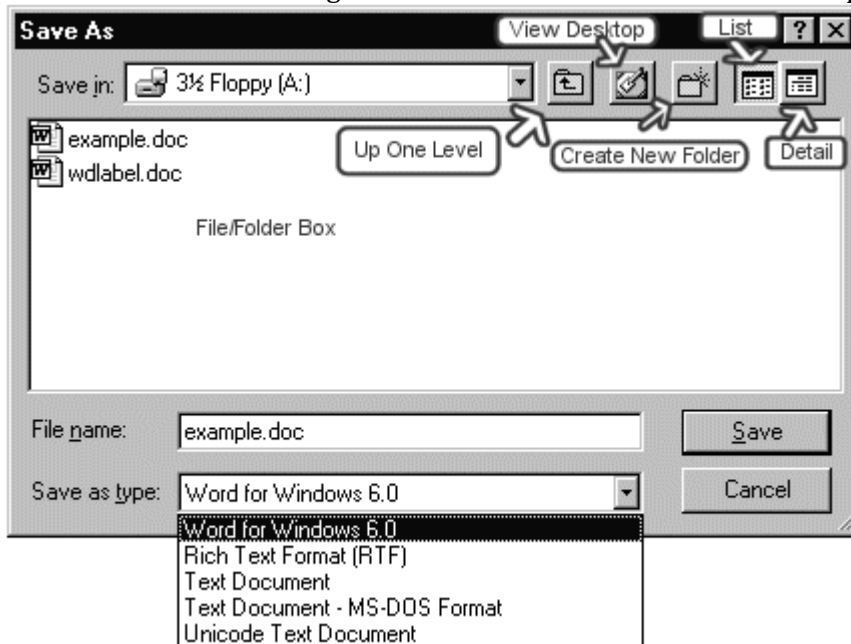
Press Ctrl-v.

Copy

Select what you want to copy.

Press Ctrl-c.

To save a file:

- Click File, which is located on the menu bar. A drop-down menu will appear.
- Click Save. A dialog box similar to the one shown here will appear.

Field/Icon	Entry
Save In field	Click to open the menu-box and select the drive and folder to which you want to save the file.
Up One Level icon	Click this icon to move up one level in the folder hierarchy.
View Desktop icon	Click this icon to move to the Desktop folder.
Create a New Folder icon	Use the Create a New Folder icon to create a new folder: Click the Create New Folder icon. Type the folder name and press Enter.

|	
	Click the folder you just created to open the folder.
List icon	Your program displays files and folders in the center of the dialog box. To have the files display without the size, type, and date modified, click the List icon.
Detail icon	Your program displays files and folders in the center of the dialog box. To have the files display with the size, type, and date modified, click the Detail icon.
File/Folder box	Your program displays files and folders in File/Folder box. Click a folder to open the folder. Click a file if you want the current file to write over (replace) that file.
File Name field	Enter the name you want your file to have in this field.
Save As Type field	Click to open the drop-down box and select a file type.
Save button	Click the Save button to save your file.
Cancel button	Click the Cancel button if you have changed your mind and do not wish to save your file.

What is a drop-down or pull-down menu?
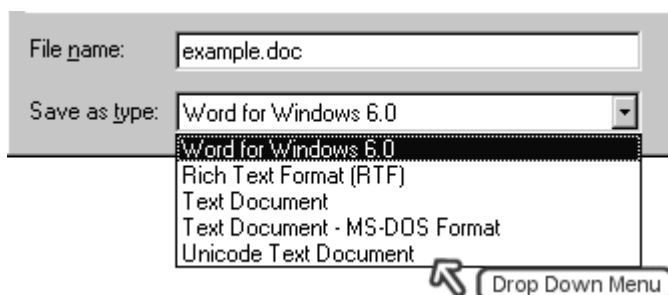
Fields with a drop-down menu have a small downward-pointing arrow next to them. You click the arrow and a list of options appears. You select the option you want from the list. You can also open the drop-down menu by holding down the Alt key and pressing the down arrow.

You can use the arrow keys to move up and down in a drop-down menu. You can also move to an item by typing the first few letters of the option.

What are radio buttons?
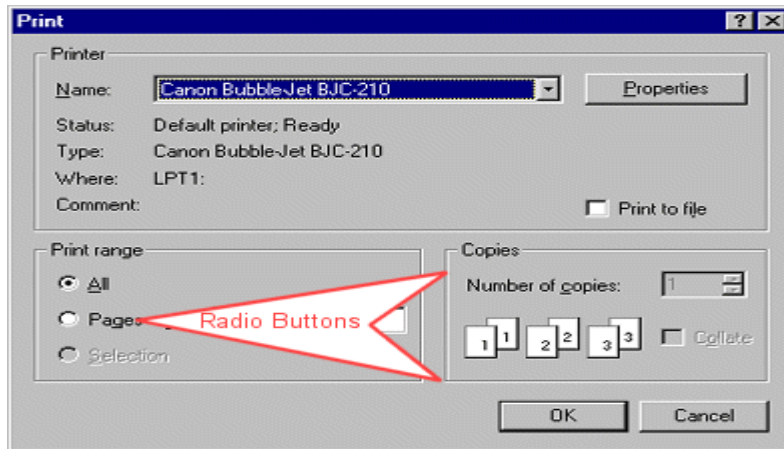
Windows XP and programs that run under Windows XP use radio buttons to present a list of mutually exclusive options. You can select only one of the options presented. Radio buttons are usually round. A dot in the middle indicates that the option is selected.

Windows XP color box
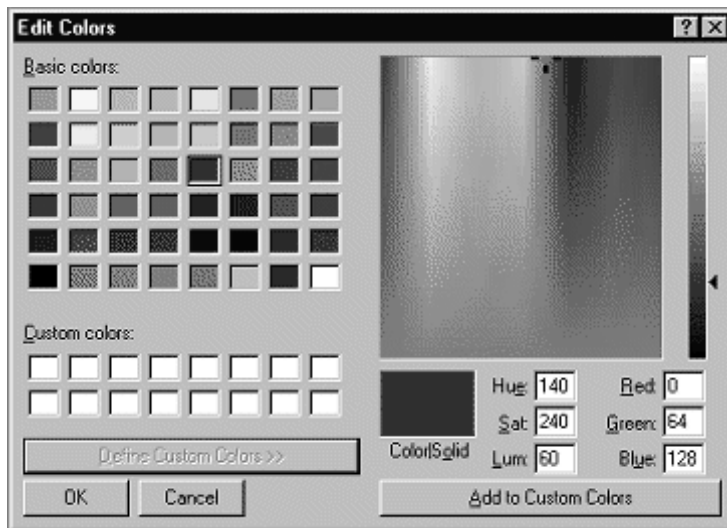
Yes. The Windows color box provides 48 basic colors. You select a color by clicking on the square of the color. You can save 16 custom colors. To select a custom color, expand the window by clicking on the Define Custom Color button. A color matrix box and a luminosity slider will appear. Move the pointer in the color matrix box horizontally to adjust the hue. Move the pointer vertically to adjust the saturation. Use the luminosity slider to adjust the luminosity. The Hue, Saturation, Luminosity (HSL) values and Red, Green, Blue (RGB) values display at the bottom of the window. After you have selected a color, you can add the color to a Custom Color square by clicking on the Add to Custom Colors button.

The Color|Solid box may display two colors. The left side of the box displays the dithered color and the right side of the box displays a closely related non-dithered color. There are 256 non-dithering colors. Non-dithering colors should display the same on all computer monitors; consequently, Web developers prefer them.

What is a software ?

Software, simply are the computer programs. The instructions given to the computer in the form of a program is called Software. Software is the set of programs, which are used for different purposes. All the programs used in computer to perform specific task is called Software. Without any type of software the computer would be of no use.

Types of software

Software is the computer program that runs on computer. Four basic categories of software- Specially Application & System software is mostly used in desktop computers.

- Application software.
- System software.
- Simulation software.
- Educational software.

1-Application software:

a) **Package Software**
 Ms. Office 2003, Ms. Office 2007, Macromedia (Dreamweaver, Flash, Freehand), Adobe (PageMaker, PhotoShop)
b) **Tailored or Custom Software**
 SAGE (Accounting), Galileo/Worldspan (Travel) etc.

2- System software:
a) **Operating System Software**
 DOS, Windows XP, Windows Vista, Unix/Linux, MAC/OS X etc.
b) **Utility Software**
 Windows Explorer (File/Folder Management), Windows Media Player, Anti-Virus Utilities, Disk Defragmentation, Disk Clean, BackUp, WinZip, WinRAR etc...
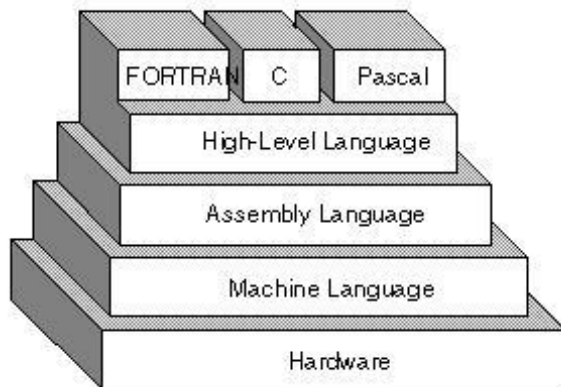
Computer Languages & Scripting:

a) Low Level Language

i) Machine Level Language
ii) Assembly Language

Machine language: These language instructions are directly executed by CPU

Assembly language: The endeavor of giving machine language instructions a name structure that means bit strings of instructions of machine language are given name here

b) High Level Language

High Level Language are user friendly language ...more natural language than assembly language.

Assembler is needed to convert assembly language into machine language
Complier is needed to convert high level to machine language

COBOL (COmmon Business Oriented Language), FORTRAN (FORmula TRANslation), BASIC (Beginner's All-purpose Symbolic Instruction Code), C, C++ etc. are the examples of High Level Language.

Operating System

- Operating system is most important system software for operating a computer.
- DOS (Disk Operating System) is system software.
- The operating system should always remain in main memory.
- Process of transferring operating system in main memory known as booting.

The operating system contains 3 files for booting. SYSINIT transfers following files.
These files are as follow
I O. SYS   (Hidden file)
MSDOS. SYS   (Hidden files)
COMMAND.COM.

The floppy contains these files. The floppy contains these three files in the '0' track then it is called as booting floppy.
There is a program called Bootstrap in BIOS chip in computer.

DOS

Earlier DOS was only operating system for user to work with different application software. But today many operating systems are available but Microsoft Windows is most popular and user friendly.

- The DOS is supporting characters only.
- It is called character user Interface (CUI).
- Graphical User Interface was developed in conjunction with mouse in 1980.
- GUI first introduced by XEROX Star Computer.
- Microsoft developed Windows as a GUI for IBM PC.
- First Windows was Windows 3.1.
- Window 3.0, 3.1, 3.11 are working on DOS.
- Later in 1995 Microsoft included operating system into GUI and released Windows 95.
- The Window is supported Graphics so called Graphics user Interface (GUI).
- Window opens a starting screen called Desktop.
- Window runs each program or application in its own separate frame or box on screen called Windows.
- The programs are placed on the screen in small pictures called "ICONS".
- You can have any number of Windows on the screen at a time.
- Switching between one window to another is easy and possible.
- Clipboard is to copy materials between documents of dissimilar type.
- Window provides joining capabilities of different applications by linking using Dynamic Data Exchange (DDE) and Object Linking and Embedding (OLE).

Bootstrap performs following function

- Testing Hardware (POST– Power On Self Test)
- Search of OS and transfer the same.
- DOS boot records are 512 Bytes.

Points to be kept in mind while naming a file.

- Name may contain extension.
- Name may be alphanumeric.
- Name may have maximum eight characters.
- Extension will be of three characters.
- No space is allowed.
- No special characters are allowed.
- Programs use their own extension for their supporting files to identify.

DOS Commands are two type
1–External DOS commands
2–Internal dos commands
Internal Dos commands are

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

DATE	– System Date can be changed.
TIME	– System time can be changed.
CLS	– Used to clear the screen.
COPY	– To copy file or files.
MD	– To create new directory.
RD	– To remove the empty directory.
CD	– To change directory location.
REN	– To rename file.

COPY CON   – To copy file from console.
DEL   – To delete a file or files.
TYPE   – Used to see the content of a file.

External Commands.
FORMAT   – TO FORMAT A FLOPPY OR HARDDISK TO CREATE TRACK AND SECTOR.
DISKCOPY   – TO COPY DUPLICATE OF DISK.
CHKDSK   – TO CHECK THE DISK.

Introduction to software packages - MS Office

Introduction

Office XP is Microsoft Corporation's latest version of its popular business software suite. The Office XP suite, or group, of software programs is used in home and office settings to accomplish a variety of computing tasks.
You may already be familiar with previous versions of Microsoft Office such as Microsoft Office 97 or Microsoft Office 2000. In this course, you'll master basic skills common to programs in Office XP Standard, including Word (word-processing application), Excel (spreadsheet application), Outlook (email application), and PowerPoint (presentation application).
This course is beneficial for those who are completely new to Microsoft Office and to those who are currently using a previous version.

Launching an Office XP Program

To launch an Office XP program:

- Click the **Start button** on the taskbar.
- Select **All Programs**.
- Click to open the Office program you want to open, such as **Microsoft Word 2002**.
- Your chosen program opens, ready for you to begin work.

Launching Word 2002 from the Start menu
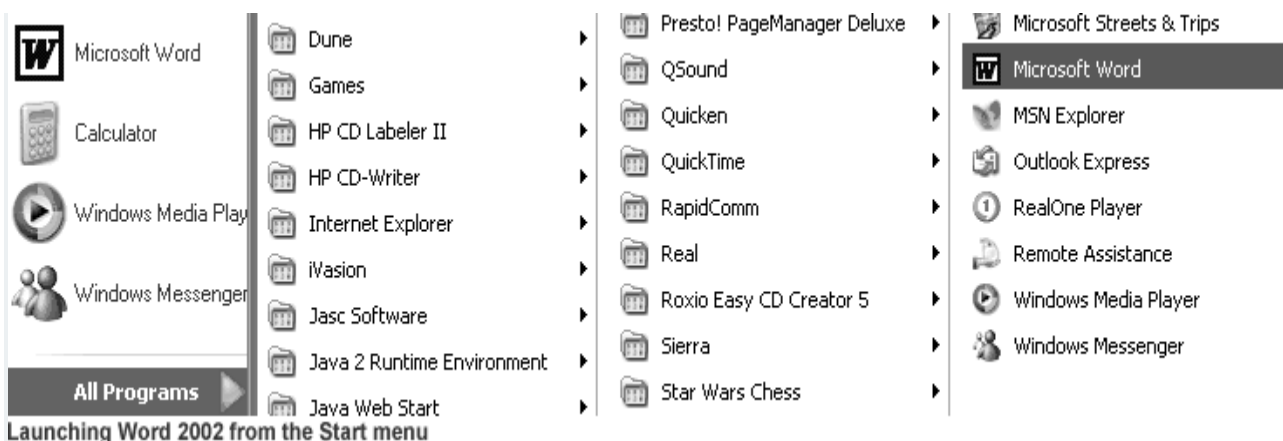
OR
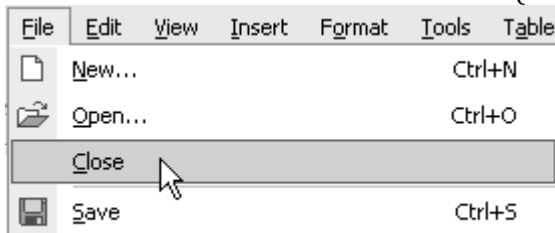- Double-click a program **shortcut** (located on the desktop).

Microsoft Word

✓ Once you've opened a program, Windows XP conveniently places it on the Start menu for easy

Closing a File and Exiting an Office XP Program
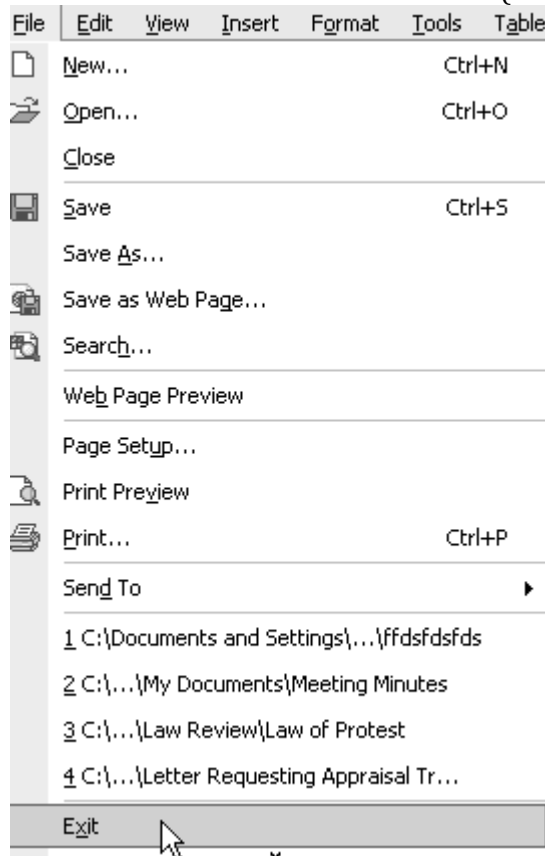
To close a current Office XP file:

Choose **File** ➜ **Close** from the menu bar. (Alt + F + C)

File	Edit	View	Insert	Format	Tools	Table
New...					Ctrl+N	
Open...					Ctrl+O	
Close						
Save					Ctrl+S	

Choosing the Close command from the File menu

To exit an Office XP program completely:

Choose **File** ➜ **Exit** from the menu bar. (Alt + F + X)

File	Edit	View	Insert	Format	Tools	Table
New...					Ctrl+N	
Open...					Ctrl+O	
Close						
Save					Ctrl+S	
Save As...						
Save as Web Page...						
Search...						
Web Page Preview						
Page Setup...						
Print Preview						
Print...					Ctrl+P	
Send To					▶	
1 C:\Documents and Settings\...\ffdsfdsfds						
2 C:\...\My Documents\Meeting Minutes						
3 C:\...\Law Review\Law of Protest						
4 C:\...\Letter Requesting Appraisal Tr...						
Exit						

OR
You can close a file and exit an Office XP program by using the close and exit buttons in the upper right of your window.

access.
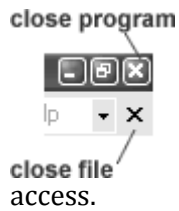
Closing a File and Exiting an Office XP Program Properly

Did you know that the most drastic way to exit Microsoft Office XP is to simply turn your computer off? Well, don't do it. If you turn your computer off without exiting properly from an Office XP program first, you may lose your data. Worse, your computer may zap other files on your hard disk. **Make a habit of closing each file before exiting the program completely.**
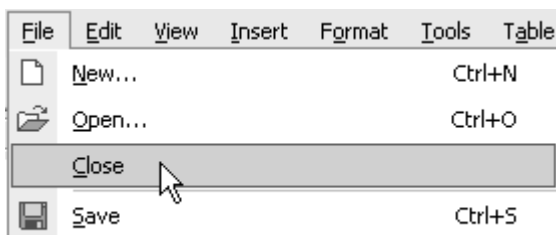
The Menu Bar

- Each Office XP program features a **menu bar**. The menu bar is made up of many different **menus**. Each menu contains **commands** that enable you to work within the program.
- Office XP programs have very similar menus. Remember, the menus and menu commands slightly differ because each program performs a different function.
- For example, **Word 2002's menu bar** is made up of the **File, Edit, View, Insert, Format, Tools, Table, Window, and Help menus**.
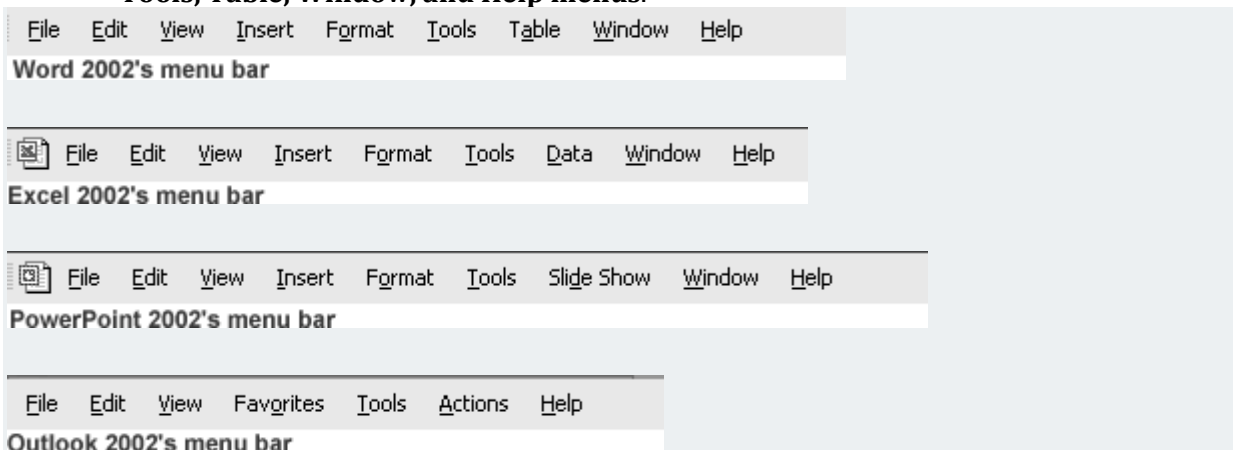
Viewing a Menu and Executing a Command

To open a menu:

- Click on a **menu name**.
- The **menu**, complete with a list of commands, appears.
- With the menu open, drag the mouse pointer to a **command** and click on it. (As you drag your mouse pointer over the commands, each command is highlighted in light blue.)

Choosing the Close secmand from the File menu

- If there is a **small black triangle** next to a command, a cascading menu with additional options displays. Hover the mouse pointer over the command with the triangle; the

 | MEA - Mumbai

cascading menu will appear. Point and click to make a selection from the cascading menu.
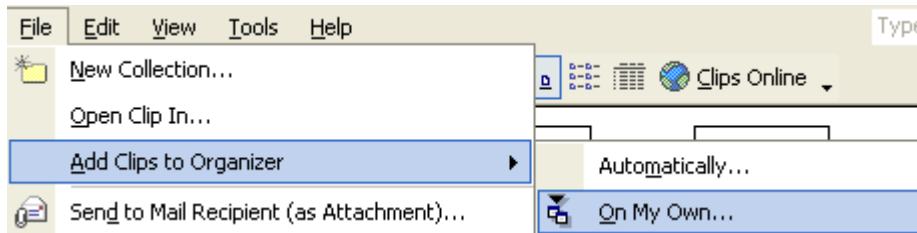

- Once you execute a command, the menu disappears. Depending on which command you selected, either the command is completed or you will be prompted to complete the next step in the command.

Standard and Formatting Toolbars

- The **Standard and Formatting toolbars** are the two most commonly used toolbars in Office XP programs. When you open Word, Excel, or PowerPoint, the Standard and Formatting toolbars are turned on by default.
- The **Standard toolbar** is located just **below the menu bar**. It contains buttons representing commands such as New, Open, Save, and Print.
- The **Formatting toolbar** is located by default **next to the Standard toolbar**. It contains buttons representing text modifying commands, such as font, text size, bold, and ordered lists. To view the entire **Formatting toolbar**, click the small arrow (in Word) or double arrows (Excel, PowerPoint) on the far right of the Formatting toolbar.
- ✓ **Note:** Microsoft Outlook features Standard, Advanced, and Web toolbars.

Word 2002's Standard and Formatting toolbars shown on the same line (partial view of Formatting toolbar)
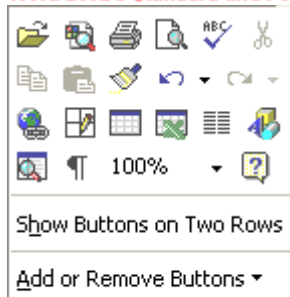
Partial view of
Formatting toolbar

Displaying and Hiding Toolbars

As you've just learned, the Standard and Formatting toolbars are turned on by default in Word 2002, Excel 2002, and PowerPoint 2002. However, all of these programs (including Outlook 2002) include other helpful toolbars that can be **displayed or hidden** as you need them.

To display or hide a toolbar:

- Choose **View → Toolbars** from the menu bar.
- The **cascading toolbar menu** appears.
- **Check marks** appear next to currently displayed toolbars.
- Click the toolbar you want to display, or click the toolbar you want to hide.
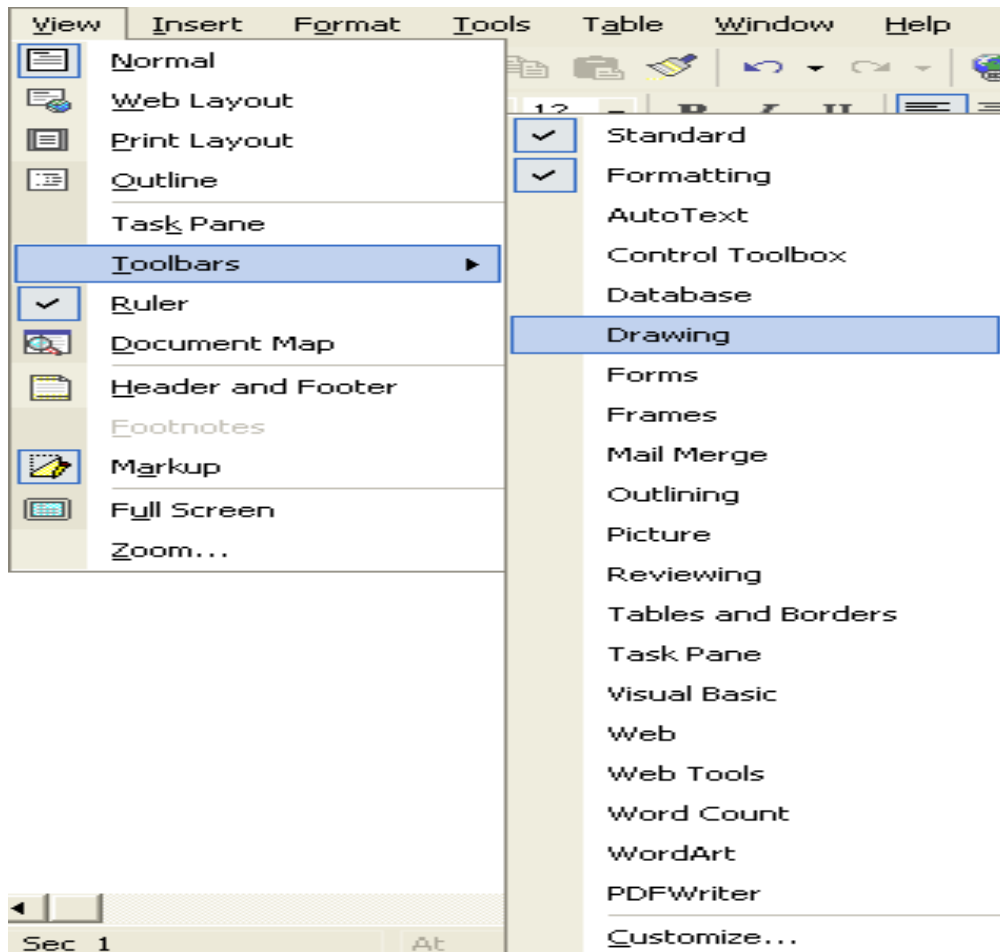
Word 2002's many toolbar options

The Task Pane

The **task pane** is a new feature found in Office XP. It is located on the right side of your screen and is present when you first start an Office XP program. Use the task pane to create new files, open files, search for files, cut and paste text and graphics, and apply styles to your Office files from a single location.

To hide the task pane:

- Choose **View → Toolbars** from the menu bar.
- The **cascading toolbar menu** appears.
- Choose **Task Pane**.
- The task pane is hidden.

OR

- Click the **small X** in the upper right corner of the task pane.

To display the task pane:

- Choose **View → Toolbars** from the menu bar.
- The **cascading toolbar menu** appears.
- Choose **Task Pane**.
- The task pane displays on the right side of the window.

Microsoft Word XP is the word processing application in the Microsoft Office Suite. Create professional-looking, formatted text documents with this powerful Word processing software.

The Basics of the Word Window

- Let's briefly review the basic parts of the Word XP window before we move onto word processing.
- Shown below is the Microsoft Word default window. When Word is launched, a new blank document, or default window, opens in Print Layout view. Although window elements are fully explained in our Windows course, here is a brief explanation of the Word window.
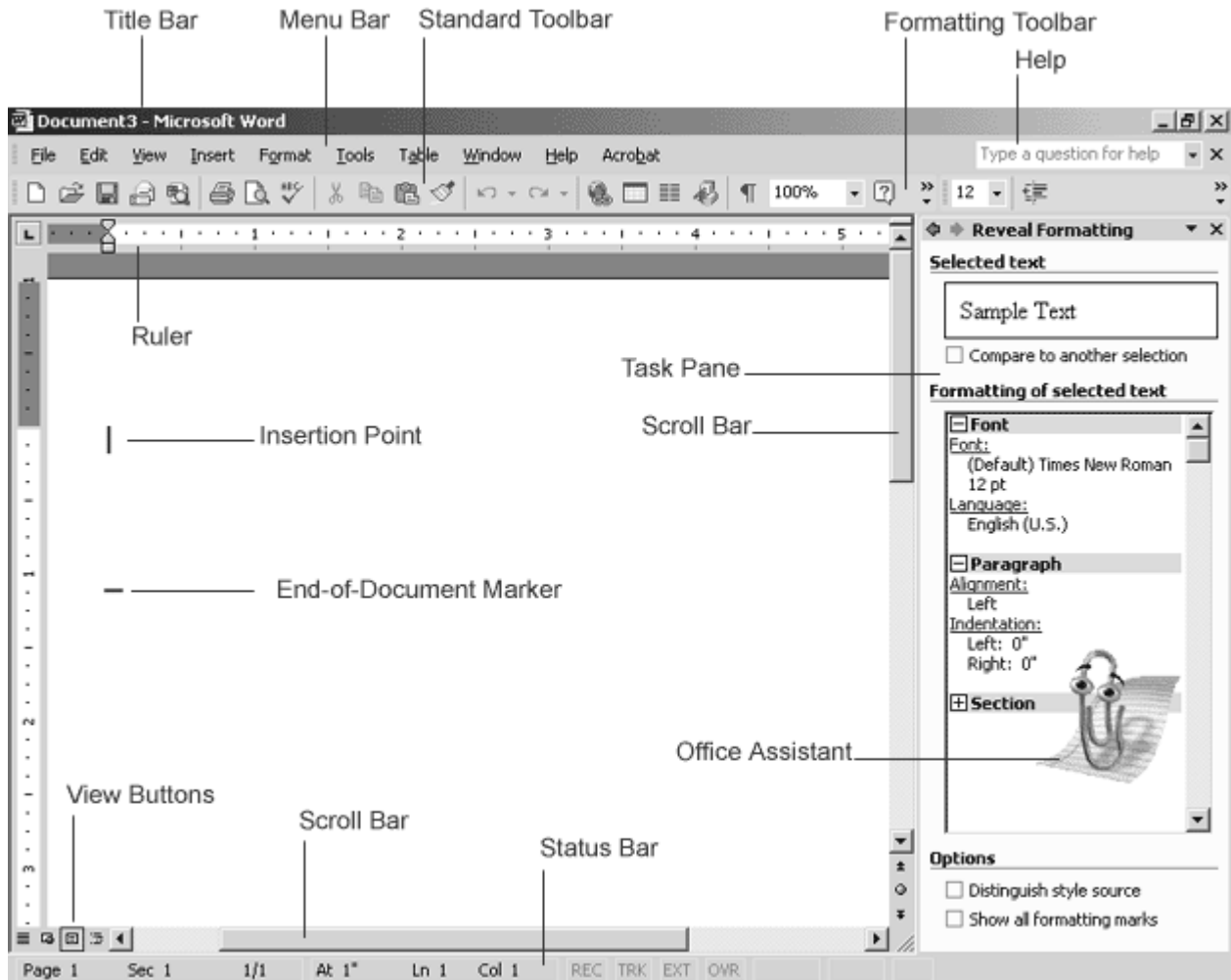
Title bar
Displays the document name followed by a program name.
Menu bar
Contains a list of options to manage and customize documents.
Standard toolbar
Contains shortcut buttons for the most popular commands.
Formatting toolbar
Contains buttons used for formatting.
Ruler
Used to set margins, indents, and tabs.
Insertion Point
The location where the next character appears.
End-of-document marker

Indicates the end of the document.

Help
Provides quick access to Help topics.

Scroll bars
Used to view parts of the document.

Status bar
Displays position of the insertion point and working mode buttons.

Task Pane
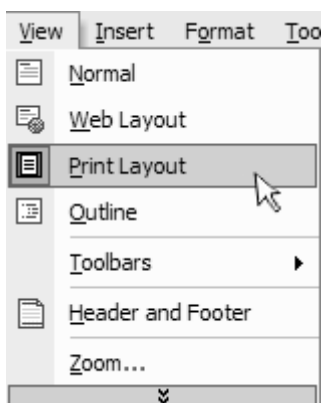Provides easy access to commonly used menus, buttons and tools.

View Buttons
Changes the layout view of the document to normal view, web layout view, print layout view, or outline view.

Office Assistant
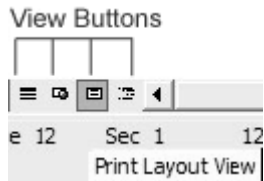Links to the Microsoft Office Help feature.

Change in View

- In an effort to provide various ways in which to view your work in progress and remain organized, Word XP offers five different views for your document. The five views are Normal view, Print Layout view, Web Layout view, Outline view, and Full Screen View.
- Normal view is best used for typing, editing, formatting and proofreading. It provides a maximum amount of space without rulers or page numbers cluttering your view.
- Web Layout view shows you what your text will look like on a web page.
- Print Layout view shows you what your document will look like when it is printed. Under Print Layout view you can see all elements of the page. Print Preview shows you this as well.
- Outline view is used to create and edit outlines. Outline view only shows the headings in a document. This view is particularly handy when making notes.
- Full Screen view displays ONLY the document that you are working on. All the other pieces of the Word window are removed except for one button that allows you to Close View Screen. Changing your Document View:
- Click View on the menu bar.
- Select the view of your choice.

OR

Click one of the four buttons at the bottom left of your Word window
(View Full Screen is not available in this location).

Pull-Down Menus

Each Office XP program features a menu bar. The menu bar is made up of many different menus. Each menu contains commands that enable you to work within the program.
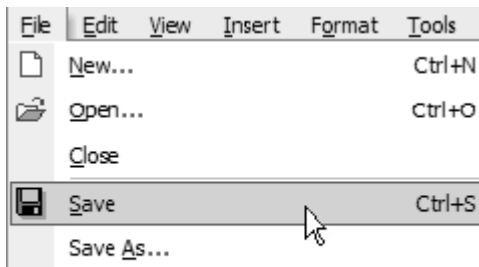
If you have used a previous version of Microsoft Word, you may notice the menu bar in Word XP operates a little differently than before.

Word XP uses pull-down menus that initially display commands that users most often need.
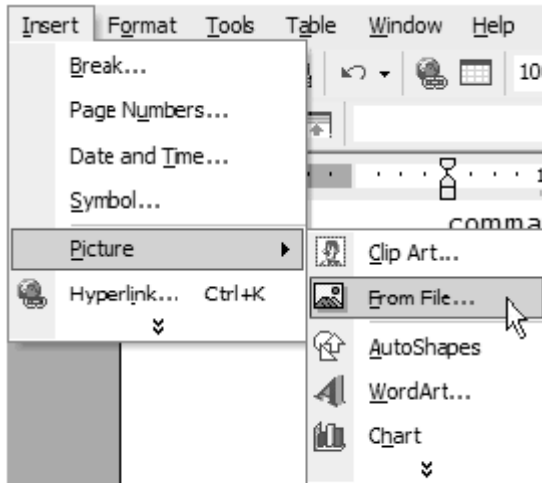Operating the new Pull-Down Menus

To Open a Menu:

- Click on a menu name on the menu bar.
- View the commands listed under the pull-down menu.
- With the menu open, drag the mouse pointer to a command and click on it to select the command. (As you drag your mouse pointer over the commands, each command is highlighted in light blue.)
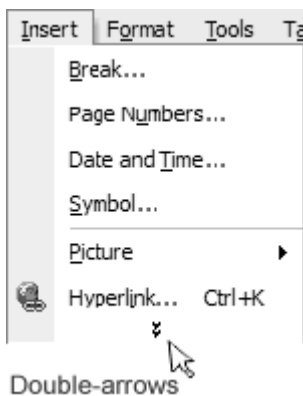

Choosing the Save Command
from the File Menu

- If there is a small black triangle next to a command, hover the mouse pointer over the command with the triangle and a cascading menu with additional options will appear. Point and click to make a selection from the cascading menu.

Choosing a command from a Cascading Menu

- Commands that are not used often in XP are initially hidden from the viewer. If you do not see all the commands on a menu, click on the double arrows at the bottom of the pull-down menu. You can also double-click the menu to expand it.

Double-arrows

Using the Task Pane

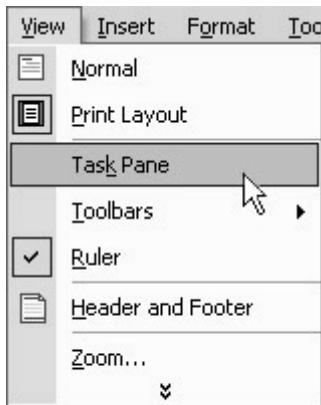The Task Pane is new in Word XP. When opened, the task pane will appear on the right side of the Word window. The task pane provides easy access to commonly used menus, buttons and tools. By default, the Task Pane will appear when Word XP is first launched.

If you do not see your task pane, you can view it by either selecting certain commands or by manually opening it.
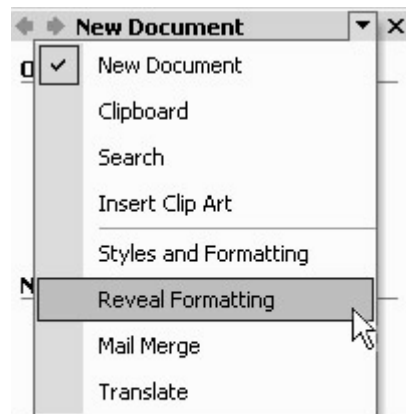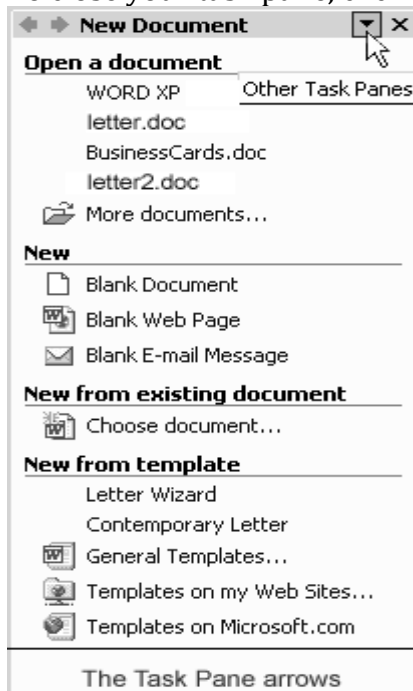
To Open the Task Pane:

- Click on View in the menu bar.

- Select Task Pane.

Selecting the Task Pane
from the View Menu

Along the top bar of the task pane you should see small backwards and forwards buttons on the left as well as a down arrow on the right. To view different task panes available to you, click on the down arrow. Once you have opened different task panes, you can navigate through them by clicking on the left and right arrow button on the left. To close your task pane, click the x symbol on the far right of the bar.

The Task Pane arrows

Choosing Reveal Formatting
from the Other Task Panes

Change in View

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Changing your Document View:

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OR
- Click **one of the four buttons at the bottom left** of your Word window (View Full Screen is not available in this location).

Pull-Down Menus

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  If you have used a previous version of Microsoft Word, you may notice the menu bar in Word XP operates a little differently than before.

  Word XP uses **pull-down menus** that initially display commands that users most often need.

Operating the new Pull-Down Menus

To Open a Menu:

- Click on a **menu name** on the **menu bar**.
- View the **commands** listed under the **pull-down menu**.
- With the menu open, drag the mouse pointer to a command and click on it to select the command. (As you drag your mouse pointer over the commands, each command is highlighted in light blue.)

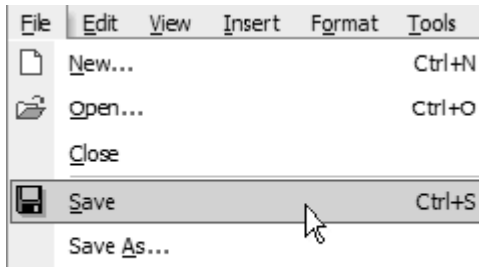Choosing the Save Command
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Using the Task Pane

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The Task Pane arrows

Choosing Reveal Formatting
from the Other Task Panes

Familiarization with MS –Office-XP Excel

Excel is a most comprehensive spreadsheet application.

APPLICATION OF EXCEL

- Preparation of Cost Sheet.
- SBP – Strategic Business Plan.
- RE / BE – Revised Estimate / Budget Estimate.

FEATURES OF EXCEL

- Tabulation of data.
- Analysis of data
- Mathematical calculation.
- Presenting data in graphical form.

Many items you see on the Excel XP screen are standard in most other Microsoft software programs like Word, PowerPoint and previous versions of Excel. Some elements are specific to Excel XP.
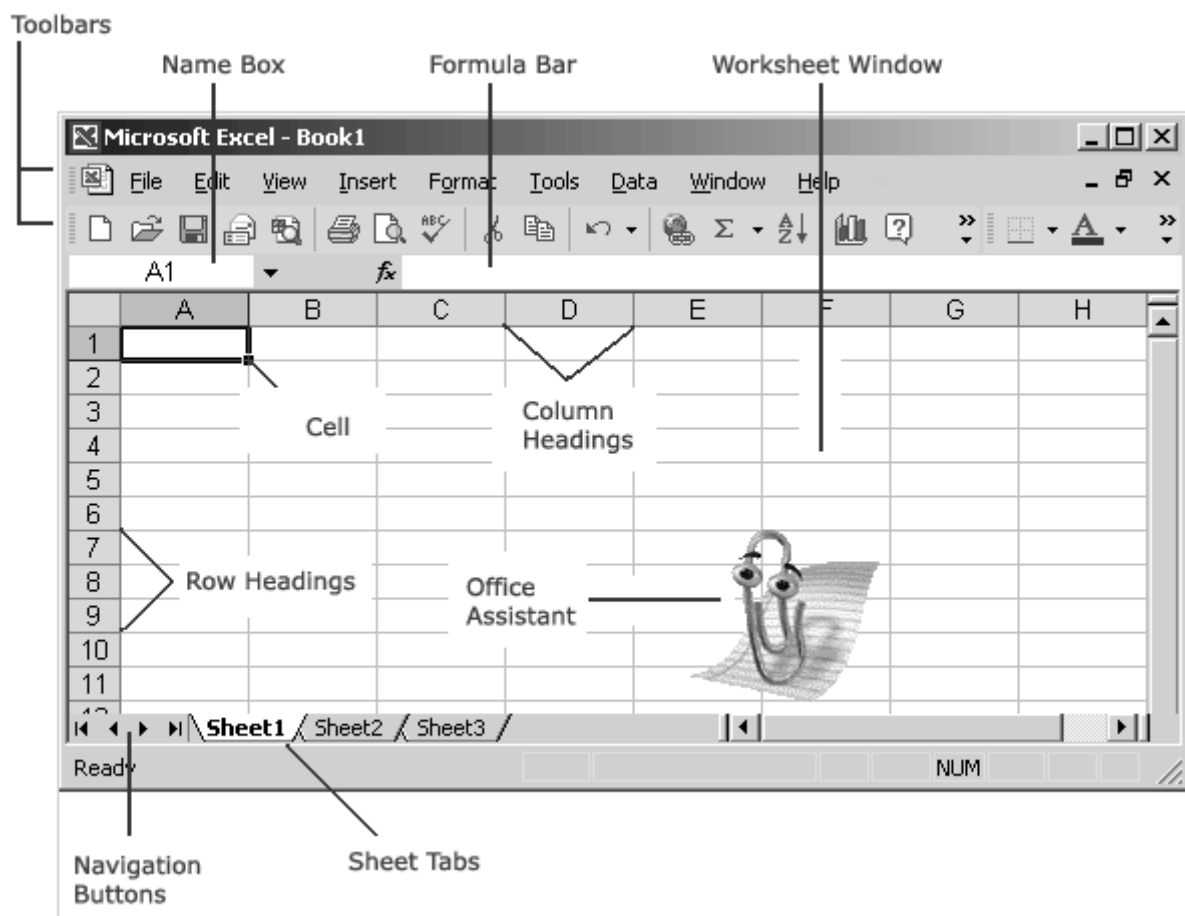
STARTING EXCEL – IT CAB STARTED BY FOLLOWING METHODS.

- If Short cut Bar is available on desktop click on **MS Excel**.

Or

- Click on short cut of **MS Excel** icon if created on desktop. (*To create short cut click on "Start" then select Program then select "MS Excel" and right click on it and drag it on desktop.*)
Or

- Click on start – Point on Program – Select MS Excel and Click.

DETAILS OF BARS IN EXCEL WINDOW SCREEN.

1) Title bar
2) Menu bar
3) Standard tool bar
4) Formatting bar
5) Formula tool bar

Title bar

Microsoft Excel - Book2

The Title bar displays both the name of the application and the name of the spreadsheet.

Menu bar

File   Edit   View   Insert   Format   Tools   Data   Window   Help

The Menu bar displays all the menus available for use in Excel XP. The contents of any menu can be displayed by clicking on the menu name with the left mouse button.

Toolbar

Some commands in the menus have pictures or icons associated with them. These pictures may also appear as shortcuts in the Toolbar.

Column Headings

A	B	C	D	E	F

Each Excel spreadsheet contains 256 columns. Each column is named by a letter or combination of letters.

Row Headings

1
2
3
4

Each spreadsheet contains 65,536 rows. Each row is named by a number.

Name Box

Shows the address of the current selection or active cell.

Formula Bar

Displays information entered-or being entered as you type-in the current or active cell. The contents of a cell can also be edited in the Formula bar.

Cell

Intersection point rows and column called cell.

Column

Rows
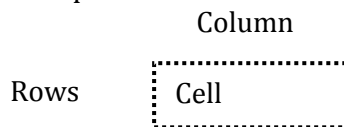
Cell

Cell pointer
This is bold cell outline, which denotes cell is current cell.

Cell Pointer / Current Cell
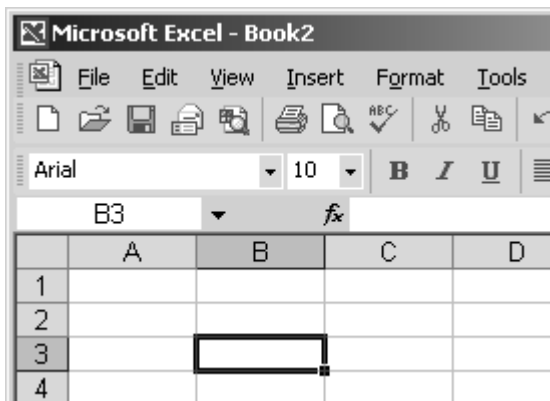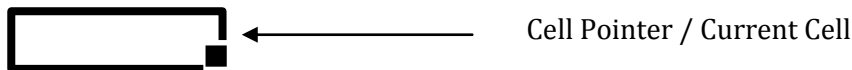
A cell is an intersection of a column and row. Each cell has a unique cell address. In the picture above, the cell address of the selected cell is B3. The heavy border around the selected cell is called the cell pointer.

The Cell

An Excel worksheet is made up of columns and rows. Where these columns and rows intersect, they form little boxes called cells. The active cell, or the cell that can be acted upon, reveals a dark border. All other cells reveal a light gray border. Each cell has a name. Its name is comprised of two parts: the column letter and the row number.
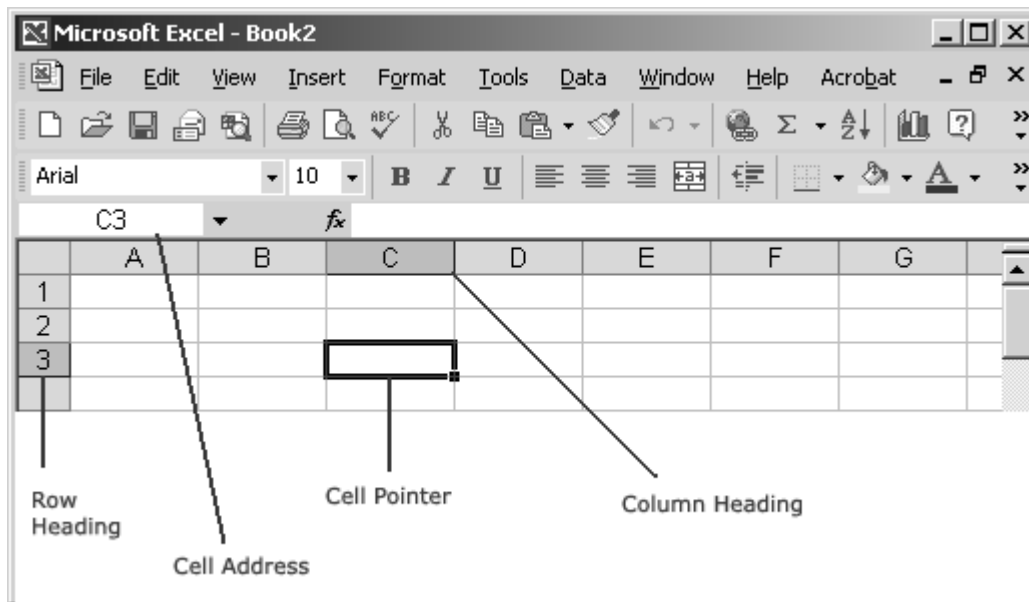
In the following picture the cell C3, formed by the intersection of column C and row 3, contains the dark border. It is the active cell.
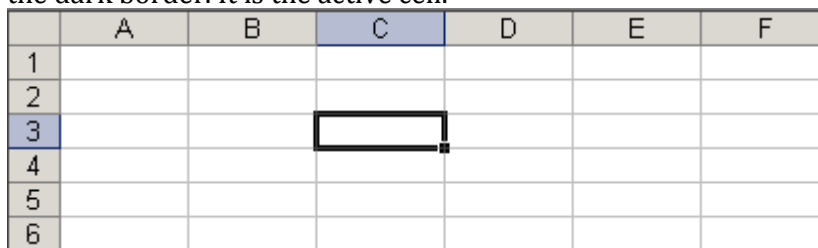
> **Important Terms**

Each cell has a unique cell address composed of a cell's column and row.

The active cell is the cell that receives the data or command you give it.

A darkened border, called the cell pointer, identifies it.

Moving around the worksheet

You can move around the spreadsheet in several different ways.

To Move the Cell Pointer:

To activate any cell, point to a cell with the mouse and click.

To move the pointer one cell to the left, right, up, or down, use the keyboard arrow keys.

Navigation Buttons and Sheet Tabs
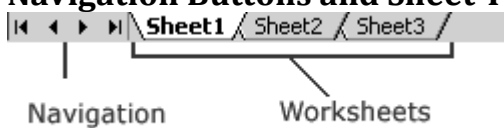
- Navigation buttons allow you to move to another worksheet in an Excel workbook. Used to display the first, previous, next or last worksheets in the workbook.
- Sheet tabs separate a workbook into specific worksheets. A Workbook defaults to three worksheets. A Workbook must contain at least one worksheet.
- Workbooks and Worksheets
- A Workbook automatically shows in the workspace when you open Microsoft Excel XP. Each workbook contains three worksheets. A worksheet is a grid of cells, consisting of 65,536 rows by 256 columns. Spreadsheet information--text, numbers or mathematical formulas--is entered in the different cells.

- Column headings are referenced by alphabetic characters in the gray boxes that run across the Excel screen, beginning with the Column A and ending with Column IV.
- Rows are referenced by numbers that appear on the left and then run down the Excel screen. The first row is named Row 1 and the last row is named 65536.

➢ **Important Terms**

A workbook is made up of three worksheets.

- The worksheets are labeled Sheet1, Sheet2, and Sheet3.
- Each Excel worksheet is made up of columns and rows.
- In order to access a worksheet, click on the tab that says Sheet#.

To Scroll Through the worksheet:

The vertical scroll bar located along the right edge of the screen is used to move up or down the spreadsheet. The horizontal scroll bar located at the bottom of the screen is used to move left or right across the spreadsheet.
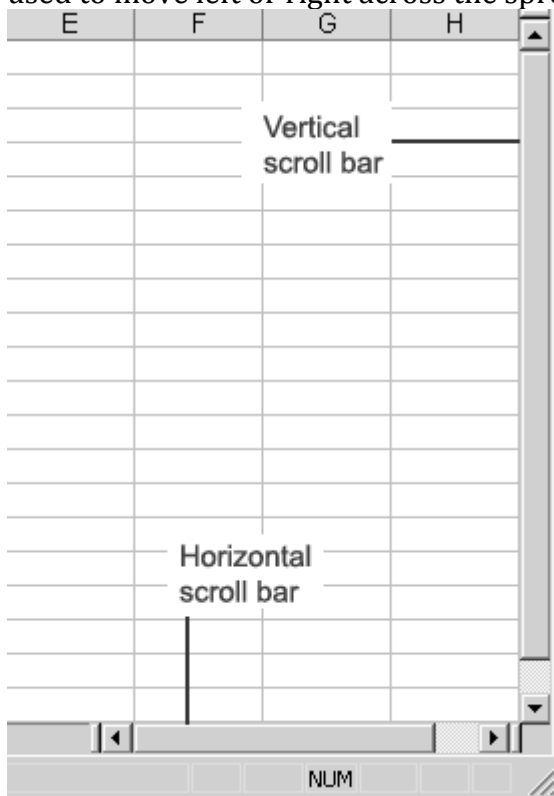
- The PageUp and PageDown keys on the keyboard are used to move the cursor up or down one screen at a time. Other keys that move the active cell are Home, which moves to the first column on the current row, and Ctrl+Home, which moves the cursor to the top left corner of the spreadsheet or cell A1.
- To Move between worksheets
- As mentioned, each Workbook defaults to three worksheets. These worksheets are represented by tabs-named Sheet1, Sheet2 and Sheet3-that appear at the bottom of the Excel window.

- To Move from one worksheet to another worksheet:
- Click on the sheet tab (Sheet1, Sheet2 or Sheet 3) that you want to display
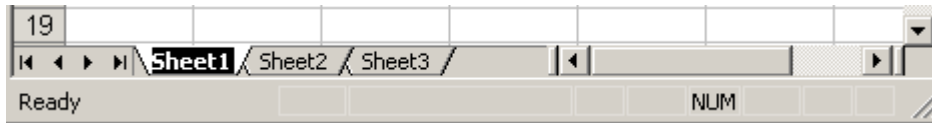
Mouse Pointer

It is a shape like white plus sign

Pull down menus - It gives access to all commands of MS Excel

Scroll Bar – To move around the sheet. This is two types.

1. **Vertical**
2. Horizontal

Create a new workbook

Workbook

Also called a spreadsheet, the Workbook is a unique file created by Excel XP.

On the **File** menu, click **New**.

To create a new, blank workbook, click the **General** tab, and then double-click the **Workbook** icon.

To create a workbook based on a **template**, click the **Spreadsheet Solutions** tab or the tab

listing your custom templates, and then double-click the template for the type of workbook

you want to create.

Entering Text

Select the cell where text is required and begin typing.

Text will appear in formula bar above.

Press Enter key to accept the entry.

Entering Number
- Type numbers directly in to cell.
- Excel performs calculation only for numeric entry.

HOW TO MOVE CURSOR AROUND SHEET
- By PgUp and PgDn.
- End + ↓ To go to end of sheet.
- End + → to go last column.
- Ctrl + ← or → Moves cursor to leftmost or rightmost of data.
- Home key – To come first column of same row.
- Ctrl + Home – To go to Home cell A1.

- To go to particular cell press F5 and type cell number in address box.
- Text always align left.
- By default cell size is 8.43.
- ◁ ◁ ▷ ▷| = These symbols used for first sheet, previous sheet, next sheet, last sheet – respectively.

To adjust the width of the columns use following methods.

- Select column Click **Format** – **Column** – **width** – click and set width manually.
- Select **Column** Click **Format** – **Auto fit** and click.
- Bring the pointer at column separator and double click.
- Bring the mouse pointer at the edge of Column select Column – click on head hold and drag Column.

How to insert blank Row / Columns.

Select the area where you want to insert. By clicking on **Insert** select **Column** or **Row**.

To copy the formula:

- Select the formula to be copied.
- Move pointer on free handle till it changes to cross hair.
- Press and hold left key and drag where you want to copy.

Moving or copying sheet

This is very careful job because calculation or chart may become inaccurate.

- Open destination sheet.
- Open source workbook to be copied.
- In Edit menu click **Move** or **Copy Sheet.**
- In **To book** box click destination workbook or **New Workbook**.
- Choose the **Before Sheet** box.
- Click sheet before which you want to insert.
- To copy sheet instead of moving select **Create a copy**.

Auto fill

It extend the series of numbers, dated, months etc. when drag the fill handle to right or down.

Custom Auto fill

In addition you can create your own custom series.

Deleting a Sheet

- Right click on the name of sheet at sheet tab.
- Choose Delete option. Or

Delete sheet by using menu bar.

Sheet must be active.

Go to Edit menu and choose **Delete Sheet** option.

Renaming Sheet

- Choose **Format** menu.
- Choose **Sheet** option and click **Rename**.
- Old name highlights and allows to type new name.

Hiding gridlines

- Select sheet.
- Click on **Tools** menu.
- Select Option
- Choose **View** tab.
- Deselect Gridlines checkbox.

Change width of a single column

- Click on cell border on right hand side of column head.
- Drag it up to desired width.

Change width of multiple columns

- Select desired columns.
- Drag right hand boundary of column head.

To fit contents into the cell

- Select the column and move cursor to right hand side border of column in column head and double click.
- Or Chose Format > Column > Auto Fit Selection on menu bar.

Change height of Rows

- Simply drag lower boundary of row up to desired height.

Change height of multiple rows

- Select rows..
- Drag lower boundary of a selected rows up to desired height.

To fit content in rows

- Just double click on lower boundary of row.

Display multiple lines in cell for text

- Select cells.
- On **Format** button click on **Cells** option.
- Choose **Alignment** tab.
- In Text Control option select **Wrap Text** check box.

Rotating text and border

Some times data in column is very narrow but labels are wide. For nice look you can rotate the label.

- Select the cell you want to rotate.
- Right click on cell and choose **Format Cells** option.
- Choose **Alignment** tab.
- On right side select **Orientation** of text to rotate.

Formulas

Formula is very important in Excel which starts with plus (+) sign.

Simple mathematical operation are-

(+) Plus sign for addition
(-) Minus sign for subtraction.
(*) Asterisk sign for multiplication
(/) Slash for division.
(^) Caret sign for raising number of power.

Creating simple formula

Click cell where want to create formula.
Type equal = sign.
Enter formula and hit **Enter** key like- =x + y.

Function

It is predefined formula, which perform particular type of computation. Values provided with function are argument to function and given within a pair of bracket.

Creating formula with functions like Average, Sums

- Click the cell where wants the formula = Average
- Using **Insert function** on formula bar select function that you want.
- Enter argument from **Collapses dialog** by **Expand dialog**.
- Select cell on worksheet the use **Expand dialog**.
- Hit **Enter** key after finish type of formula.

Conditional formatting

- Select the cells for conditional formatting.
- On **Format** menu select **Conditional Formatting**.
- Click **Cell Values** and select comparison phrase.
- Type constant value or formula.
- Click **Format**.
- Select formatting which you want if it is returns to **True** value.
- Click **Add** to have conditional formatting.

Display numbers as percentage

- Select the cells.
- On **Format** menu click **Cells**.
- Select **Number** tab.
- In **Category list** click **Fraction** to display fraction or **Percentage**.
- For decimal places set the **Decimal Places** box.

Validating data

- Select the cell.
- On **Data** menu click **Validation**.
- Click **Setting** tab.
- Select type of validation.
- Allow value from list.
- Allow dates and time within a timeframe.

- Allow text of a specified length.
- Calculate what allowed based in another cell.
- Use a formula to calculate.
- Specify whether he cell can be left blank or has to be filled by selecting or deselecting the **ignore blank** check box.

Filtering data

- Click a cell in the list to be filtered.
- Click **Data** option and select **Filter**.
- Click **AutoFilter**.
- You will get a category to filter the data.

Importing data Word

- Select row and column of table from Word document.
- Click **Copy** button.
- Switch over to Excel worksheet by **ALT+TAB** keys.
- Click on worksheet where want to copy data.
- Click **Paste** button.
- To format cell use **Paste option**

Importing Access

- Go to Data > Import External Data > Import Data
- Select the Access file to bee import.
-

Printing

In Excel first select the area, which you want to print.
Chose File $\Rightarrow$ then Print here select the options given in print dialog box then click OK.

KEYS FOR MOVING AND SCROLLING IN A WORKSHEET OR WORKBOOK

Press   **To**

Arrow keys   Move one cell up, down, left, or right
CTRL+arrow key   Move to the edge of the current
HOME   Move to the beginning of the row
CTRL+HOME   Move to the beginning of the worksheet
CTRL+END   Move to the last cell on the worksheet, which is the cell at the
intersection   of the rightmost used column and the bottom-most used row (in
the lower-   right corner), or the cell opposite the home cell, which is typically
A1
PAGE DOWN   Move down one screen
PAGE UP   Move up one screen
ALT+PAGE DOWN   Move one screen to the right
ALT+PAGE UP   Move one screen to the left
CTRL+PAGE DOWN   Move to the next sheet in the workbook
CTRL+PAGE UP   Move to the previous sheet in the workbook
CTRL+F6 or CTRL+TAB   Move to the next workbook or window
CTRL+SHIFT+F6 or CTRL+SHIFT+TAB   Move to the previous workbook or window
F6   Move to the next pane in a workbook that has been split
SHIFT+F6   Move to the previous pane in a workbook that has been split
CTRL+BACKSPACE   Scroll to display the active cell

F5	Display the **Go To** dialog box
SHIFT+F5	Display the **Find** dialog box
SHIFT+F4	Repeat the last **Find** action (same as **Find Next**)
TAB	Move between unlocked cells on a protected worksheet

Keys for entering data on a worksheet

Press	To
ENTER	Complete a cell entry and move down in the selection
ALT+ENTER	Start a new line in the same cell
CTRL+ENTER	Fill the selected cell range with the current entry
SHIFT+ENTER	Complete a cell entry and move up in the selection
TAB	Complete a cell entry and move to the right in the selection
SHIFT+TAB	Complete a cell entry and move to the left in the selection
ESC	Cancel a cell entry
BACKSPACE	Delete the character to the left of the insertion point, or delete the Selection.
DELETE	Delete the character to the right of the insertion point, or delete the selection
CTRL+DELETE	Delete text to the end of the line
Arrow keys	Move one character up, down, left, or right
HOME	Move to the beginning of the line
F4 or CTRL+Y	Repeat the last action
SHIFT+F2	Edit a cell comment
CTRL+SHIFT+F3	Create names from row and column labels
CTRL+D	Fill down
CTRL+R	Fill to the right
CTRL+F3	Define a name

Keys for formatting data

Press	To
ALT+' (apostrophe)	Display the **Style** dialog box
CTRL+1	Display the **Format Cells** dialog box
CTRL+SHIFT+~	Apply the General number format
CTRL+SHIFT+$	Apply the Currency format with two decimal places (negative numbers appear in parentheses)
CTRL+SHIFT+%	Apply the Percentage format with no decimal places
CTRL+SHIFT+^	Apply the Exponential number format with two decimal places
CTRL+SHIFT+#	Apply the Date format with the day, month, and year
CTRL+SHIFT+@	Apply the Time format with the hour and minute, and indicate A.M. or P.M.
CTRL+SHIFT+!	Apply the Number format with two decimal places, thousands separator, and minus sign (–) for negative values
CTRL+SHIFT+&	Apply the outline border
CTRL+SHIFT+_	Remove outline borders
CTRL+B	Apply or remove bold formatting
CTRL+I	Apply or remove italic formatting
CTRL+U	Apply or remove an underline
CTRL+5	Apply or remove strikethrough formatting
CTRL+9	Hide rows
CTRL+SHIFT+((opening parenthesis)	Unhide rows
CTRL+0 (zero)	Hide columns
CTRL+SHIFT+) (closing parenthesis)	Unhide columns

Keys for editing data

Press	To
F2	Edit the active cell and put the insertion point at the end of the line
ESC	Cancel an entry in the cell or formula bar
BACKSPACE	Edit the active cell and then clear it, or delete the preceding character in the active cell as you edit the cell contents
F3	Paste a defined name into a formula
ENTER	Complete a cell entry
CTRL+SHIFT+ENTER	Enter a formula as an array formula
CTRL+A	Display the Formula Palette after you type a function name in a formula
CTRL+SHIFT+A	Insert the argument names and parentheses for a function, after you type a function name in a formula
F7	Display the **Spelling** dialog box

Keys for inserting, deleting, and copying a selection

Press	To
CTRL+C	Copy the selection
CTRL+X	Cut the selection
CTRL+V	Paste the selection
DELETE	Clear the contents of the selection
CTRL+HYPHEN	Delete the selection
CTRL+Z	Undo the last action
CTRL+SHIFT+PLUS SIGN	Insert blank cells

Keys for moving within a selection

Press	To
ENTER	Move from top to bottom within the selection (down), or move in the direction that is selected on the **Edit** tab (**Tools** menu, **Options** command)
SHIFT+ENTER	Move from bottom to top within the selection (up), or move opposite to the direction that is selected on the **Edit** tab (**Tools** menu, **Options** command)
TAB	Move from left to right within the selection, or move down one cell if only one column is selected

Keys for selecting cells, columns, or rows

Press	To
CTRL+SHIFT+* (asterisk)	Select the current region around the active cell (the current region is a data area enclosed by blank rows and blank columns)
SHIFT+arrow key	Extend the selection by one cell
CTRL+SHIFT+arrow key	Extend the selection to the last nonblank cell in the same column or row as the active cell
SHIFT+HOME	Extend the selection to the beginning of the row
CTRL+SHIFT+HOME	Extend the selection to the beginning of the worksheet
CTRL+SHIFT+END	Extend the selection to the last used cell on the worksheet (lower-right corner)
CTRL+SPACEBAR	Select the entire column
SHIFT+SPACEBAR	Select the entire row
CTRL+A	Select the entire worksheet
SHIFT+BACKSPACE	Select only the active cell when multiple cells are selected
SHIFT+PAGE DOWN	Extend the selection down one screen
SHIFT+PAGE UP	Extend the selection up one screen

CTRL+SHIFT+SPACEBAR   With an object selected, select all objects on a sheet
CTRL+6   Alternate between hiding objects, displaying objects, and displaying
                             placeholders for objects
CTRL+7   Show or hide the **Standard** toolbar
F8   Turn on extending a selection by using the arrow keys

PowerPoint

The PowerPoint Window has toolbars and panes to help you quickly create presentations. Most of the toolbars are common in Office applications but may feature options unique to PowerPoint.

Title Bar - displays the document name followed by a program name.
Menu Bar - contains a list of options to manage and customize documents.
Standard Toolbar - contains shortcut buttons for the most popular commands.
Formatting Toolbar - contains buttons used for formatting.
Status Bar - displays slide position and the type of design in PowerPoint.
Drawing Toolbar - contains tools for drawing lines, shapes and objects.
Help - provides quick access to Help topics.

PowerPoint XP has a new default Normal view - the Tri-Pane View. This view, which opens when you launch PowerPoint, allows you to see multiple parts of a presentation at once.
One of the other noticeable changes between PowerPoint 2000 and PowerPoint 2002 is the Task Pane. Located on the right side of the computer screen, this pane allows you to select tasks in different categories and allows you to quickly enhance your slides in a few steps.

Title Bar — Formatting Toolbar — Help

Menu Bar
Standard Toolbar
Outline and Slides Tabbed Panes
Task Pane
View Buttons
Status Bar — Drawing Toolbar
Tri-Pane View
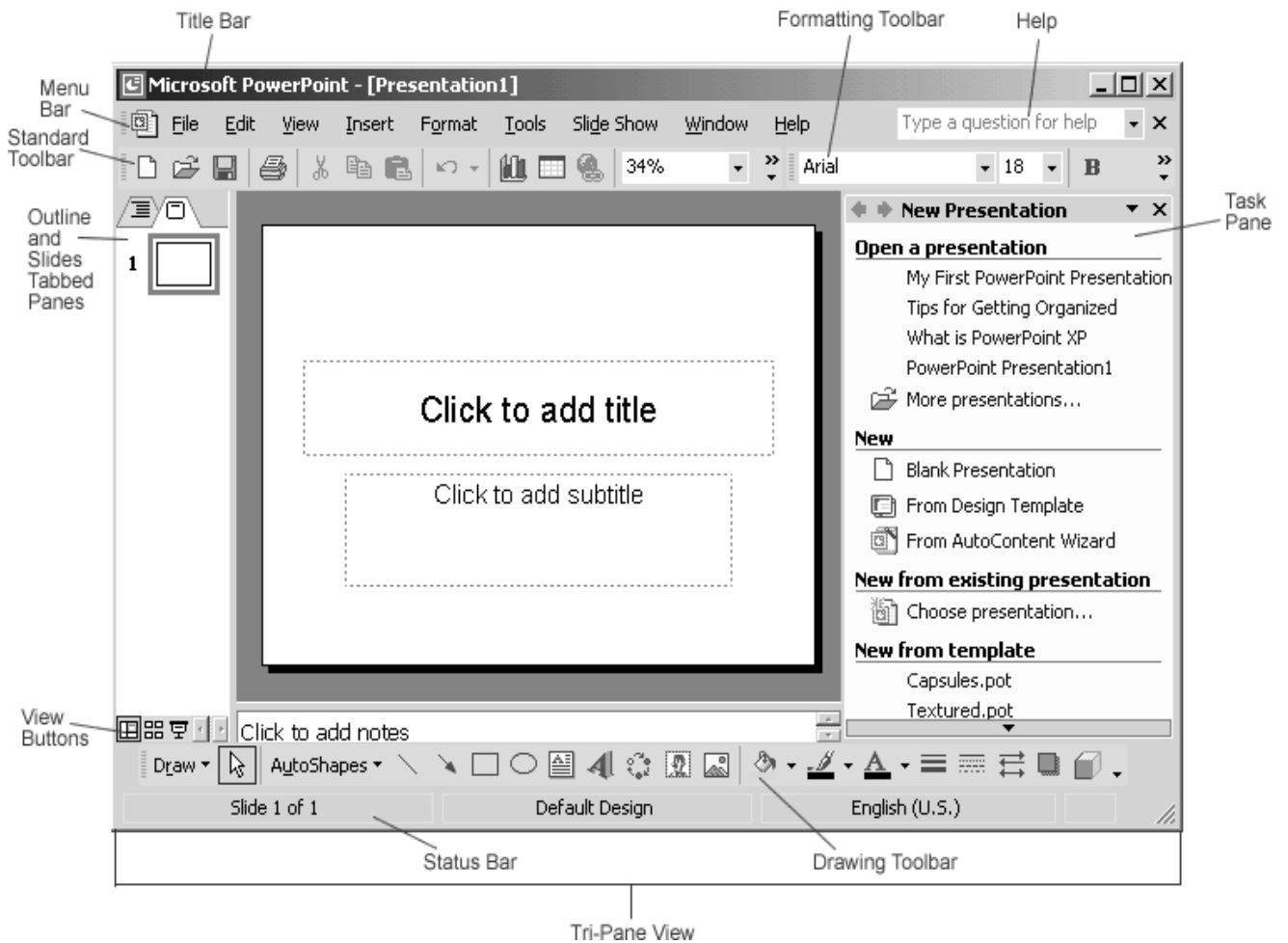
Also new in PowerPoint 2002 are the Outline and Slides Tabbed Panes. Click on the tabs on the left side of the screen to view an outline or a slide of your presentation. The tabs render differently based on the size of the pane.

You can show or hide PowerPoint's toolbars. Click on the View menu and choose Toolbar. Decide which ones you want to show or hide.

View Buttons and Slide Views
The view buttons at the left bottom corner of the screen allow three slide views: **Normal View**, **Slide Sorter View** and **Slide Show.**

The view buttons can be useful as you prepare your presentation. They control the way slides are displayed on the screen. Click a view button to see a different view.

Normal View contains the Outline and Slides Tabbed Panes on the left, the Slide pane in the center and the Task Pane on the right.

The Outline View shows the text of your presentation for easy editing while Slides View shows text and graphics of the slide you're working on.
Click on the tabs to switch between the two views. Under the center slide area is a place for notes.
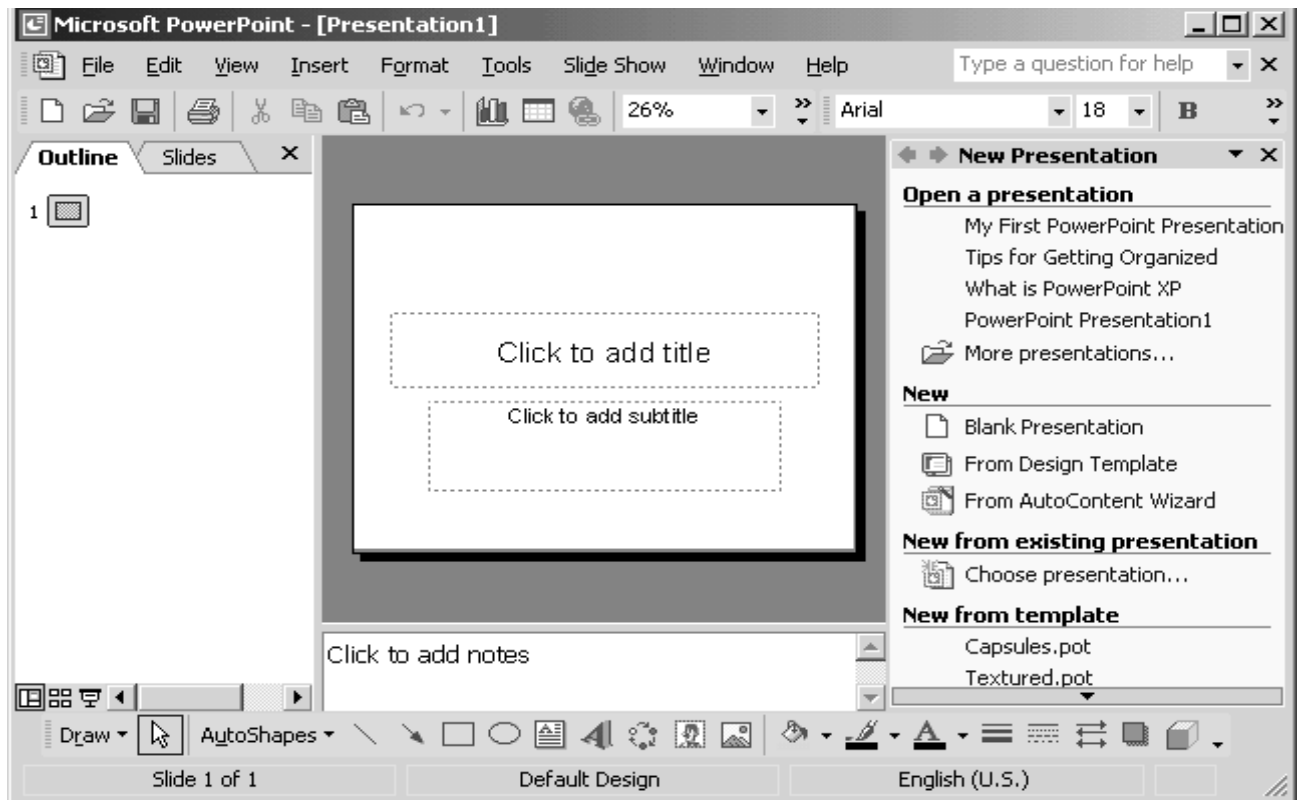
You can hide or show the different panes in Normal View. To hide the Task Pane, click on the View menu and choose Task Pane. (The View menu also allows you to choose other views). To hide the Outline View and Slide Tabbed Panes, click on the X to the left of the Slides Tab.

More Views

Here are some other views that may be useful as you create your presentations:

Slide Sorter View lets you see small versions of all the slides you have created. You can delete, copy, and move slides in this view.

Slide Show lets you see your presentation electronically as it will appear to an audience.

The Task Pane

The PowerPoint XP Task Pane replaces the dialog boxes used in PowerPoint 2000. The down-pointing arrow in the top, right corner of the pane allows you to select different menus and tools. By default, the Task Pane appears when PowerPoint XP is launched.
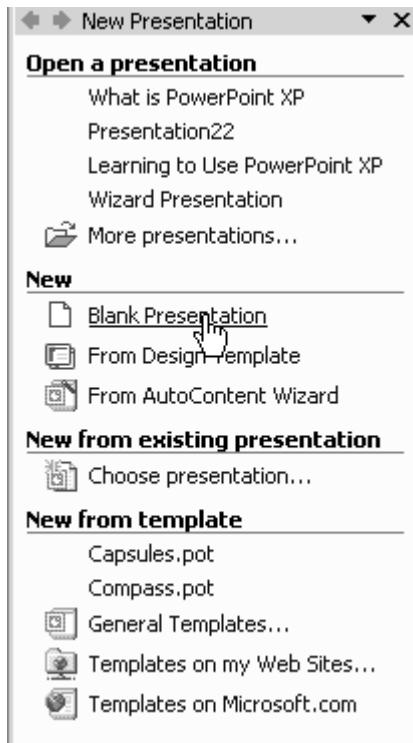
The Slide Layout and Slide Design panes within the Task Pane help organize layouts, design templates, and color schemes. When you select a design option, your slides are quickly updated with the new look.

You can view the Slide Layout and Slide Design panes by clicking on the down-pointing arrow next to New Presentation in the Task Pane.

Select Slide Layout or Slide Design (Design Templates, Color Schemes, Animation Schemes). You'll learn more about using these panes later in this course.
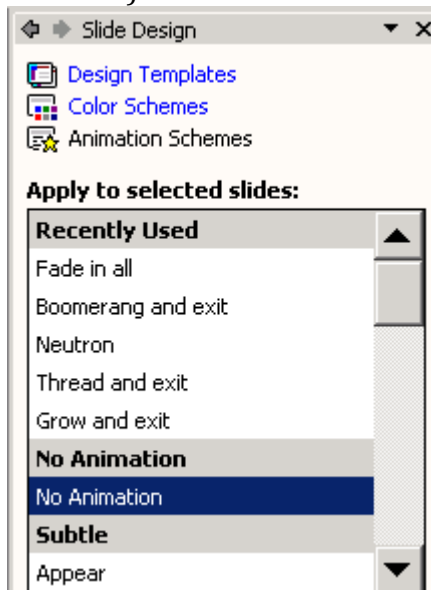
Using the Task Pane

If you do not see the Task Pane on the right side of the PowerPoint window, you can easily access it.

To Open the Task Pane:
Click View → Task Pane
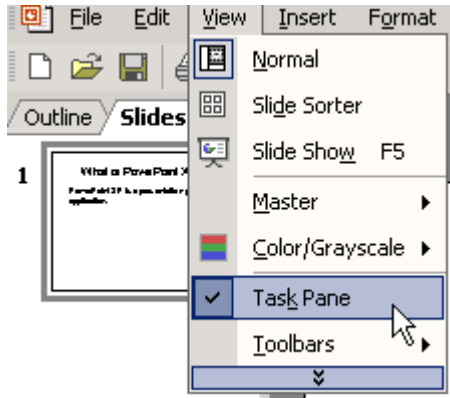
To View Different Panes:
Click on the down-pointing arrow next to New Presentation and select different panes. Once you open different panes, you can move through them by clicking on the backward and forward arrow buttons on the left.

To Close the Task Pane:
Click the X on the right corner of the bar.
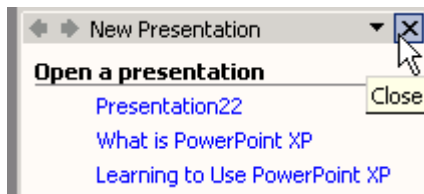
You can hide or view the Task Pane by clicking on View → Task Pane.

Pull-Down Menus

PowerPoint XP's menu bar operates differently than the one in PowerPoint 2000. The menu initially displays commands that you most often use. To view infrequently used commands, you use pull-down menus.

To View Commands in a Pull-Down Menu:
Click on a menu in the menu bar. (File, Edit, View, Insert, etc.)
Move your mouse pointer over the double arrows at the bottom of the pull-down menu.

Hover mouse pointer over double arrows to view pull down menu
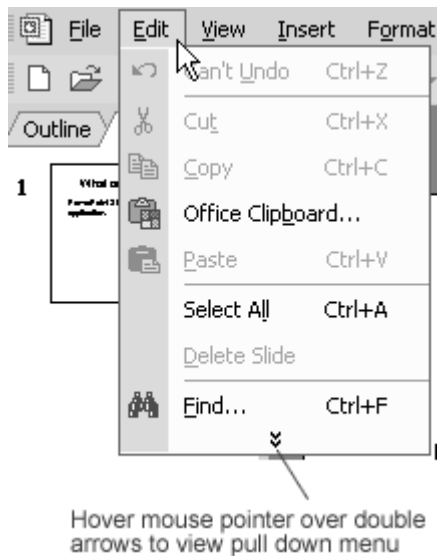
Notice that some menus have black arrows to the right. Slide you mouse pointer over the arrow to view more options.
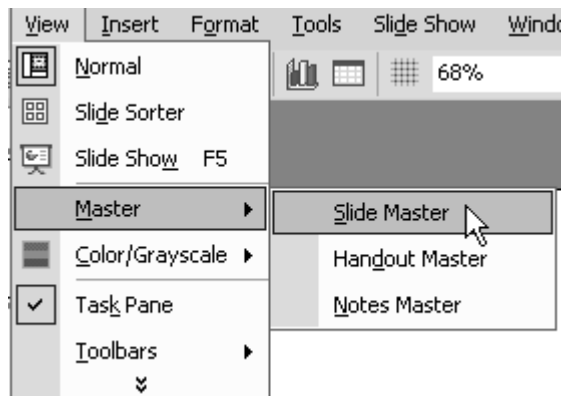
Use of Internet for office works like E-mail & Web browsing

How Does the Internet Work?

The Internet is a worldwide collection of computer networks, cooperating with each other to exchange data using a common software standard. Through telephone wires and satellite links, Internet users can share information in a variety of forms.

connect easily through ordinary personal computers and local phone numbers;

- exchange electronic mail (E-mail) with friends and colleagues with accounts on the Internet;
- post information for others to access, and update it frequently;
- access multimedia information that includes sound, photographic images and even video; and
- access diverse perspectives from around the world.

An additional attribute of the Internet is that it lacks a central authority—in other words, there is no "Internet, Inc." that controls the Internet. Beyond the various governing boards that work to establish policies and standards, the Internet is bound by few rules and answers to no single organization.

The History of the Internet

Many people think that the Internet is a recent innovation, when in fact the essence of it has been around for over a quarter century. The Internet began as ARPAnet, a U.S. Department of Defense project to create a nationwide computer network that would continue to function even if a large portion of it were destroyed in a nuclear war or natural disaster.

During the next two decades, the network that evolved was used primarily by academic institutions, scientists and the government for research and communications. The appeal of the Internet to these bodies was obvious, as it allowed disparate institutions to connect to each others' computing systems and databases, as well as share data via E-mail.

The nature of the Internet changed abruptly in 1992, when the U.S. government began pulling out of network management, and commercial entities offered Internet access to the general public for the first time. This change in focus marked the beginning of the Internet's astonishing expansion.

How Do People Use the Internet?

Among the ways that users like yourself are taking advantage of the Internet are:

- Sharing research and business data among colleagues and like-minded individuals.
- Communicating with others and transmitting files via E-mail.
- Requesting and providing assistance with problems and questions.
- Marketing and publicizing products and services.
- Gathering valuable feedback and suggestions from customers and business partners.

Unlike many computer networks, the Internet consists of not one but multiple data systems that were developed independently. The most popular and important systems are:

E-mail, for exchange of electronic mail messages.

USENET newsgroups, for posting and responding to public "bulletin board" messages.

File Transfer Protocol (FTP), a system for storing and retrieving data files on large computer systems.

Gopher, a method of searching for various text-based Internet resources (largely obsolete).

TELNET, a way of connecting directly to computer systems on the Internet.

Internet Relay Chat (IRC), a system for sending public and private messages to other users in "real time"—that is, your message appears on the recipient's screen as soon as you type it.

CU-SeeMe, a videoconferencing system that allows users to send and receive sound and pictures simultaneously over the Internet.

The World Wide Web.

- Before you can connect to the Internet and access the World Wide Web, you need to have certain equipment. In brief, you must have a computer (preferably running an up-to-date operating system); a modem and access to a telephone line or a local area network (LAN) that is in turn connected to the Internet; and connection software that will allow you to establish an account with a service provider and access the Internet.

- A modem is not needed when accessing the Internet through a LAN.

The Right Hardware
To operate most of the current Web browsers and on-line services, you should have an IBM PC/PC equivalent, UNIX workstation, or Apple Macintosh **computer** with at least 8 megabytes (MB) of random access memory (RAM) and 10 MB of free disk space. If you are unsure of how much RAM and disk space your computer has.

You must also have access to a live **telephone line**. Most modems accept the same jacks as do ordinary household telephones, allowing you to connect your modem to a wall jack using standard phone cord.

The Right Software
For best results, make sure that your computer is running the most up-to-date **operating system** that it can handle. If you have an IBM PC/PC compatible computer, it should be running Microsoft Windows version 3.1, Windows NT, Windows 95 or OS/2. If you have a Macintosh, it should be running System 7 or higher.

The Browser
The application program that serves as the primary method for accessing the World Wide Web, which is one of the major services on the Internet. In order to view a Web site, its address (URL), such as www.mtnlmumbai.in, is typed into the search box at the top of the browser, and the site's home page is retrieved.

- **Browsers have numerous features including bookmarks (Favorites) that store the addresses (URLs) of frequently used pages. Tabs are another useful feature that enable multiple Web pages to remain open within the browser. Internet Explorer, Firefox, Safari...**
- **The most widely used Web browsers are Microsoft's Internet Explorer (IE), Mozilla's Firefox and Apple's Safari. All are free, and Firefox and Safari run in both Windows and Mac.**
- **All browsers offer similar features, no matter which computer they run on. The way users interact with a Web page has more to do with the page than the browser. Web pages contain embedded programs that turn them into applications not much different than the software users install in their own computers.**

Web Browser History
The Mosaic browser put the Web on the map in 1993, but by the mid-1990s, Netscape Navigator had 80% of the market. Vying for top spot, Netscape and Internet Explorer (IE) constantly added features that fragmented Web sites into competing camps. In the early

days, one often found sites with notices such as "Best Viewed in Netscape" or "Best Viewed in Internet Explorer." By 2008 Internet Explorer, which comes with Windows, had roughly 74% of the market, while Firefox had 18%. Safari came in third with 6%, and Opera and Netscape each had less than 1.

Firefox on the Mac

BROWSING CONCEPTS

Browsing

A term that refers to exploring an online area, usually on the World Wide Web

Browser

Software that will load and display a web page.

A browser interprets the HTML or XML code from the web page files, executes embedded scripts and programs, provides encryption/decryption for security where needed, displays graphics (except text-only browsers), plays music and video, and provides links to related pages. Browsers are purportedly based on standards

developed by the World Wide Web Consortium and recognized by the Internet Engineering Task Force.

URL

Uniform Resource Locators

The World Wide Web address of a site on the Internet. The URL for the Internal Revenue Service, for example, is http://www.irs.gov. (See also "Domain name")

protocol:/ / host.domain.first-level domain
http://cettm.mtnl.in

What is DNS?

* Domain Name Service
* Internet Protocol
* Distributed database
* Maps hierarchically organized keys to values
* E.g. host name to IP address
* Mailer records
* Name space
* Developed to replace hosts file

DNS Namespace

* Hierarchical tree of domains -Root
* Top level domains (gov, edu, com, fr, se, uk etc.)
* Some countries have subdomains denoting organisation type (e.g. ac.uk, co.uk)
* Subdomains generally for specific organisations (e.g. mit.edu, microsoft.com etc.)
* Subdomains within organisation (e.g. oucs.ox.ac.uk)
* Technically, a domain is the part of the name space at or below the domain name identifying the domain.

Top level domains

There are basically divided into three areas .arpa (special domain) .com .org . mil .gov etc (generic domains) . in . uk . sg . au etc (country domains)

DNS Namespace

.(root)commilorgedugovnetarpain31fr3comdellatiorgnetmtnlvsnl

Delegation of Responsibility

* Vital to understand this concept

- DNS Database is distributed
- No one server is responsible for the whole namespace
- Given name server is responsible for part of the namespace
- Called a zone
- Server is "authoritative" for the zone

Delegation of Authority

- Authority is delegated from the top down
- Cannot simply set up a name server for a domain and expect clients to resolve names correctly
- Name servers for parent domain must know that authority has been delegated to new domain
- E.g. if new ac.uk domain xxx.ac.uk is created, name servers for ac.uk must be configured with information about name servers responsible for new domain

Name Servers

Root Name Servers

They provide guidance to all name servers. They do not contain all information about every host on the internet, but they do provide direction as to where domains are located (the IP address of the name server for the uppermost domain a server is requesting)

- The root name server is the starting point to find any domain on the network.
- If access to the root name servers ceased, transmissions over the internet would eventually come to a halt.

DNS Queries

Client queries DNS Server

DNS Server

- Checks its cache
- Checks whether it contains the information in its own zone files
- Queries other name servers iteratively
- Returns an answer

Iterative Queries

- Example — client queries name server for IP address of mumbai.mtnl.net.in
- Sends query to root name servers
- Root name servers refer to name servers authoritative for in domain name servers(at NCST PUNE)
- in name servers refer to name servers authoritative for net.in domain
- net.in name servers refer to name servers authoritative for mtnl.net.in domain name servers (at MTNL's site 127.95.69.125)
- Name server returns answer to client(MTNL's DNS returns IP address)

DNS Hierarchy
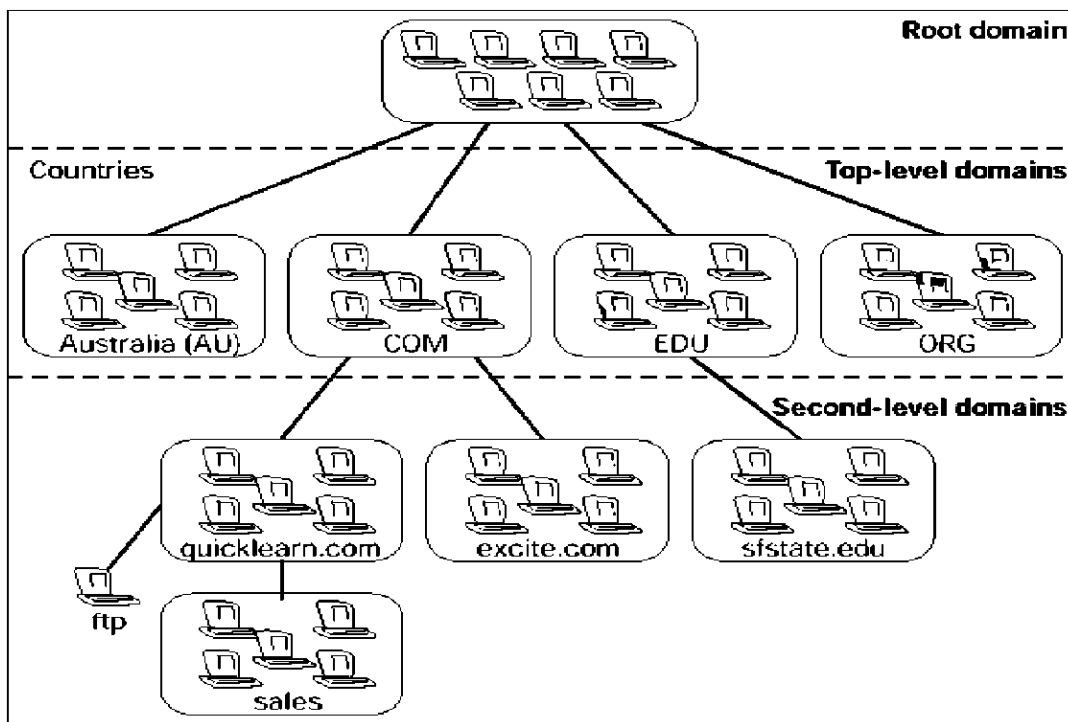
DNS Hierarchy

- The top level of the DNS hierarchy, also called the **root** level, is maintained by a set of 13 servers called **root name servers**.
- These servers have gained some notoriety for their unique role on the Internet. Maintained by various independent agencies, the servers are uniquely named A, B, C and so on up to M.
- Ten of these servers reside in the United States, one in Japan, one in London, and one in Stockholm, Sweden.

Domain hierarchy

- An organisation administering a domain can divide it into subdomains. Each of those subdomains can be delegated to other organisations.
- The organisations delegated to become responsible for all the data can further subdivide the subdomain and delegate those
- If the subdomain is not delegated away the some contains the domain names and data in the subdomain.
- The parent domain points to the sub domain's name server for address mapping

Name resolution
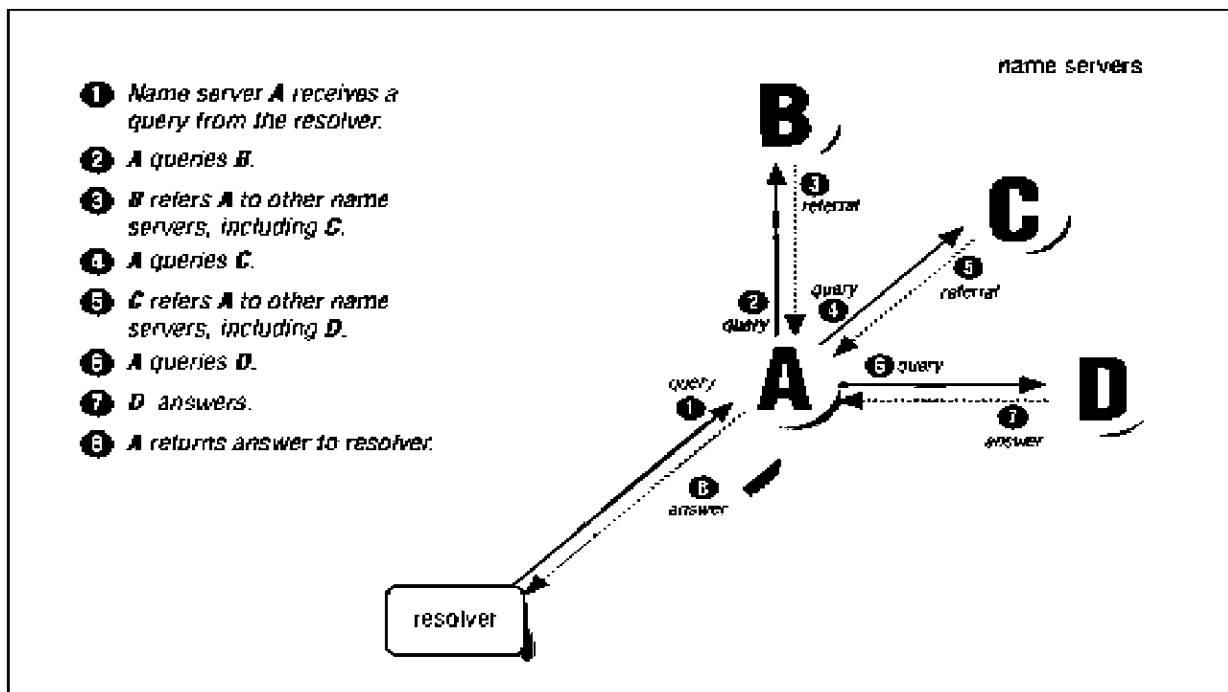
Location of Root Name Servers

University of Maryland College Park, MD (US)

A B C D E F G H IJ KLM

Letter   Old name

- ns.internic.net
- ns1 .isi.edu
- c.psi.net
- terp.umd.edu
- ns.nasa.gov
- ns.isc.org
- ns.nic.ddn.mil

- aos.arl.army.mil
- nic.nordu.net
- Operator VeriSign I SI
- Cogent
- NASA I SC
- U.S. DoD NIC U.S. Army Autonomica VeriSign
- RI PE I CANN
- WIDE Project
- Location Dulles, VA (US) Marina Del Rey, CA (US) Herndon, VA (US)
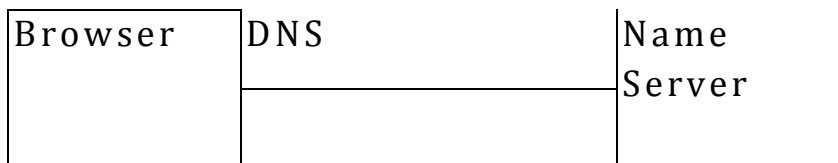- Mountain View, CA (US) Palo Alto, CA (US)
- Vienna, VA (US)
- Aberdeen, MD (US)
- Stockholm (Sweden) Dulles, VA (US)
- London (UK) Los Angeles (US) Tokyo (Japan)

Browser to Name Server

Browser	DNS	Name Server

How Web Browser gets IP number of a URL

Client application (Browser,Email,FTP) needs IP address of the URL.

The Web browser first goes to a local DNS server (either company intranet or ISP) to get this information. If the IP address is a local one, the DNS server will be able to resolve the URL with the IP address. It will send the true I P address to the computer.

The Web browser now uses that IP address and contacts the site. The site sends you the information requested.

If the information requested isn't on the intranet/ISP -and if the local DNS server doesn't have the IP address-the intranet DNS server must get the information from a DNS server on the Internet. The intranet DNS server contacts the *root domain server.* The root domain server tells the intranet/ISP server which primary nameserver and secondary nameserver has the information about the requested URL.

The intranet DNS server now contacts the primary nameserver. If the IP address cannot be found in the primary nameserver, the intranet DNS server contacts the secondary server. Once found, the information is sent back to the Browser.

The Web browser now uses the I P address to contact the proper site.

Web Page

- A Web page is a simple text file that contains not only text, but also a set of **HTML tags** that describe how the text should be form atted when a browser displays it on the screen.
- The tags are simple instructions that tell the Web browser how the page should look when it is displayed. The tags tell the browser to do things like change the font size or color, or arrange things in columns. The Web browser **interprets** these tags to decide how to format the text onto the screen.

Web Server

A Web server is a piece of computer software that can respond to a browser's request for a page, and deliver the page to the Web browser through the Internet.

HTML

- HTML stands for **Hyper Text Markup Language.**
- A globally accepted document format which can be read by everybody using a software known as browser (which is a freeware)
- A "markup language" is a computer language that describes how a page should be formatted. I f all you want to do is display a long string of black and white text with no formatting, then you don't need HTML. But if you want to change fonts, add colors, create headlines and embed graphics in your page, HTML is the language you use to do

HTTP

- Hypertext Transfer Protocol) - The protocol for moving hypertext files across the Internet.
- Requires a HTTP client program on one end (browser), and an HTTP server program(Web Server) on the other end.
- HTTP is the most important protocol used in
- the World Wide Web
- HTTP uses TCP/IP protocol suite HTTP uses Port Number 80

Web Client to Web Server

Browser	HTTP	Web Server

FTP
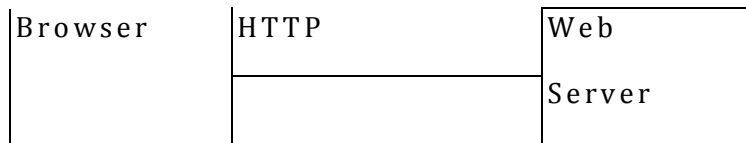
- File Transfer Protocol
- A way of transferring files over the Internet from one computer to another
- FTP also uses TCP/IP protocol suite
- FTP enables File Transfers between client and an FTP Server
- FTP uses Port No. 20 & 21

Portal (Web Portal)

A **web portal** is a web site that provides a starting point, a gateway, or portal, to other resources on the Internet or Intranet. Portals are also known as Enterprise information portals (EIP).

Types of Web Portals

'Mega' Web Portals provide a broad range of features, services, content and commercial partnerships.Examples include:

http://yahoo.com, http://my.netscape.com, and http://my.oracle.com. 'Vertical', or 'Niche', Web Portals (also known as Vortals) focus on a specialized audience and/or topic, and provide features like search engines, discussions, and directories. Exam ples include:
•http://www.searchbug.com - Special Searches (find people)

Web Directories

A **web directory** is a directory on the World Wide Web that specializes in linking to other web sites and categorizing those links. Web directories often allow site owners to submit their site for inclusion. editors review submissions for fitness.

Famous web directories are Google, LookSmart, and Yahoo!.

What is a Search Engine ?

- A tool that enables users to locate information on the World Wide Web. Search engines use keywords entered by users to find Web sites which contain the information sought
- Top 5 Search Engines   Searches Per Day
- Google Overture
- 250 million
- 167 million
- Inktomi

- 80 million
- LookSmart
- 45 million
- FindWhat
- 33 million

Search Engines

Internet search engines are special sites on the Web that are designed to help people find information stored on other sites. There are differences in the ways various search engines work, but they all perform three basic tasks:

•They search the Internet -- or select pieces of the Internet -- based on important words.

•They keep an index of the words they find, and where they find them.

•They allow users to look for words or com binations of words found in that index

How search engine works ?

A search engine employs special software robots, called **spiders**, to build lists of the words found on Web sites. When a spider is building its lists, the process is called **Web crawling**

The usual starting points are lists of heavily u sed ser v er s an d v er y p opu lar p ag es. Th e spider will begin with a popular site, indexing the words on its pages and following every link found within the site. In this way, the spidering system quickly begins to travel, spreading out across the most widely used portions of the Web.
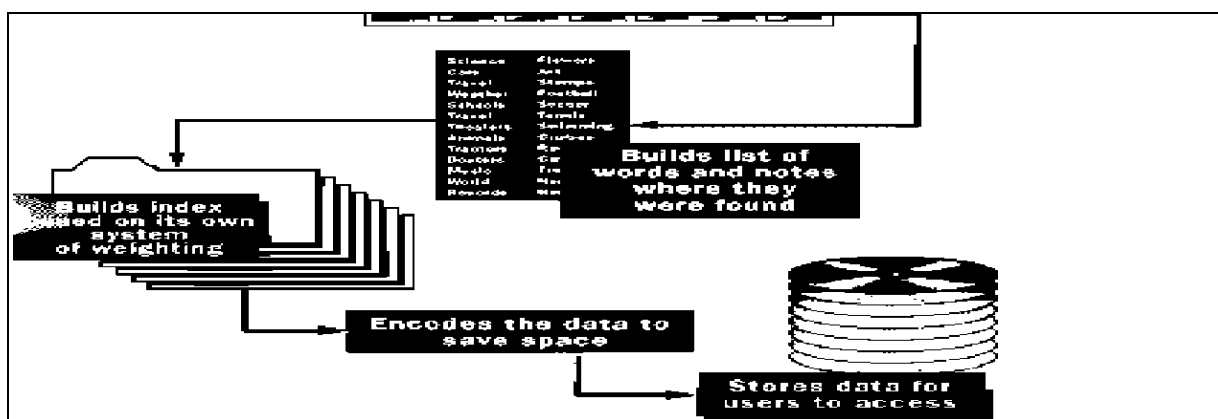
How search engine works ?

Tips for quick Search

• Be specific while searching

•Use the + symbol to add more words (except Google Search)

E.g. "Windows+ 98+ bugs" will search for pages containing all the three words

•Use the - symbol to subtract (to eliminate) the words

E. g. "Gandhi -Sonia" will search for pages containing "Gandhi" except "Sonia"

Tips for quick Search

Using quotation marks to get exact search

Eg: "Windows xp" will search the pages containing "Windows xp" only.

Site search in Altavista

Eg: "host: mtnl.net.in" will search for the web sites under the domain of "mtnl.net.in"

host: mtnl.net.in -delhi will exclude a particular site viz. delhi.mtnl.net.in

Title Search

In Altavista, use the title command to find documents with the title specified

E.g.: title: mtnl will fetch the documents with title "MTNL"

In Google, use intitle

E.g.: intitle: bsnl

allintitle: will fetch documents that have all words specified in their page title

E.g.: allintitle: bsnl,mtnl

Power search commands

Visit the following site for more power searching commands

http:/, searchenginewatch.com/facts/article. php/2155981
Plug-ins
* A sm all piece of software that enriches a larger piece of software by adding features or fu n ctions.

- Plug-ins enable browsers to play/display audio/video/text files
- Adobe Acrobat Reader
- Macromedia Flash Player
- Real Audio Player
- Macromedia Shock Wave
- Winzip
- JVM (Java Virtual Machine)

Flash Player

Flash Player is perhaps the most needed plug-in. 75% of the animated advertisements you see online are Flash .swf "movies" (Shockwave format).
Here is one Flash movie example:
Given Sunday.

Adobe Acrobat Reader

.pdf (Portable Document Format) viewing.
Most government forms, online application forms, and a multitude of other documents
use .pdf format on the Web.

Windows Media Player

To run .mov, .mp3, .wav, .au, and .avi files, Windows Media Player is perhaps the most popular for this purpose, but you can use a multitude of other movie / audio choices.

WinZip

WinZip, which allows you to download large files in "compressed" (shrunken file size) .zip format, and then expand the compressed files for full use on your computer.
This is the smartest tool for sending either large files, or batches of many smaller files.
Technically, WinZip is not a "plug-in", but it certainly is recommended as a web browsing partner tool.

Java Virtual Machine (JVM).

Java Virtual Machine; a software for interpreting compiled Java bytecode.
A **JVM** is **built** into most modern browsers
The JVM allows you to run online games and online program "applets" that are written in the Java programming language.
Here are some <u>sample Java game applets.</u>

- Applets
- A small Java program that can be embedded in an HTML page.

- Applets differ from full-fledged Java applications in that they are not allowed to access certain resources on the local com puter, such as files and serial devices (modems, printers, etc.), and are prohibited from communicating with most other computers across a network.
- The com m on rule is that an applet can only make an Internet connection to the computer from which the applet was sent.

Off-line Browsing

- To save on I nternet time and account web pages can be browsed offline.

- This can be done in two ways

- By saving web pages and viewing them offline.

- By synchronizing a site and going offline .

- Synchronizing can be done manually or can be scheduled

Smart Browsers

Certain browsers can download the entire web site.

These sites can be viewed offline. E.g.:

Webstripper WebZip

Recreational Software Advisory Council

Presently known as Internet Content Rating Association (ICRA)

Platform for Internet Content Selection - (PICS)

A standard for meta-data associated with World-Wide Web content, originally designed to help parents and teachers control what children access on the Internet, but also used for code signing and privacy. The PICS platform is one on which other rating services and filtering software have been built.

Cookies

- Persistent Client-State HTTP Cookies are files containing information about visitors to a web site (e.g. user name and preferences).

- This in form ation is provided by the u ser du rin g the first visit to a web server.

- The server records this information in a text file and stores this file on the visitor's hard drive.

- When the visitor accesses the same web site again th e server looks for th e cookie an d con figu res itself based on th e in form ation provided.

Connection Options

Until recently, the two primary methods of accessing the Internet were through a **network connection**, allowing users of local area networks (LANs) to go online through their school or workplace systems, and **dial-up connections** through a modem and phone line. However, new connection options allow for greater speeds and flexibility, while keeping costs to a minimum.

The following are some of the newer connection options that you might want to investigate:

- Cable Internet
- Satellite connections
- Integrated Services Digital Network (ISDN
- Wireless connections
- WebTV

What to Look for in an Access Provider

Access providers vary widely in the services and capabilities they offer. The providers listed at the beginning of this chapter offer local access throughout most of the United States; however, you might find that a smaller, local provider is more suited to your needs.

Email

Messages, usually text, sent from one person to another via computer.
E-mail can also be sent automatically to a large number of addresses.

E-Mail Environment
works in a client-server environment.
Client is the software that runs on user's Windows.
Server is a series of programs running on the operating system of the host computer.
Sends and receives mail from other Electronic Post Offices.

E-Mail Environment
E-mail Post Office program running on a host computer   (the server in ISP side).
The client program talks to the server program over the network to transfer mail back and forth.
Internet services are provided with servers, which, in turn, provide services.

Electronic Mail Boxes
- Each electronic mail box has an address. mailbox@computer
- users' mail box computer on which mail box resides (users' ID) (domain name)
Eg: vishal@yahoo.com

Email Message Header

From   Sender's address
To Recipient's address
Cc Address for Carbon Copy
Bcc   Address for Blind Carbon Copy
Date   Date on which message is sent
Sub   Topic of the message
Reply-To Address to which message should go

Types of Email

Client mail Eg: rttc@mtnl.net.in
Web mail Eg: rttc@yahoo.com
Client/Server Mail

An email system based on a client/server architecture requires a client software at the users' computer and a mail server software at the ISP node Email Client and an application software running on the users' computer.

Eg:
Outlook Express
Eudora
Netscape
Mozilla

Merits
•Speed: once you've downloaded your email all further manipulations occur locally.
•Older: more software is likely to support it.
•Offline: you can download and read your messages offline.
Demerits
Mail clients all store mail in different formats.
So if you want to switch clients it's a hassle to transfer your mail.

If you read mail from different locations, you can end up with mail scattered on different machines.

Email Server

An application software running on the ISP's Server.

Eg:
Workgroupmail mail server
Merak Mail server

Web mail

Web mail is the name given to provision of access to messages via a web browser (no need of an exclusive client software)

Advantages of web mail over client mail
- Access messages from anywhere.
- Email access is fast and efficient even over modems.

- Rich and familiar interface reduces the training costs of those who use the software.
- Encryption may be applied from the server to where-ever the user is (eg. at home, in an Internet Cafe, etc.) increasing security.
- High performance anti-spam, anti-virus

Merits

- Client independent: you can switch email clients / computer platforms without affecting your mail
- Location independent: you can check your mail from many locations without scattering your mail

Demerits

- If the mailer is unaccessible you can't access any of your mail.
- You have to be online while reading your mail.

EMAIL Protocols

a) X.400
b) SMTP
c) POP3
d) IMAP

X.400

An ISO and ITU standard for addressing and transporting e-mail messages.
It conforms to layer 7 of the OSI model and supports several types   of transport mechanisms, including Ethernet, X.25, TCP/IP, and dial-up lines.

Not widely used in Internet

SMTP
(Simple Mail Transfer Protocol)

protocol transferring mail between hosts in TCP/IP Protocol Suite.
uses information written on envelope of the mail (m essage header) but does not look at the contents (message body) of the envelope.
describes the communication between mail servers
port number is 25, and behaviour is described in RFC 821.

POP3
(Post Office Protocol

(Post Office Protocol Ver 3)

- a mail client for client mail.
- ensures the message makes it into the right mailbox on that server.
- used to retrieve email from a remote server to a local client over a TCP/IP connection.
- works over a TCP/IP connection using network port 110 and defined by RFCs 1734, 1957, 2449
- Application layer internet protocol

(I MAP) Internet Message Access
Protocol

- a mail client for web mail

- an application layer Internet protocol used for accessing email on a remote server from a local client.
- e-mail is received & held by internet server and one can view the heading and the sender of the letter and then decide whether to download the mail.
- create and manipulate folders or mailboxes on the server, delete messages or search for certain part or entire note.

MAI L TRANSPORT SYSTEM

**MUA** : Mail User Agent. A program used to create and receive mail messages.
MTA : Mail Transfer Agent. The means by which mail messages are transferred between machines over the internet. I t resides in the server.
MDA : Mail Delivery Agent. Mechanism that delivers the mail messages to the recipient mailbox when mail is delivered via an MTA to the Mail Server. I t resides in the server.

Email Client to Email Server

Email Client	POP3,IMAP,SMTP	Email Server
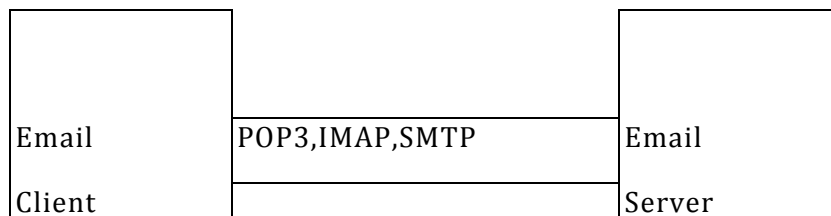
DELIVERY OF EMAI L THROUGH INTERNET
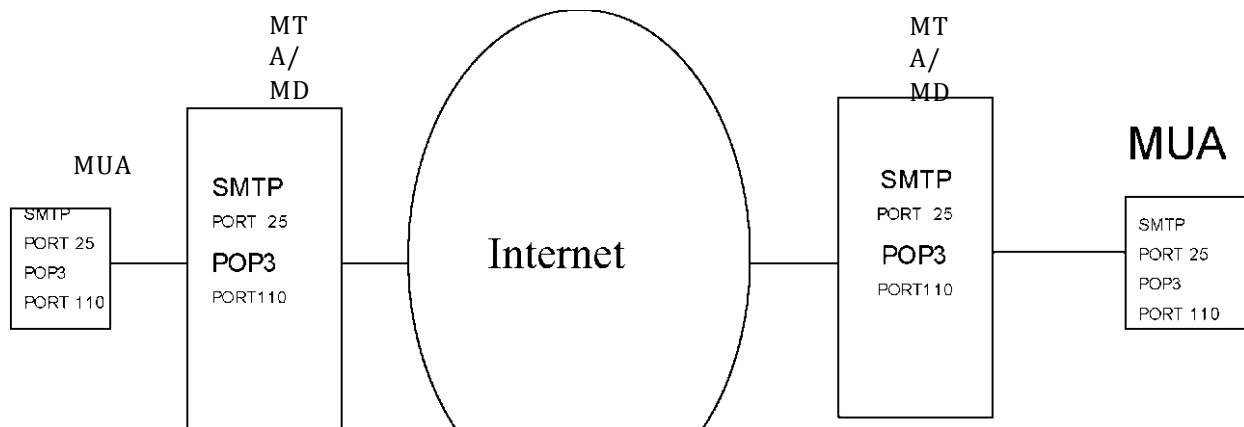
Instant messaging

- the ability to exchange messages in real time with other people over the Internet.
- To send and receive instant messages, a connection to the Internet and instant messaging software are needed.
- The instant messaging software enables you to set up a list of friends who also use the program.

- Once you set up this list, you can see if each friend is online at a particular moment. If so, you can begin a conversation with them quickly and easily.
- Most conversations are typed text messages that are sent back and forth, though more advanced users can exchange voice, video, files and more.

How to start using Messenger?
- Download and install the IM software.
- Get a user ID (mostly free of charge)
- What to do after signing in to **IM**

Add some people to your list! • See if people are online •Send an Instant Message

How to send an instant message
- Double-click on the name of a person in your Messenger List. A window will pop up with the person's name.
- Type your message to them and press the Enter key. Your message will be sent to them. You will also be able to see when they are typing a reply to your message.

Chatting jargons

- The conventions of chat systems include special items of jargon, generally abbreviations meant to save typing, which are not used orally. E.g., re, BCNU, BBL, BTW, CUL, FWIW, FYA, FYI, IMHO, OTT, TNX, WRT, WTF, WTH, , , BBL, HHOK, NHOH, ROTFL, AFK, b4, TTFN, TTYL, OIC, re.
- Chatting jargons.
- Chatting jargons
- In My Not So Humble Opinion   IMNSHO
- In My Humble Opinion   I MHO
- Over the top   OTT
- Thanks   TNX
-
- With Regard To, With Respect To.   WRT
- Ta-Ta For Now - goodbye for now   TTFN

be back later.	BBL
By the way.	BTW
"See you later".	CUL
For what it's worth.	FWIW
be seeing you	BCNU
For your amusement	FYA
For your information	FYI
In My Arrogant Opinion	I MAO
I n My Opinion	IMO

The feature of Linux Operating system

Every desktop computer uses an **operating system**. The most popular operating systems in use today are:

- Windows
- Mac OS
- UNIX

Linux is an operating system -- very much like **UNIX** -- that has become very popular over the last several years.

Operating systems are computer programs. An operating system is the first piece of software that the computer executes when you turn the machine on. The operating system loads itself into memory and begins managing the resources available on the computer. It then provides those resources to other applications that the user wants to execute. Typical services that an operating system provides include:

- **A task scheduler** - The task scheduler is able to allocate the execution of the CPU to a number of different tasks. Some of those tasks are the different applications that the user is running, and some of them are operating system tasks. The task scheduler is the part of the operating system that lets you print a document from your word processor in one window while you are downloading a file in another window and recalculating a spreadsheet in a third window.
- **A memory manager** - The memory manager controls the system's RAM and normally creates a larger virtual memory space using a file on the hard disk
- **A disk manager** - The disk manager creates and maintains the directories and files on the disk. When you request a file, the disk manager brings it in from the disk.
- **Security manager** - The OS maintains the security of the information in the computer's files and controls who can access the computer.

Linux is as much a phenomenon as it is an operating system. To understand why Linux has become so popular, it is helpful to know a little bit about its history. **The first version of UNIX was originally developed several decades ago and was used primarily as a research operating system in universities. High-powered desktop workstations from companies like Sun proliferated in the 1980s, and they were all based on UNIX**. A number of companies entered the workstation field to compete against Sun: HP, IBM, Silicon Graphics, Apollo, etc. Unfortunately, each one had its own version of UNIX and this made the sale of software difficult. Windows NT was Microsoft's answer to this marketplace. NT provides the same sort of features as UNIX operating systems -- security, support for multiple CPUs, large-scale memory and disk management, etc. -- but it does it in a way that is compatible with most Windows applications.

The **Linux kernel**, created by **Linus Torvalds**, was made available to the world for free. Torvalds then invited others to add to the kernel provided that they keep their contributions free. Thousands of programmers began working to enhance Linux, and the operating system grew rapidly. Because it is free and runs on PC platforms, it gained a sizeable audience among hard-core developers very quickly. Linux has a dedicated following and appeals to several different kinds of people:

- People who already know UNIX and want to run it on PC-type hardware
- People who want to experiment with operating system principles
- People who need or want a great deal of control over their operating system
- People who have personal problems with Microsoft

In general, Linux is harder to manage than something like Windows, but offers more flexibility and configuration options.

Linux File System

Linux file system structures and understand the meaning of individual high-level directories.
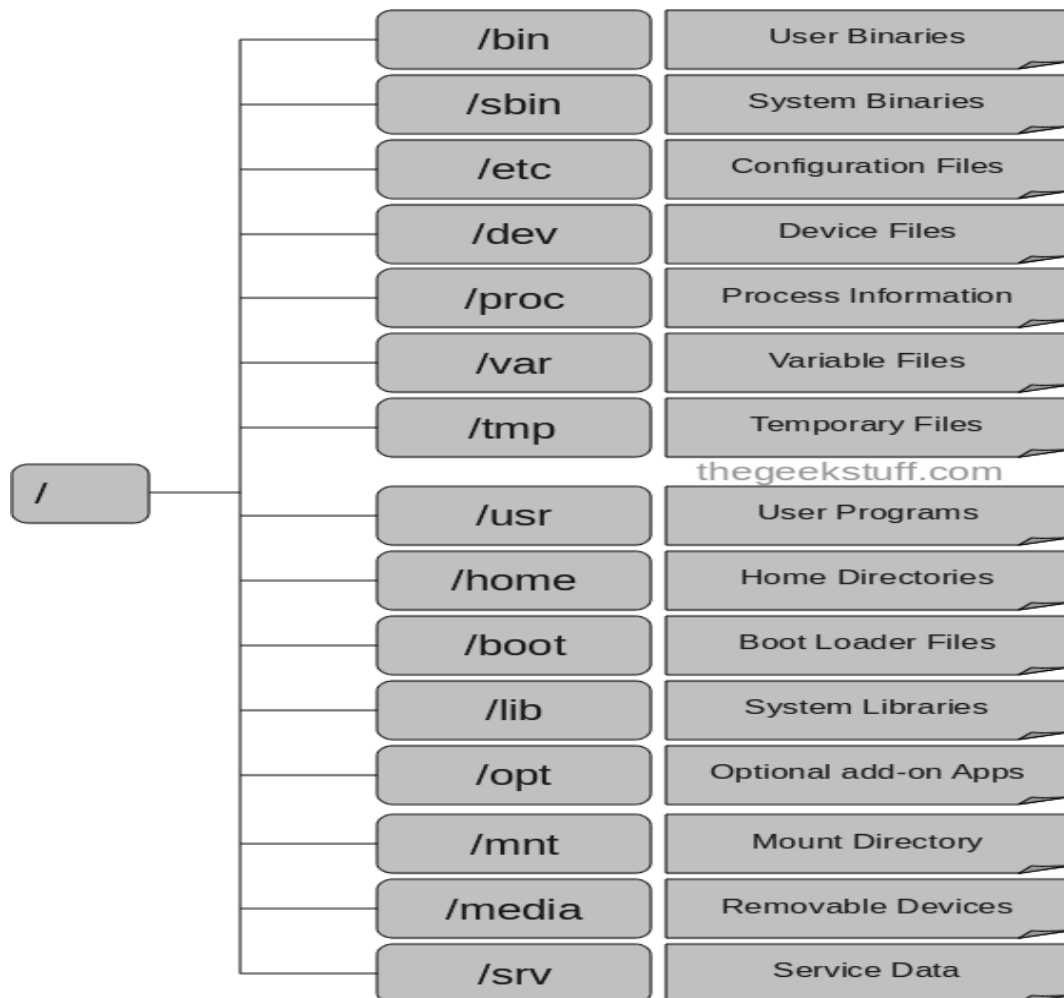
1. / – Root

- Every single file and directory starts from the root directory.
- Only root user has write privilege under this directory.
- Please note that /root is root user's home directory, which is not same as /.

2. /bin – User Binaries

- Contains binary executables.
- Common linux commands you need to use in single-user modes are located under this directory.
- Commands used by all the users of the system are located here.
- For example: ps, ls, ping, grep, cp.

| **MEA - Mumbai**

3. /sbin – System Binaries

- Just like /bin, /sbin also contains binary executables.
- But, the linux commands located under this directory are used typically by system aministrator, for system maintenance purpose.
- For example: iptables, reboot, fdisk, ifconfig, swapon

4. /etc – Configuration Files

- Contains configuration files required by all programs.
- This also contains startup and shutdown shell scripts used to start/stop individual programs.
- For example: /etc/resolv.conf, /etc/logrotate.conf

5. /dev – Device Files

- Contains device files.
- These include terminal devices, usb, or any device attached to the system.
- For example: /dev/tty1, /dev/usbmon0

6. /proc – Process Information

- Contains information about system process.
- This is a pseudo filesystem contains information about running process. For example: /proc/{pid} directory contains information about the process with that particular pid.
- This is a virtual filesystem with text information about system resources. For example: /proc/uptime

7. /var – Variable Files

- var stands for variable files.
- Content of the files that are expected to grow can be found under this directory.
- This includes — system log files (/var/log); packages and database files (/var/lib); emails (/var/mail); print queues (/var/spool); lock files (/var/lock); temp files needed across reboots (/var/tmp);

8. /tmp – Temporary Files

- Directory that contains temporary files created by system and users.
- Files under this directory are deleted when system is rebooted.

9. /usr – User Programs

- Contains binaries, libraries, documentation, and source-code for second level programs.
- /usr/bin contains binary files for user programs. If you can't find a user binary under /bin, look under /usr/bin. For example: at, awk, cc, less, scp
- /usr/sbin contains binary files for system administrators. If you can't find a system binary under /sbin, look under /usr/sbin. For example: atd, cron, sshd, useradd, userdel
- /usr/lib contains libraries for /usr/bin and /usr/sbin
- /usr/local contains users programs that you install from source. For example, when you install apache from source, it goes under /usr/local/apache2

10. /home – Home Directories

- Home directories for all users to store their personal files.
- For example: /home/john, /home/nikita

11. /boot – Boot Loader Files

- Contains boot loader related files.
- Kernel initrd, vmlinux, grub files are located under /boot
- For example: initrd.img-2.6.32-24-generic, vmlinuz-2.6.32-24-generic

12. /lib – System Libraries

- Contains library files that supports the binaries located under /bin and /sbin
- Library filenames are either ld* or lib*.so.*
- For example: ld-2.11.1.so, libncurses.so.5.7

13. /opt – Optional add-on Applications

- opt stands for optional.
- Contains add-on applications from individual vendors.
- add-on applications should be installed under either /opt/ or /opt/ sub-directory.

14. /mnt – Mount Directory

- Temporary mount directory where sysadmins can mount filesystems.

15. /media – Removable Media Devices

- Temporary mount directory for removable devices.
- For examples, /media/cdrom for CD-ROM; /media/floppy for floppy drives; /media/cdrecorder for CD writer

16. /srv – Service Data

- srv stands for service.
- Contains server specific services related data.
- For example, /srv/cvs contains CVS related data.

General overview of the Linux file system

- **A simple description of the UNIX system, also applicable to Linux, is this:**
- **"On a UNIX system, everything is a file; if something is not a file, it is a process."**
- **In order to manage all those files in an orderly fashion, man likes to think of them in an ordered tree-like structure on the hard disk, as we know from MS-DOS (Disk Operating System) for instance. The large branches contain more branches, and the branches at the end contain the tree's leaves or normal files. For now we will use this image of the tree, but we will find out later why this is not a fully accurate image.**
- **Most files are just files, called *regular* files; they contain normal data, for example text files, executable files or programs, input for or output from a program and so on.**

- **While it is reasonably safe to suppose that everything you encounter on a Linux system is a file, there are some exceptions.**

  - *Directories*: files that are lists of other files.
  - *Special files*: the mechanism used for input and output. Most special files are in /dev, we will discuss them later.
  - *Links*: a system to make a file or directory visible in multiple parts of the system's file tree. We will talk about links in detail.
  - *(Domain) sockets*: a special file type, similar to TCP/IP sockets, providing inter-process networking protected by the file system's access control.
  - *Named pipes*: act more or less like sockets and form a way for processes to communicate with each other, without using network socket semantics.

This table gives an overview of the characters determining the file type:

File types in a long list

Symbol	Meaning
-	Regular file
d	Directory
l	Link
c	Special file
s	Socket
p	Named pipe
b	Block device

In order not to always have to perform a long listing for seeing the file type, a lot of systems by default don't issue just **ls**, but **ls -F**, which suffixes file names with one of the characters "/=*|@" to indicate the file type. To make it extra easy on the beginning user, both the -F and --color options are usually combined, see Section 3.3.1.1. We will use **ls -F** throughout this document for better readability.

As a user, you only need to deal directly with plain files, executable files, directories and links. The special file types are there for making your system do what you demand from it and are dealt with by system administrators and programmers.

Now, before we look at the important files and directories, we need to know more about partitions.

Mount points

All partitions are attached to the system via a mount point. The mount point defines the place of a particular data set in the file system. Usually, all partitions are connected through the *root* partition. On

this partition, which is indicated with the slash (/), directories are created. These empty directories will be the starting point of the partitions that are attached to them. An example: given a partition that holds the following directories:

| videos/ | cd-images/ | pictures/ |

We want to attach this partition in the filesystem in a directory called /opt/media. In order to do this, the system administrator has to make sure that the directory /opt/media exists on the system. Preferably, it should be an empty directory. How this is done is explained later in this chapter. Then, using the **mount** command, the administrator can attach the partition to the system. When you look at the content of the formerly empty directory /opt/media, it will contain the files and directories that are on the mounted medium (hard disk or partition of a hard disk, CD, DVD, flash card, USB or other storage device).

During system startup, all the partitions are thus mounted, as described in the file /etc/fstab. Some partitions are not mounted by default, for instance if they are not constantly connected to the system, such like the storage used by your digital camera. If well configured, the device will be mounted as soon as the system notices that it is connected, or it can be user-mountable, i.e. you don't need to be system administrator to attach and detach the device to and from the system.

On a running system, information about the partitions and their mount points can be displayed using the **df** command (which stands for *disk full* or *disk free*). In Linux, **df** is the GNU version, and supports the -h or *human readable* option which greatly improves readability. Note that commercial UNIX machines commonly have their own versions of **df** and many other commands. Their behavior is usually the same, though GNU versions of common tools often have more and better features.

More file system layout

For convenience, the Linux file system is usually thought of in a tree structure. On a standard Linux system you will find the layout generally follows the scheme presented below.

Linux file system layout
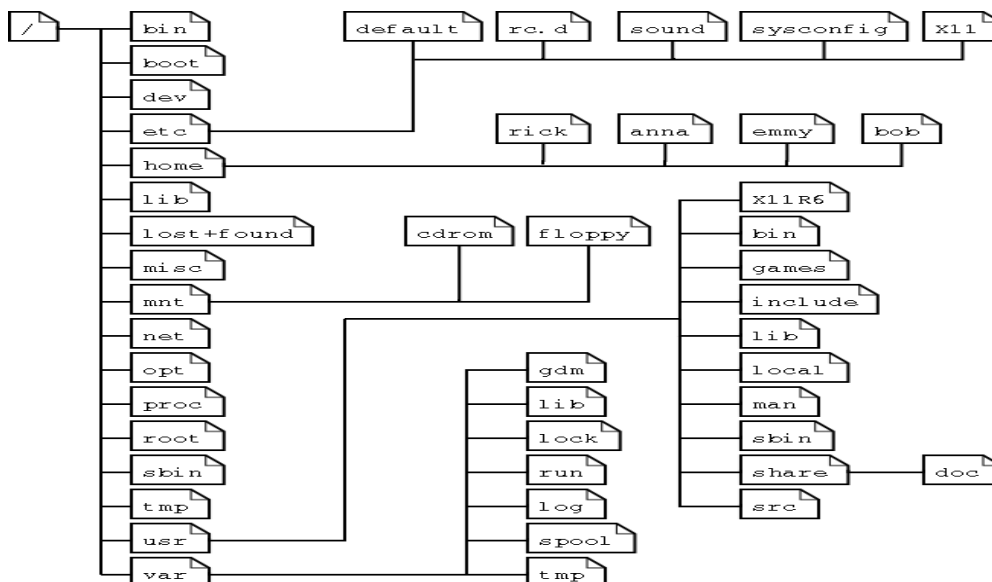
This is a layout from a RedHat system. Depending on the system admin, the operating system and the mission of the UNIX machine, the structure may vary, and directories may be left out or added at will.

| MEA - Mumbai

The tree of the file system starts at the trunk or *slash*, indicated by a forward slash (/). This directory, containing all underlying directories and files, is also called the *root directory* or "the root" of the file system.

Subdirectories of the root directory

Directory	Content
/bin	Common programs, shared by the system, the system administrator and the users.
/boot	The startup files and the kernel, `vmlinuz`. In some recent distributions also `grub` data. Grub is the GRand Unified Boot loader and is an attempt to get rid of the many different boot-loaders we know today.
/dev	Contains references to all the CPU peripheral hardware, which are represented as files with special properties.
/etc	Most important system configuration files are in `/etc`, this directory contains data similar to those in the Control Panel in Windows
/home	Home directories of the common users.
/initrd	(on some distributions) Information for booting. Do not remove!
/lib	Library files, includes files for all kinds of programs needed by the system and the users.
/lost+found	Every partition has a `lost+found` in its upper directory. Files that were saved during failures are here.
/misc	For miscellaneous purposes.
/mnt	Standard mount point for external file systems, e.g. a CD-ROM or a digital camera.
/net	Standard mount point for entire remote file systems
/opt	Typically contains extra and third party software.
/proc	A virtual file system containing information about system resources. More information about the meaning of the files in `proc` is obtained by entering the command **man *proc*** in a terminal window. The file `proc.txt` discusses the virtual file system in detail.
/root	The administrative user's home directory. Mind the difference between /, the root directory and /root, the home directory of the *root* user.

Directory	Content
/sbin	Programs for use by the system and the system administrator.
/tmp	Temporary space for use by the system, cleaned upon reboot, so don't use this for saving any work!
/usr	Programs, libraries, documentation etc. for all user-related programs.
/var	Storage for all variable files and temporary files created by users, such as log files, the mail queue, the print spooler area, space for temporary storage of files downloaded from the Internet, or to keep an image of a CD before burning it.

THE FILE SYSTEM IN REALITY

For most users and for most common system administration tasks, it is enough to accept that files and directories are ordered in a tree-like structure. The computer, however, doesn't understand a thing about trees or tree-structures.

Every partition has its own file system. By imagining all those file systems together, we can form an idea of the tree-structure of the entire system, but it is not as simple as that. In a file system, a file is represented by an *inode*, a kind of serial number containing information about the actual data that makes up the file: to whom this file belongs, and where is it located on the hard disk.

Every partition has its own set of inodes; throughout a system with multiple partitions, files with the same inode number can exist.

Each inode describes a data structure on the hard disk, storing the properties of a file, including the physical location of the file data. When a hard disk is initialized to accept data storage, usually during the initial system installation process or when adding extra disks to an existing system, a fixed number of inodes per partition is created. This number will be the maximum amount of files, of all types (including directories, special files, links etc.) that can exist at the same time on the partition. We typically count on having 1 inode per 2 to 8 kilobytes of storage.

At the time a new file is created, it gets a free inode. In that inode is the following information:

- Owner and group owner of the file.
- File type (regular, directory, ...)
- Date and time of creation, last read and change.
- Date and time this information has been changed in the inode.
- Number of links to this file (see later in this chapter).
- File size
- An address defining the actual location of the file data.

What is KDE?

- KDE stands for The *K Desktop Environment,* and is made by the KDE organisation worldwide.
- KDE is open software in every sense, and the company is made up of the Unix community whom contribute to it. Anyone with the desire to can contribute to KDE, you needent just be a programmer either, you can be a bug reporter, a documentarist, a graphic design artist and many other imaginable posts.
- You make KDE what it is, and KDE provides back to you. The ideas behind the Gnome project are inherently similar.

So What is KDE then?

- KDE is a Windowing Manager and Graphical User Interface for the UNIX operating system, not just Linux (but was made on Linux machines).
- KDE has been with us since approximately 1997 and is the one of two most popular desktops for Linux. You can freely download and distribute KDE, and these days, there is no restriction on copying it.
- At the heart of KDE, lies a graphical toolkit and fully featured programming language called Qt. Qt is found on many platforms including Mobile Phones/PDAs, Windows and Mac OS, but is still most popular on the Linux/UNIX platform. Qt is made by a commercial company called Trolltech. Before early 2000, KDEs main aims are to make a highly usable, user friendly, functional and highly powerful graphical user interface. They definitely have fulfilled that goal.
- Users coming from either a Windows or a Mac OS background will feel quite at home with KDE as it has a very similar look and feel to both. For example, the Windows style 'Start' menu is alternated by the 'K' menu. Like MacOS X, it allows for skinning, transparencies and other eye candies, and can incorporate many 'Themes'.

What are the strong points about KDE?

- It is a fully featured Graphical User Interface, much like the Mac OS or Windows Desktop

- It has an excellent combination File Manager / Web Browser called Konqueror

- It is very user friendly, offering extensive help almost all of the time

- It has an excellent control panel for simplistically configuring your Linux system in one, easy to find place. It is likened to the Windows XP control panel interface.

- It is highly themeable and customizable, allowing you to make KDE look whatever way you wish.

- It has thousands of open source applications, games and utilities available.

- By default, it comes with loads of great applications such as an award winning Email client, Kmail, a complete Office suite, KOffice, as well as a Personal Information Manager, Editors, games and graphical programs amongst many others.

- It handles files very well: knowing what to do with even files that are foreign to the operating system

- It's multimedia capabilities are extensively versatile, allowing for easy movie, sound and tv/capture playback and recording

KDE (K Desktop Environment)

KDE is built on top of the Qt toolkit and runs on numerous platforms. It's much more than just a desktop environment though.

There are side projects such as KDevelop and KOffice that help to make it a great desktop for getting your work done out of the box. There are numerous other projects not officially part of the KDE team that specifically create apps for use under it

If you are a Windows user, then KDE is probably the environment that will be most familiar to you. You will have a tray down bottom which features applets and launchers in the same positions as the Windows taskbar does.

However, KDE has far more customization than what Windows gives you. Similar to the Windows start menu, there is a K Menu here that displays your recently used files, programs and control panel. In the end, this really is an environment that is welcoming to new Linux users due to it's ease of use, but has full customization and functionality to please power users.

Once KDE is installed and you log in for the first time, you will be greeted with a prompt that will ask you how you wish to use it. If you are coming from Windows or Mac OS,

Your desktop will look like this after you log in. Blue KDE background and gray-ish gradient K bar.


If you install the full blown KDE installation, you will have a ton of functionality immediately available (Mail Client), Konquerer (Web Browser), Konsole (Customizable terminal), KSnapshot (Screenshot taker), Kopete (Multi-client IM), KDE Control Center and much more.

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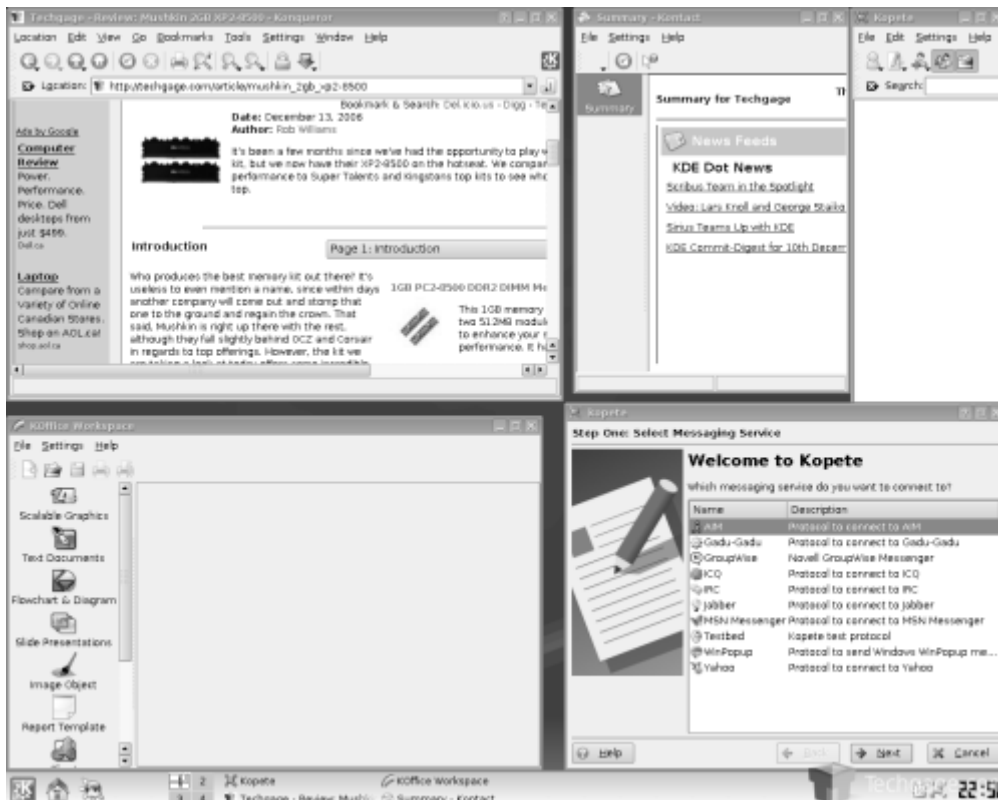
KDE control center is the one stop shop for all things KDE. Here, you can control anything the environment offers. From an eyecandy perspective, you can easily change the theme, color scheme, icon set, fonts and anything else to better suit you. Beyond that though, you can also change file associations, network settings, samba, peripherals and even the KDM login manager.

It's not a secret that KDE is a superb environment, but it's also one of the most accessible. It's such a complete environment, that its really no surprise that it's used by default on many distros. Besides, where else can you get Konqi the green dragon? From a customization perspective, I've included a screenshot of my personal KDE desktop. The default desktop included with KDE is not exactly the best looking out there, but really anything is possible. I spent 5 minutes customizing mine. With a little TLC, you can really create a desktop that perfectly suits you.
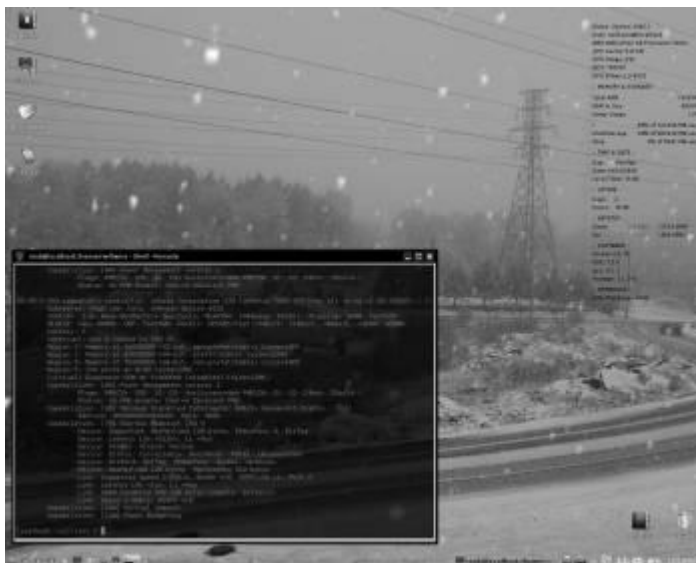
Note: System Info bar in above screenshot is possible with SuperKaramba and theme (will need to edit).

KDE-Look.org is another related site that focuses on customizing everything on your machine, including the theme, color scheme, desktop wallpapers, icons, login screen and even the splash screen. There is a world of possibility here on the customization front.

But, there are other popular desktops out there, and we are going to move into the second most popular one next.

What is GNU/Linux?

- Linux is an operating system: a series of programs that let you interact with your computer and run other programs.
- An operating system consists of various fundamental programs which are needed by your computer so that it can communicate and receive instructions from users; read and write data to hard disks, tapes, and printers; control the use of memory; and run other software. The most important part of an operating system is the kernel.
- In a GNU/Linux system, Linux is the kernel component. The rest of the system consists of other programs, many of which were written by or for the GNU Project. Because the Linux kernel alone does not form a working operating system, we prefer to use the term "GNU/Linux" to refer to systems that many people casually refer to as "Linux".
- GNU/Linux as an operating system is powerful -- but GNU/Linux as an *idea* about software development is even more so. GNU/Linux is a free operating system: It's licensed under the GNU General Public Licence. Thus, source code is freely available in perpetuity to anyone. It's maintained by a unstructured group of programmers world-wide, under technical direction from Linus Torvalds and other key developers.
- GNU/Linux as a movement has no central structure, bureaucracy, or other entity to direct its affairs.

HOW IS GNU/LINUX UNIQUE?

GNU/Linux's loose structure is unlikely to change. That's a good thing: It works precisely because people are free to come and go as they please: Free programmers are happy programmers are effective programmers.

Gnome
The GNOME desktop

GNOME is a desktop environment and graphical user interface that runs on top of a computer operating system. It is composed entirely of free and open source software.

It is an international project that includes creating software development frameworks, selecting application software for the desktop, and working on the programs that manage application launching, file handling, and window and task management.

GNOME is part of the GNU Project and can be used with various Unix-like operating systems, most notably Linux and as part of OpenSolaris Desktop.

History

- In 1996, the KDE project was started. KDE itself was free and open source from the start, but members of the GNU project were concerned with KDE's dependence on the non-GPL Qt toolkit, then owned by Trolltech.
- In August 1997, two projects were started in response to this issue: the Harmony toolkit, a free replacement for the Qt libraries, and GNOME, a different desktop not using Qt[4] but built on GTK+ licensed under the GNU Lesser General Public License (LGPL), a free software license that allows GPL-incompatible software to link to it.
- The GNOME desktop itself is licensed under the LGPL for its libraries, and the GPL for applications that are part of the GNOME project. Having the toolkit and libraries under the LGPL allowed applications written for GNOME to use a much wider set of licenses.

The GNOME Project started from scratch and created a completely new desktop called GNOME 3. It has:

- A modern visual theme and font
- An activities view providing access to all windows and applications
- A subtle notifications system and a discreet top panel
- Integration with an improved Nautilus file manager
- Integrated desktop services for messaging
- A new system settings application
- An activities search feature
- Features such as snap-like window tiling

Installation

- GNOME group contains the core desktop environment and applications, and gnome-extra contains the rest. You likely do not want all of the packages installed, so consider reading the package descriptions before installing them (or just remove them later).
-
- You must install the gnome group. gnome-extra does not imply that you want everything in gnome.

GNOME desktop components:

GNOME core components include:

Control Center: This collection of applications customizes the GNOME environment.

`gnome-panel` : This application provides the tool bar and menu system to launch applications and host panel applets. Panel also interfaces with session manager (`gnome-session`) when exiting the desktop. Panel also interfaces with session-manager when exiting the desktop and managing "saved" sessions when launching the desktop.

`nautilus` : Manages desktop icons and provides a file manager.

`gdm`: GNOME Display Manager (login screen) This handles X-Authentication, netwrk desktop access (XDMCP), graphical login prompt, logos, ...

GNOME VFS: Uses mime types for transparent file access.

Window manager. None specified. Can use Metacity, Sawfish, ...

- Component management:

D-Bus: cross-desktop message bus for sending events between various applications, the desktop, and low-level components of the system. D-Bus enables different types of applications to communicate and integrate with each other and with the desktop.
Note that Bonobo and ORBit have been deprecated in favor of D-Bus.

Bonobo: GNOME inter-application CORBA communications.

ORBit: CORBA Object Request Broker (ORB). Makes objects accessible.
(Uses: `/usr/bin/gnome-name-service`)

All GNOME configuration files use XML representation.

GNOME desktop initialization:

If the system is configured to boot to run level 3 (console mode) the X-Windows is started by the command `xinit`.

If configured to boot to run level 5 then the gdm will be executed at system start-up.

The choice of using the KDE (kdm) or GNOME (gdm) login manager is set in the config file `/etc/sysconfig/desktop`. There are two options:

```
DESKTOP="GNOME"
```
(Configure with: `/usr/sbin/gdmsetup`)
or

```
DISPLAYMANAGER="KDE"
```

GDM Startup:

X-Windows command `xinit`:

`/etc/X11/xinit/xinitrc`
which sets the environment and calls:

`/etc/X11/xinit/xinitrc-common`
which set the root window, sets resource files for the:

keyboard (`/etc/X11/Xmodmap`)

fonts (`/etc/X11/Xresources`)

- ...

and executes X-Windows start-up scripts in `/etc/X11/xinit/xinitrc.d/...`

`/etc/X11/xinit/xinput.d/...`
language configurations ...

o

The login screen: `/usr/bin/gdm`

X-windows script `/etc/X11/xdm/Xsession` starts X-windows session and then calls `/usr/bin/gnome-session`

gnome-session : This sets up GNOME desktop environment.
Config file: `/usr/share/gnome/default.session`

This config file lists the GNOME processes to start.

GNOME user configuration files and directories

The GNOME desktop will generate the following configuration files and directories in the users home directory:

File/Directory	Description
.esd_auth	[File] Enlightened Sound Daemon (ESD) authentication cookie.
.gconf	[Directory] User preferences stored here.
.gconfd	[Directory] gconfd daemon information stored here. CORBA IOR and object info.
.gnome	[Directory] User info not held in .gconf. i.e. mime type info.
.gnome2	[Directory] User info not held in .gconf. i.e. Window location, keyboard shortcut info, ...
.gnome-private	[Directory] Empty. Not used??
.gnome2-private	[Directory] Empty. Not used??
Desktop .gnome-desktop (older RH 8/9)	[Directory] Desktop icons and application launchers.
.nautilus	[Directory] Nautilus file manager data.
.thumbnails	[Directory] Thumbnail images generated and used by Nautilus.
.metacity	[Directory] Metacity window manager data.
.themes	[Directory] Theme options, window frame options, ...
.screensaver	[Directory] Screensaver configuration data. Command to set defaults: xscreensaver-demo Command to control xscreensaver process: xscreensaver-command System configuration data stored in: /usr/X11R6/lib/X11/app-defaults/XScreenSaver

Configuration Commands

GNOME primary configuration GUI tool: gnome-control-center

Command	Description
GNOME Configuration and Properties (This single command ties in most of the commands below into a single GUI.)	/usr/bin/gnome-control-center
GNOME Display Properties (X-Windows resolution)	/usr/bin/gnome-display-properties
GNOME Window Properties (X-Windows Properties)	/usr/bin/gnome-window-properties
GNOME Desktop Keyboard Properties	/usr/bin/gnome-accessibility-keyboard-properties (RH 9.0, FC 1/2/3)
GNOME Desktop Keybinding Properties	/usr/bin/gnome-keybinding-properties (RH 9.0, FC 1/2/3)
GNOME Desktop Keyboard Layout	/usr/bin/gnome-keyboard-layout (FC 3)
GNOME Desktop Keyboard Properties	/usr/bin/gnome-keyboard-properties (FC 3)
GNOME Mouse Properties	/usr/bin/gnome-mouse-properties (FC 3)
GNOME Desktop Network Configuration	/usr/bin/gnome-network-preferences (RH 9.0, FC 1/2/3))
GNOME Sound Properties	/usr/bin/gnome-sound-properties (RH 9.0, FC 1/2/3)
GNOME Volume Control	/usr/bin/gnome-volume-control (FC 3)
GNOME Volume Properties Device specific)	/usr/bin/gnome-volume-properties (FC 3)
GNOME Audio Profiles (CD quality, ...)	/usr/bin/gnome-audio-profiles-properties (FC 3)
GNOME Theme Manager (Desktop look)	/usr/bin/gnome-theme-manager (FC 3)
GNOME Background Properties (Wallpaper)	/usr/bin/gnome-background-properties (FC 3)
GNOME Bluetooth Manager	/usr/bin/gnome-bluetooth-manager (FC 3)
GNOME desktop options and GNOME applications configuration	/usr/bin/gconf-editor (RH 8.0+ ... FC 3)
GNOME desktop properties configuration	/usr/bin/gnome-session-properties (RH 8.0+) (Use gnome-session-save or select save on exit to store settings. If you mess up, delete $HOME/.gnome2/session*.)
GNOME desktop Character Map configuration	/usr/bin/gnome-character-map (FC 3)
GNOME desktop font configuration (run as root)	/usr/bin/redhat-update-gnome-font-install (RH 9.0 - FC 3) /usr/bin/redhat-update-gnome-font-install2
GNOME Font properties	/usr/bin/gnome-font-properties
GNOME Font Viewer	/usr/bin/gnome-font-viewer
GNOME desktop properties save	/usr/bin/gnome-session-save (RH 8.0+)
GNOME session properties	/usr/bin/gnome-session-properties
GNOME Panel Preferences	/usr/bin/gnome-panel-preferences (RH 8.0,9.0) (Also see gnome-panel-screenshot)
GNOME Desktop User Interface Properties	/usr/bin/gnome-ui-properties
GNOME Desktop File Types and Properties	/usr/bin/gnome-file-types-properties (RH 9.0)
GNOME Desktop Item Edit	/usr/bin/gnome-desktop-item-edit
GNOME Default Application Configuration (Default web browser, Mail reader, ...)	/usr/bin/gnome-default-applications-properties
GNOME Default Printer	/usr/bin/gnome-default-printer
GNOME Database Properties	/usr/bin/gnome-database-properties
GNOME Help	/usr/bin/gnome-help
GNOME About	/usr/bin/gnome-about

GNOME Keyboard Shortcuts:

Shortcut	Description

F1	Launch Gnome help system. If pressed in a Gnome aware application, the help document for the given application is opened. Otherwise, the GNOME main help page is opened.
F2	Raise the current window to the top of the desktop or to the foreground. This is the same affect achieved by mouse clicking on a window.
Menu	Opens the main desktop menu. This key can be used from within any GUI application. This key is located next to the Ctrl key in the lower-right part of the keyboard.

GNOME Menus:

Location of ".desktop" Definition File:

Menus are specified by ".desktop" files located in one of the following directories:

```
/usr/share/gnome/apps/
```

```
/etc/X11/applnk/
```

```
/usr/share/applnk/
```

```
$HOME/.gnome/apps/
```
(Private menues)

Ubuntu Gnome Desktop Configuration

How to change the Ubuntu window manager from Unity to Metacity:

Ubuntu (11.04+) upgrades to and installs with "Unity" as the default desktop X-window manager. For developers or users of multi-window applications this window manager is deeply flawed. Unity turns off an application's toolbar unless it maximizes to the entire screen and only then will the toolbar function. Applications such as Gimp require the simultaneous use of multiple windows with none maximized.

The default Gnome 2.2+ window manager is "Metacity" and it does not have the rediculus restrictions and limitations of Unity.

To change the default Ubuntu desktop from Unity to Metacity perform the following steps:

Start the "Control Center" by selecting the switch icon (circle with a vertical bar at the peak)

Scroll to and select "Login Screen" and select "Ubuntu Classic"

- or from a console terminal window type the command: `metacity --replace`
-
- Note that Gnome 3 will introduce the X-window manager "Matter" (a combination of Metacity and the Gnome shell "Clutter": a MeGo based mobil OS Javascript desktop).

-

Move window frame buttons to the right corner:
- Start Gnome configuration editor: `gconf-editor`
- apps -> Metacity -> General
- Select "button_layout" and change values to: `menu:maximize,minimize,close`
  Note that the colon separates the bulk of the frame from the corner.
- GNOME and KDE share a few similar goals. It's a desktop environment designed around the goal to provide an easy to use platform of high quality, with great free software. If you are familiar with GNU, you know that it's a project designed around free software. GNOME just so happens to be part of this project, so that can tell you right there the goals.

- While GNOME shares similar goals as KDE, The environment as a whole is completely different, and is reminiscent of Mac OS 9 in terms of layout.
- Whereas in KDE, all of the programs, launchers and applets are crammed into a single bar (which is why it's so large by default),
- GNOME splits this into two parts. On the top of the screen you will have your menu, clock and quick launchers. On the bottom, you have your currently used applications and also the desktop switcher.

- GNOME includes a slew of official programs, some of which can be used through other environments just fine. Included here is Gedit (text editor), Evolution (E-mail client), Epiphany (Web browser), Nautilus (File manager) and Totem (Movie player). Whereas KDE is based on the Qt toolkit, GNOME is based on the GTK+ toolkit like many other *nix apps are.
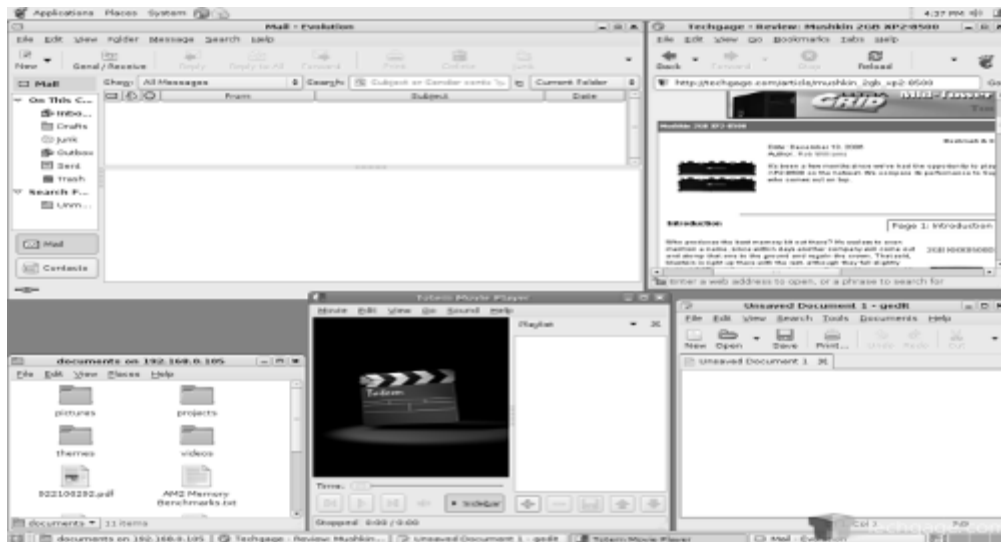
Environment feel a lot more modern.

Linux command

If you are able to navigate using **MS-DOS**, you should be able to quickly pick up on the navigation of Linux and Unix. In the below chart is a listing of common **MS-DOS** commands with their **Linux** / Unix counterpart.

MS-DOS	Linux / Unix
attrib	chmod
backup	tar
dir	ls
cls	clear
copy	cp
del	rm
deltree	rm -R rmdir
edit	vi pico
format	fdformat / mount / umount
move / rename	mv
type	less <file>
cd	cd chdir
more < file	more file
md	mkdir

Commands

```
adduser  Add a user to the system
addgroup Add a group to the system
alias    Create an alias •
apropos  Search Help manual pages (man -k)
apt-get  Search for and install software packages (Debian/Ubuntu)
aptitude Search for and install software packages (Debian/Ubuntu)
aspell   Spell Checker
awk      Find and Replace text, database sort/validate/index
bash     GNU Bourne-Again SHell
bc       Arbitrary precision calculator language
bg       Send to background
break    Exit from a loop •
bzip2    Compress or decompress named file(s)
cal      Display a calendar
case     Conditionally perform a command
cat      Concatenate and print (display) the content of files
cd       Change Directory
cfdisk   Partition table manipulator for Linux
chgrp    Change group ownership
chmod    Change access permissions
chown    Change file owner and group
chroot   Run a command with a different root directory
chkconfig System services (runlevel)
cksum    Print CRC checksum and byte counts
clear    Clear terminal screen
cmp      Compare two files
comm     Compare two sorted files line by line
command  Run a command - ignoring shell functions •
continue Resume the next iteration of a loop •
cp       Copy one or more files to another location
cron     Daemon to execute scheduled commands
crontab  Schedule a command to run at a later time
csplit   Split a file into context-determined pieces
cut      Divide a file into several parts
date     Display or change the date & time
dc       Desk Calculator
dd       Convert and copy a file, write disk headers, boot records
ddrescue Data recovery tool
declare  Declare variables and give them attributes •
df       Display free disk space
diff     Display the differences between two files
diff3    Show differences among three files
dig      DNS lookup
dir      Briefly list directory contents
dircolors Colour setup for `ls'
dirname  Convert a full pathname to just a path
dirs     Display list of remembered directories
dmesg    Print kernel & driver messages
du       Estimate file space usage
echo     Display message on screen •
egrep    Search file(s) for lines that match an extended expression
eject    Eject removable media
enable   Enable and disable builtin shell commands •
env      Environment variables
ethtool  Ethernet card settings
eval     Evaluate several commands/arguments
exec     Execute a command
exit     Exit the shell
expect   Automate arbitrary applications accessed over a terminal
```

```
expand    Convert tabs to spaces
export    Set an environment variable
expr      Evaluate expressions
false     Do nothing, unsuccessfully
fdisk     Partition table manipulator for Linux
fg        Send job to foreground
file      Determine file type
find      Search for files that meet a desired criteria
fmt       Reformat paragraph text
fold      Wrap text to fit a specified width.
format    Format disks or tapes
free      Display memory usage
ftp       File Transfer Protocol
function  Define Function Macros
fuser     Identify/kill the process that is accessing a file
gawk      Find and Replace text within file(s)
getopts   Parse positional parameters
grep      Search file(s) for lines that match a given pattern
hash      Remember the full pathname of a name argument
head      Output the first part of file(s)
help      Display help for a built-in command •
history   Command History
hostname  Print or set system name
id        Print user and group id's
if        Conditionally perform a command
ifconfig  Configure a network interface
ifdown    Stop a network interface
import    Capture an X server screen and save the image to file
install   Copy files and set attributes
jobs      List active jobs •
join      Join lines on a common field
kill      Stop a process from running
killall   Kill processes by name
less      Display output one screen at a time
let       Perform arithmetic on shell variables •
ln        Make links between files
local     Create variables •
locate    Find files
logout    Exit a login shell •
look      Display lines beginning with a given string
lpc       Line printer control program
lprint    Print a file
lprintd   Abort a print job
lprintq   List the print queue
lprm      Remove jobs from the print queue
ls        List information about file(s)
lsof      List open files
make      Recompile a group of programs
man       Help manual
mkdir     Create new folder(s)
mkfifo    Make FIFOs (named pipes)
mkisofs   Create an hybrid ISO9660/JOLIET/HFS filesystem
more      Display output one screen at a time
mount     Mount a file system
mtools    Manipulate MS-DOS files
mv        Move or rename files or directories
mmv       Mass Move and rename (files)
netstat   Networking information
nice      Set the priority of a command or job
nl        Number lines and write files
open      Open a file in its default application
```

```
op       Operator access
passwd   Modify a user password
paste    Merge lines of files
ping     Test a network connection
pkill    Stop processes from running
popd     Restore the previous value of the current directory
pr       Prepare files for printing
printcap Printer capability database
printenv Print environment variables
printf   Format and print data •
ps       Process status
pwd      Print Working Directory
quota    Display disk usage and limits
ram      ram disk device
rcp      Copy files between two machines
read     Read a line from standard input •
reboot   Reboot the system
rename   Rename files
renice   Alter priority of running processes
remsync  Synchronize remote files via email
return   Exit a shell function
rev      Reverse lines of a file
rm       Remove files
rmdir    Remove folder(s)
rsync    Remote file copy (Synchronize file trees)
screen   Multiplex terminal, run remote shells via ssh
scp      Secure copy (remote file copy)
sed      Stream Editor
select   Accept keyboard input
set      Manipulate shell variables and functions
shift    Shift positional parameters
shutdown Shutdown or restart linux
sleep    Delay for a specified time
sort     Sort text files
source   Run commands from a file `.'
split    Split a file into fixed-size pieces
ssh      Secure Shell client (remote login program)
su       Substitute user identity
sudo     Execute a command as another user
sum      Print a checksum for a file
suspend  Suspend execution of this shell •
sync     Synchronize data on disk with memory
tar      Tape ARchiver
tee      Redirect output to multiple files
test     Evaluate a conditional expression
time     Measure Program running time
times    User and system times
touch    Change file timestamps
top      List processes running on the system
traceroute Trace Route to Host
trap     Run a command when a signal is set(bourne)
tr       Translate, squeeze, and/or delete characters
true     Do nothing, successfully
tsort    Topological sort
tty      Print filename of terminal on stdin
type     Describe a command •
umount   Unmount a device
unalias  Remove an alias •
units    Convert units from one scale to another
unset    Remove variable or function names
until    Execute commands (until error)
```

```
usermod  Modify user account
users    List users currently logged in
uuencode Encode a binary file
uudecode Decode a file created by uuencode
v        Verbosely list directory contents (`ls -l -b')
vdir     Verbosely list directory contents (`ls -l -b')
vi       Text Editor
vmstat   Report virtual memory statistics
wait     Wait for a process to complete •
watch    Execute/display a program periodically
wc       Print byte, word, and line counts
which    Search the user's $path for a program file
while    Execute commands
who      Print all usernames currently logged in
whoami   Print the current user id and name (`id -un')
Wget     Retrieve web pages or files via HTTP, HTTPS or FTP
write    Send a message to another user
yes      Print a string until interrupted
```

What is openoffice:

- OpenOffice.org, commonly known as OOo or OpenOffice, is an open-source application suite whose main components are for word processing.

- An open source alternative for Microsoft Office, with word processor, spreadsheet, and presentation modules, running under X11.

- A Open Source replacement to Microsoft popular office product Microsoft Office.

- Platforms

- Platforms supported by OO.o include Microsoft Windows, Linux, Solaris, BSD, OpenVMS, OS/2 and IRIX.[39] The current primary development platforms are Microsoft Windows, Linux and Solaris.

- Support for Mac OS X exists for OS X's native Aqua user interface, as of version 3.0. Previous versions required installing the X Window System component. NeoOffice is an independent fork of OpenOffice, specially adapted for Mac OS X.

Operating system compatibility

- FreeBSD: v3.2.1
- Linux
- OpenBSD
- NetBSD
- Solaris: v3.2.1
- Mac OS X v10.2: up to v1.1.2
- Mac OS X v10.3: up to v2.1
- Mac OS X v10.4–v10.5 (PowerPC): up to v3.2
- Mac OS X v10.4–v10.5 (Intel): v3.2
- Mac OS X v10.6: v3.2.1
- Windows 95: up to v1.1.5
- Windows NT 4.0 Service Pack 6 – up to v2.0.1

- Windows 98 – Windows ME: up to v2.4.3
- Windows 2000 – Windows 7: v3.3 (Tablet PC input is not supported)
- OS/2 and eComStation: up to v3.2.0
- IRIX (mips4): up to v1.0.3

Components

OpenOffice.org comprises a collection of applications that work together closely to provide the features commonly included in modern office suites. Many of the components mirror those available in Microsoft Office. The components available include:

Module		Notes
	Writer	A word processor similar to Microsoft Word and WordPerfect. It can export Portable Document Format (PDF) files, and can function as a basic WYSIWYG editor for creating and editing web pages.
	Calc	A spreadsheet similar to Microsoft Excel and Lotus 1-2-3. Calc can export spreadsheets to the PDF format. (See ooWriter entry, above, for details of PDF). Calc provides a number of features not present in Excel, including a system which automatically defines series for graphing, based on the layout of the user's data.
	Impress	A presentation program similar to Microsoft PowerPoint and Apple Keynote. Impress can export presentations to Adobe Flash (SWF) files, allowing them to be played on any computer with a Flash player installed. It also includes the ability to create PDF files, and the ability to read Microsoft PowerPoint's .ppt format. Impress lacks ready-made presentation designs but this can be overcome by downloading free templates on-line.
	Base	A database management program similar to Microsoft Access. Base allows the creation and manipulation of databases, and the building of forms and reports to provide easy access to data for end-users. As with MS Access, Base can function as a front-end to a number of different database systems, including Access databases (JET), ODBC data sources and MySQL/PostgreSQL. Base became part of the suite starting with version 2.0. Native to the OpenOffice.org suite is an adaptation of HSQL. While Base can be a front-end for any of the databases listed, there is no need to install any of them. Raw SQL code can be entered by those who prefer it, or graphical user interfaces can be used.
	Draw	A vector graphics editor comparable in features to early versions of CorelDRAW and Microsoft Visio. It features versatile "connectors" between shapes, which are available in a range of line styles and facilitate building drawings such as flowcharts. It has similar features to desktop-publishing software such as Scribus and Microsoft Publisher. Draw can also export its creations to the PDF format. (See ooWriter entry, above, for details of PDF).

	Math	A tool for creating and editing mathematical formulae, similar to Microsoft Equation Editor. OOo users can embed formulae inside other OpenOffice.org documents, such as those created by Writer. It supports multiple fonts and can export to PDF.

Open Document format

OpenOffice.org pioneered the ISO/IEC standard OpenDocument file formats (ODF), which it uses natively and by default. Since version 3.0 the default format of OpenOffice.org is based on draft versions for OASIS ODF 1.2 (but this setting can be changed to ODF 1.0/1.1 in application settings). Versions 2.0–2.3.0 of OpenOffice.org default to the ODF 1.0 file format; OpenOffice.org versions 2.3.1–2.4.3 default to ODF 1.1. The OpenDocument 1.0 specification was approved for release as an ISO and IEC International Standard under the name ISO/IEC 26300:2006.

OpenOffice.org used the OpenOffice.org XML file format in its 1.x versions as its native and default format for saving files. OpenOffice.org developers contributed the OpenOffice.org XML File Format to OASIS. On the basis of that format OASIS developed the OpenDocument format, which became the native file format of OpenOffice.org. OpenOffice.org XML file format is still supported in all later versions of OpenOffice.org.

PDF export

OpenOffice.org 1.1 introduced Export to PDF and can Export presentations to Flash (.SWF). Since OpenOffice.org 2.4.0 it also supports export to PDF/A-1a format (ISO 19005-1).

Other formats

OpenOffice.org also supports reading (and in some cases writing) many legacy and current proprietary file formats, e.g.

Microsoft Office formats,
Rich Text Format,
Microsoft Pocket Word (.psw), Microsoft Pocket Excel (.pxl),
MS Works through libwps,
WordPerfect through libwpd,
Quattro Pro 6,
StarOffice,
Lotus Software,
Hangul WP 97 format,
AportisDoc (Palm)
T602
SYLK
and others.

OpenOffice.org also supports

Unified Office Format since OpenOffice.org 3.0,
DocBook since OpenOffice.org 1.1,
Data Interchange Format,

HTML
TXT,
Comma-separated values
dBASE
and many others.

Introduction to Internet

Internet - An overview

A Global Communication super highway

Internet

- Internet is a global network of computer networks.
- TCP/IP protocol suite make all dissimilar networks communicate with each other.
- Uses Packet Switching Technology
- I t is not owned by a single person or country or organization
- Whoever wants to participate in the network can do so.

What can we do with internet ?

- Stay in touch with people
- Share information
- Communicate instantly
- Promote business
- E-Commerce
- E-Learning
- Remote management of networks
- Virtual Private Connections

Internet Services

- World Wide Web
- Electronic mail
- Usenet news groups
- Instant Messaging & chatting
- Telnet
- Gopher
- FTP
- Archie

- Search Engines
- Internet Telephony

World Wide Web (WWW or W3)

- A system of Internet servers that uses HTTP to transfer specially formatted documents.

- The documents are formatted in a language called HTML (Hypertext Mark-up Language) that supports links to other documents, as well as graphics, audio, and video files.

- One can jump from one document to another simply by clicking on hyperlinks.

- Not all Internet servers are part of the World Wide Web

Electronic Mail (email)

- Messages, usually text, sent from one person to another via computer.

- E-mail can also be sent automatically to a large number of addresses

Usenet (news group)

- Usenet: Usenet is derived from "User's Network" and was originally a separate service, or what is called a Bulletin Board System.

- It is now referred to as newsgroups, discussion groups, or sometimes just News.
- While not all Usenet machines are on the Internet, this is rapidly changing. There are over 10,000 newsgroups. URL's for newsgroups differ in appearance, with no domain name appearing eg., news: comp. jobs. offered From Faculty-of-Education

Instant Messaging

- A type of communications service that enables you to create a kind of private chat room with another individual in order to communicate in real time over the Internet, analogous to a telephone conversation but using text-based, not voice-based, communication.
- Typically, the instant messaging system alerts you whenever somebody on your private list is online. You can then initiate a chat session with that particular individual.

Chatting

Any system that allows any number of logged-in users to have a typed, real-time, on-line conversation.

IRC - A client-server chat system of large (often worldwide) networks. IRC is structured as networks of Internet servers, each accepting connections from client program s, one per user.

ICQ - 1. Abbreviation for "I seek you".

2. A proprietary chat system created by a couple of Israeli guys, who later founded "mirabilis". ICQ was sold to America On-Line around 1998.

TELNET

- The Internet standard protocol for remote login.
- Runs on top of TCP/IP.
- acts as a terminal emulator for the remote login session.

Gopher

- A distributed document retrieval system which started as a Campus Wide Information System at the University of Minnesota, and which was popular in the early 1990s.
- The protocol is like a primitive form of HTTP (Protocol used by WWW which came later).
- Now most of the gopher sites have been migrated to WWW.
- The latest browsers do not support gopher now.

FTP (File Transfer Protocol)

Allows users to copy files between their local system and any system they can reach on the network

E.g.:ftp://ftp.microsoft.com

Archie

- A system to automatically gather, index and serve information on the Internet.
- The initial implementation of Archie by McGill University School of Computer Science provided an indexed directory of file names from all anonymous FTP archives on the Internet.
- Later versions provide other collections of information.

Search Engines

A program that searches web documents for specified keywords and returns a list of the web sites where the keywords were found.

E.g.:

- AltaVista
- Excite
- Google
- Yahoo
- Khoj
- rediff
- indiatimes

Internet Telephony

A category of hardware and software that enables people to use the Internet as the transmission medium for telephone calls.

For users who have free, or fixed-price Internet access, Internet telephony software essentially provides free telephone calls anywhere in the world. E.g.

- CoolTalk
- NetMeeting

- BolAnmol prepaid MTNL International Telephone Service

Client Server Architecture

Internet is a network of Servers which provide the various services and Clients who gets the services provided by the Servers.

Servers

- Servers provide different services
- Server consists of hardware & software
- Server is a high end PC with a Server s/w
- A single server(hardware) can provide many services (using different server s/w)
- Alternatively each service can be provided by dedicated servers

Server Hardware

- A high end computer with large storage
- more processing speed (single/muiti CPU)
- large memory

Server Software

E.g.:

Web Service (WWW) : Web Server

Email   : Mail Server

FTP   : FTP Server

Client Hardware

A computer with-

- Intel 80486 processor & above
- VGA Monitor
- Modem
- Connecting link e.g PSTN, ISDN,ADSL

Client Software

- O/s with GUI
- TCP/IP Protocol
- Browser like Internet Explorer for accessing Web Service.
- Mail Client like Outlook Express or Microsoft Outlook to access Email Service.

Internet Terminology

- WWW-World Wide Web
- TCP-Transmission Control Protocol
- IP- Internet Protocol
- HTML-Hyper Text Markup Language
- http- Hyper Text transport protocol
- ftp- File Transfer protocol
- URL- Uniform Resource Locator
- FAQ-Frequently Asked Questions
- Requests For Comments

Internet Terminology

Plug-ins- are programs which help the browser to display / play various multimedia objects.

Eg: **Audio** : Winamp Player, Realaudio player

Video : VDOlive, Quick Time Movie Player

Text   : Acrobat Reader

Organizations behind the scene

- Internet Society(ISOC)
- InterNIC
- Internet Engineering Task Force (IETF)
- Internet Society
- World Wide Web Consortium

InterNIC

- INTERnet Network Information Center.
- InterNIC is a registered service mark of the U.S. Department of Commerce to provide domain name registration services in .com, .net, .org, and .edu.

Internet Engineering Task Force (IETF)

- IETF is a large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the internet architecture and the smooth operation of the Internet. It is open to any interested individual.
- The actual technical work of the IETF is done in its working groups/committees

Internet Architecture Board (IAB)

- IAB Provides architectural oversight
- The IAB is chartered both as a committee of the

Internet Engineering Task Force (IETF) and as an advisory body of the Internet Society (ISOC).

Internet Assigned Numbers Authority (IANA)

An organization working under the auspices of the Internet Architecture Board (IAB) that is responsible for assigning new Internet-wide IP addresses.

Internet Society (ISOC)

The Internet Society (ISOC): An international membership organization working to assure the evolution of global Internet and internetworking technologies.

W3 Consortium

The World Wide Web Consortium (W3C) develops interoperable technologies (specifications, guidelines, software, and tools) to lead the Web to its full potential.

Internet Corporation for Assigned Names & Numbers (ICANN)

Globally responsible for Internet Protocol (IP) address space allocation, protocol parameter assignment, Domain Name System (DNS) management, and root server system management functions.

ICANN also coordinates the Internet's root server system and is dedicated to preserving the operational stability of the Internet.

What is required to access Internet

- Hardware
- Software
- Link to the ISP (Internet Service Provider)
- Internet Account with ISP

Network
What is a Network?

- A Network is a connection of two or more computers to Share Resources.
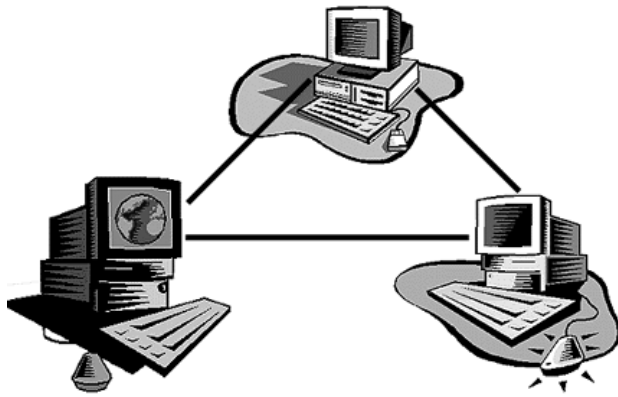
How Network is formed ?

The computers in a network are connected via hardware and software.

The hardware is what physically connects the com puters in the network together.

For eg:
Telephone lines, fiber-optic cables, routers and Gateways and the computers themselves.

The software is what enables us to use the hardware for com m unication and exchanging inform ation.

What are Shareable Resources?

-Any Hardware or Software that makes sense by being Shared for use.

-Devices that bring down Total Cost of Ownership are classified as Shareable Devices.

-Examples of Hardware Shareable Devices are Printers and Modems.

-Examples of Software Shareable Resources are Softwares like MS Office, Tally etc.

Inter operable

Networks can be interoperable.
This means that different types of computers, using different operating system s, can be connected, communicate with each other, and share information - as long as they follow the network protocols.

Interoperability
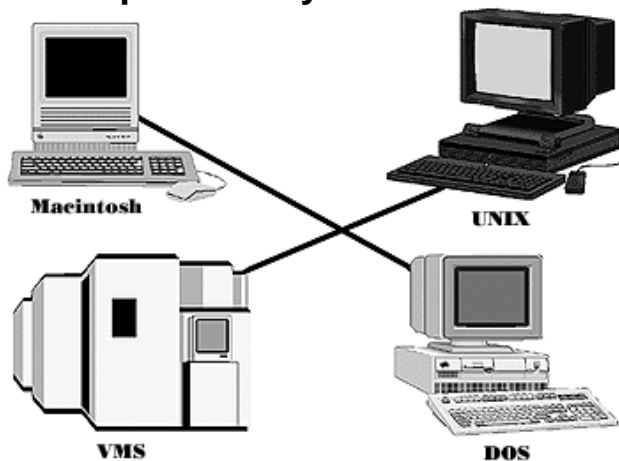
Network connections

- A connection of computers is achieved physically, it is not a logical assumption.

-This can be achieved by using various Media of Connectivity.

Networking Media

• Introduction to Media Types.

-Wired.

-Wireless.

Wireless Networking

• Wireless Options.

- Radiowaves

- Microwaves
- Infra Red
- Laser

Wired Networking

• Wired Options

-Twisted Pair (STP/UTP)

-Coaxial Cables

- Optical Fiber Cable

Twisted Pair

-The very first kind of wire ever used for connecting two computers with each other

- Very Cost Effective.

Coaxial Cables
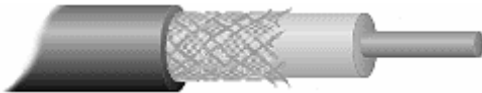
-Very similar to the Cable Operators Wire..
-Disadvantage : Only a Linear Arrangement of Computers could be done using these.
-Connectors Used : British Naval Connectors(BNC)
-Variety : Thinnets (10Base2) and Thicknets(10Base5)
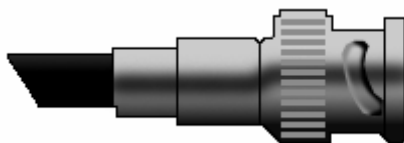
STP/UTP
• Unshielded Twisted Pair
• Shielded Twisted Pair(Used where E/M interference is more)
    - Connectors : RJ 45

The RJ-45 Connector
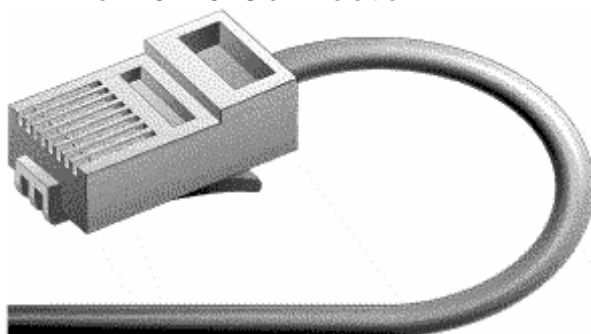
CAT Cables

CAT-1   < 1Mbps   Analog Voice/ISDN BRI

CAT-2   4Mbps   IBM system for Token Ring

CAT-3   16Mbps   Voice & Data on 1 0BaseT

CAT-4   20Mbps   Used in 1 6Mbps Token Ring

CAT-5   100Mbps   1 00BaseT or Fast Ethernet

CAT- 5 E   350Mbps

CAT-6   550Mbps

CAT-7   >700Mbps

OPTIC FIBRE CABLE
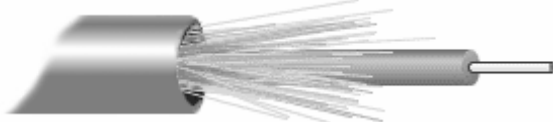
Fiber optic cabling consists of a centre glass core surrounded by several layers of protective materials (See fig). It transmits light rather than electronic signals eliminating the problem of electrical interference

Categories
Single mode (Using a single ray for long haul transmission)
Multi m ode (using multiple rays for short haul transmission)

Ethernet media categories

Specification	Cable Type	Max length
10/ 100/ 1000 BaseT	UTP	100 meters
10Base2	Thin Coaxial	185 meters
10Base5	Thick Coaxial	500 meters
10BaseF	Fibre Optic	2000meters
100BaseTX	UTP	220 meters
1000BaseF(SX,LX,LH)	Fibre Optic	550/ 5000/ 10000m

Categories of Networks

| MEA - Mumbai

LAN

a. Single-building LAN

Backbone
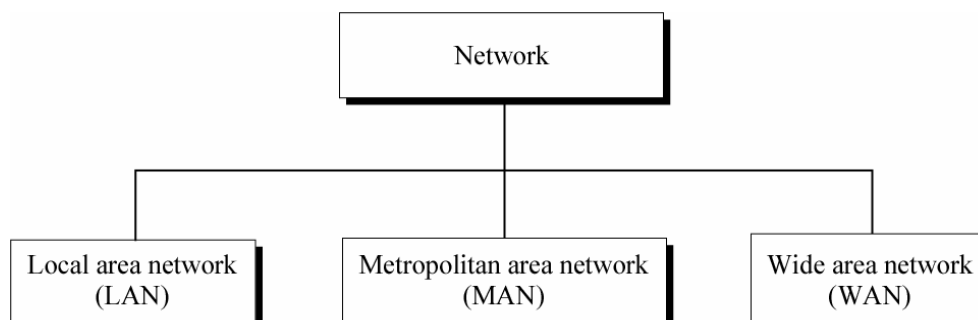
b. Multiple-building LAN
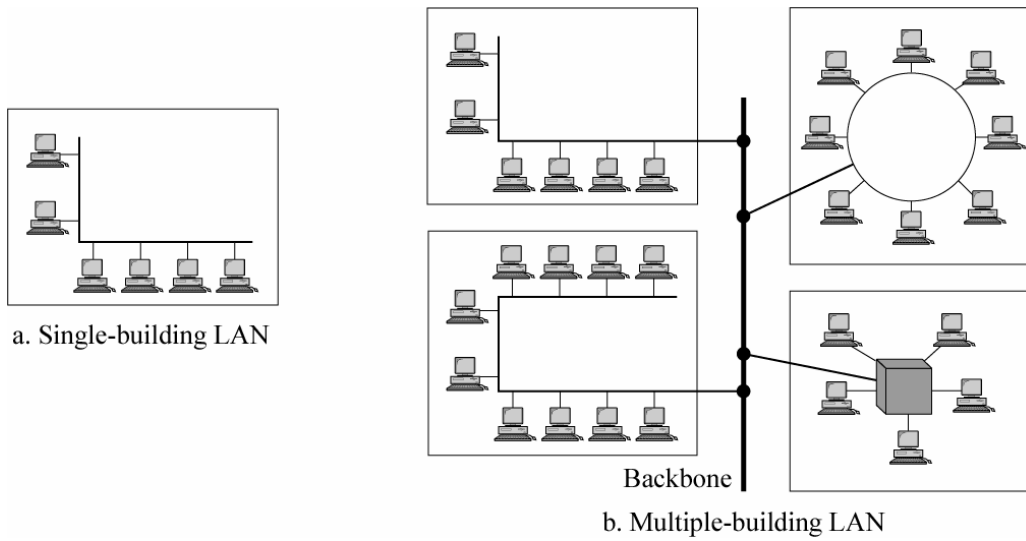
CAN

Campus Area Network or CAN is a network spread over a lim ited geographical area such as a University or PSU cam pus.
CAN is an extended LAN

MAN

Public city network
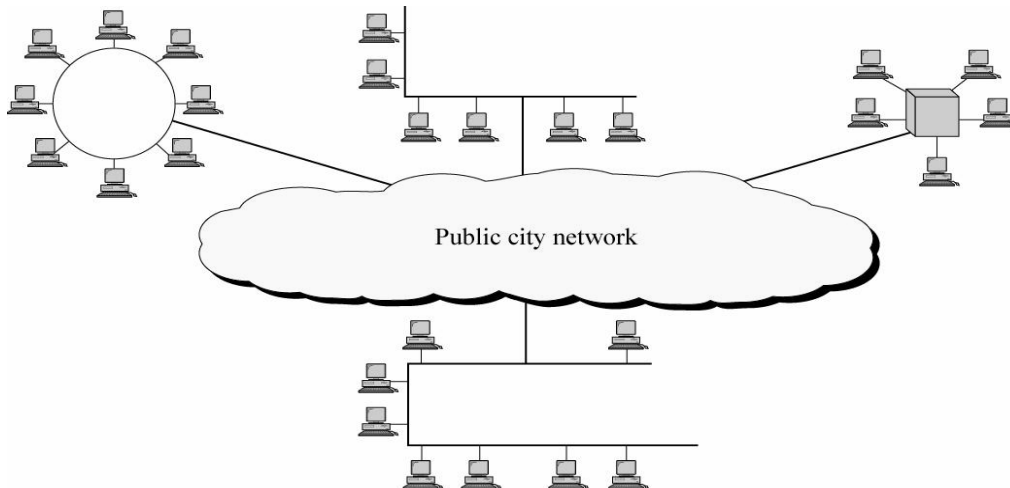
WAN
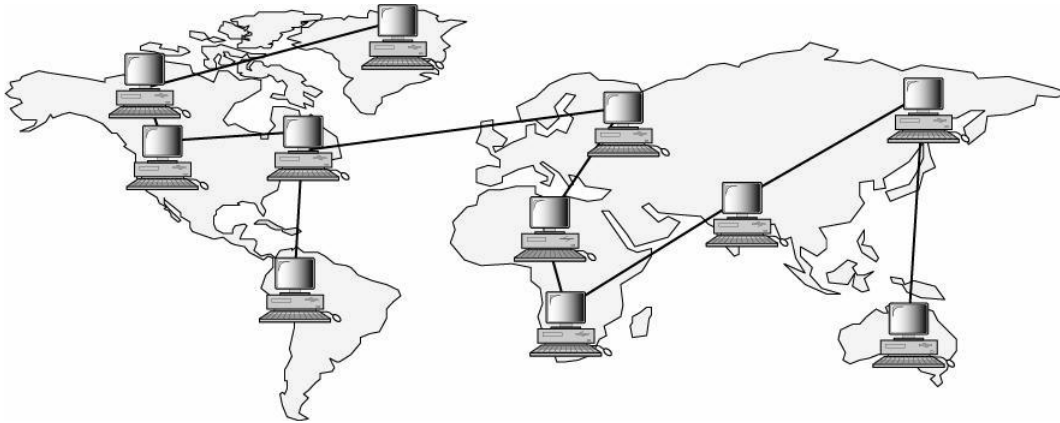
GAN

A network that is composed of different interconnected com puter networks and covers an unlimited geographical area.
Synonymous with an internet

Internetwork (Internet)
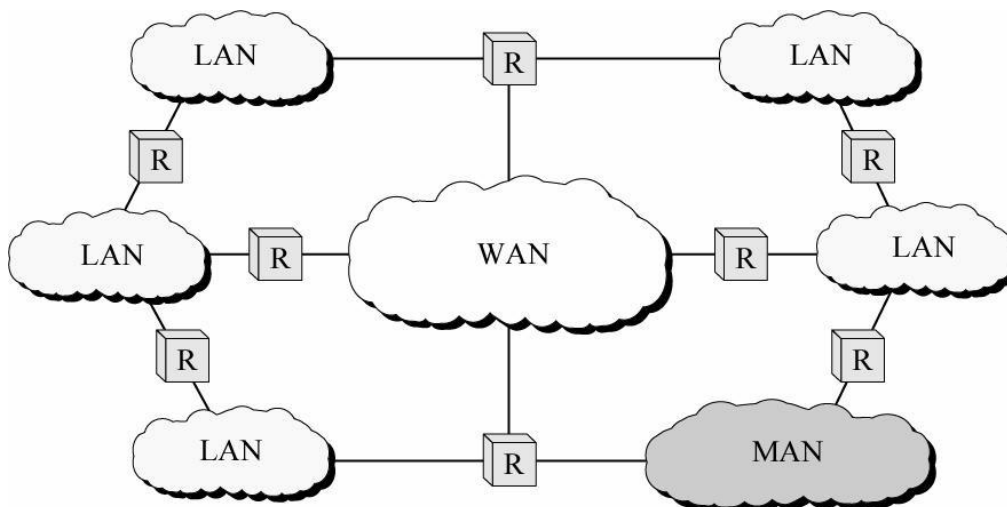
SAN (Storage Area Network)

A storage area network (SAN) is a highspeed special-purpose network (or subnetwork) that interconnects different kinds of data storage devices with associated data servers on behalf of a larger network of users. Typically, a storage area network is part of the overall network of computing resources for an enterprise.

LAN TECHNOLOGIES

- ARCNET
- TOKEN RING
- FDDI

- ETHERNET

ARCNET (Attached Resource Computer Network)

Supports 2.5-Mbps bandwidth

ARCNET (also denoted as ARCnet) is a local area network (*LAN)* protocol

Uses a *token-bus* scheme for managing line sharing among the workstations and other devices connected on the LAN.

ARCNET was the first widely available networking system for microcomputers and became popular in the 1980s for office automation tasks.

ANSI / ATA 878.1-1999 - This standard defines the frame format, m edium access, services, active hub operation, and the physical layer

functions and connectors for a token bus LAN operating at 2.5 Mbps.

* ATA Arcnet Trade Association
* ANSI American National Standards Institute

TOKEN RING

Token ring is a local area network protocol which resides at the data link layer (DLL) of the OSI model. I t uses a special three-byte frame called a token that travels unidirectionally around a star-wired logical ring. Token ring frames travel completely around the ring in a counter-clockwise direction. Token ring LAN speeds of 4Mbps, 16Mbps, 100Mbps and 1Gbps have been standardized by the IEEE 802.5 working group

FDDI (Fiber Distributed Data Interface)

The FDDI specifies a 1 00-Mbps token-passing, dual-ring LAN using fiber-optic cable.

FDDI is frequently used as high-speed backbone technology because of its support for high bandwidth and greater distances than copper.

FDDI standard was produced by the ANSI X3T9.5 standards committee in the mid-1980s

ETHERNET

LAN specification invented by Xerox Corporation and developed jointly by Xerox, I ntel, and Digital Equipment Corporation. Ethernet networks use CSMA/CD and run over a variety of cable types at 10 Mbps.

Ethernet conforms to standard IEEE 802.3

CATEGORI ES OF NETWOK

- PEER TO PEER NETWORK
- CLI ENT SERVER NETWORK

PEER TO PEER NETWORK

No dedicated server
No hierarchy among the computers

All computers are equal
Users at each computer determine what data on their com puter gets shared on the network
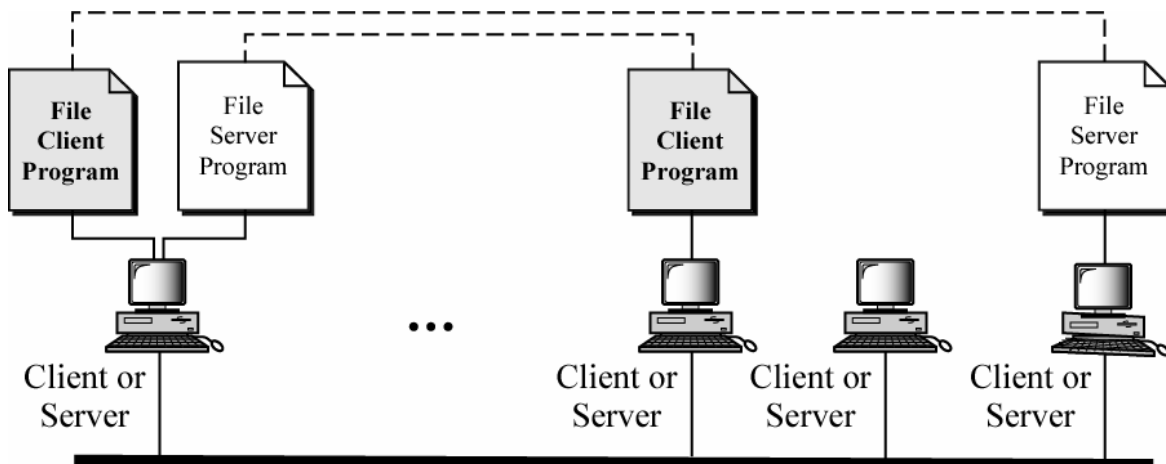These networks are called workgroups

CLI ENT SERVER NETWORK

Dedicated servers for various services Clients access servers to get the service Examples
File Server, Web Server, Mail Server etc
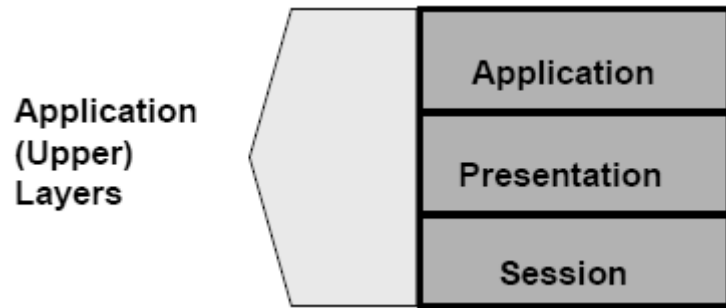
Client/Server Model with Dedicated Servers
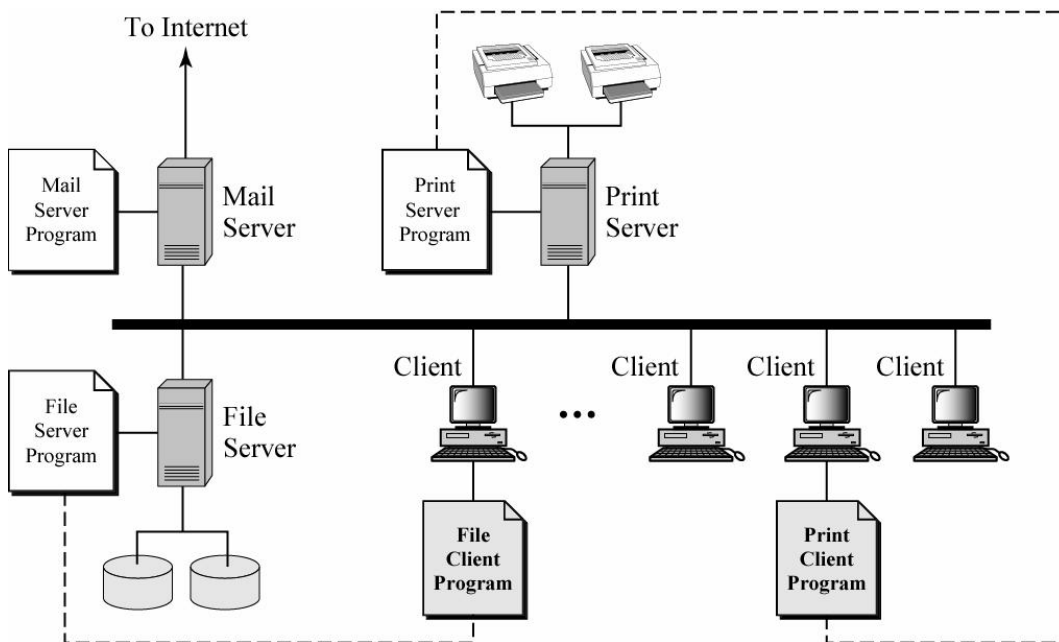
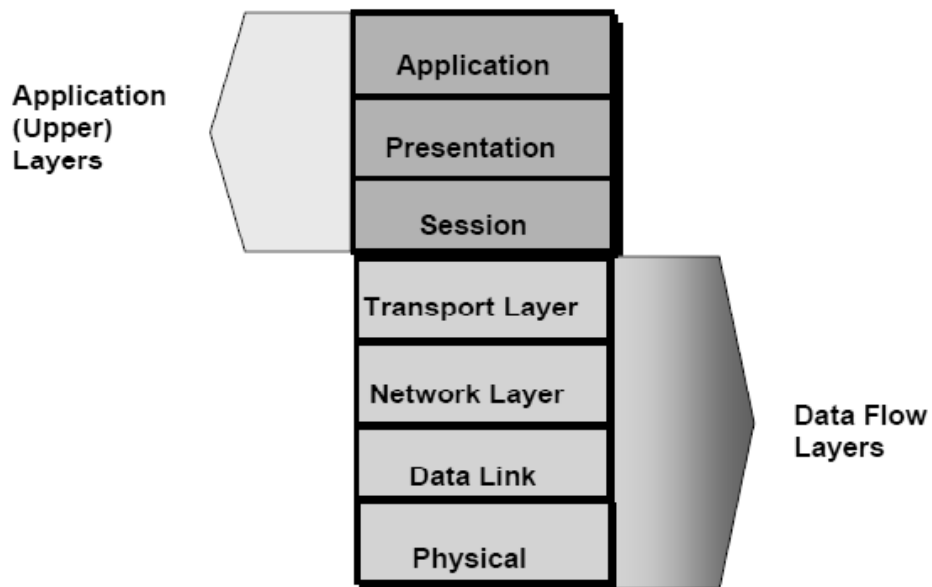## Client/ Server Model with a General Server
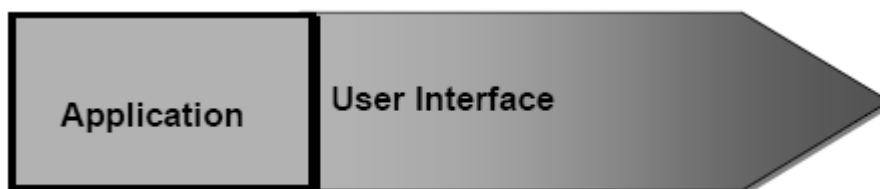
Peer-to-Peer Model

OSI Model Overview

Application (Upper) Layers

Application (Upper) Layers

Application

Presentation

Session

OSI Model Overview

Application (Upper) Layers

Application

Presentation

Session

Transport Layer

Network Layer

Data Link

Physical

Data Flow Layers

Role of Application Layers

Application

User Interface

| MEA - Mumbai

Role of Application Layers

| Application | User Interface |
| Presentation | • How data is presented
• Special processing such as encryption |

Role of Application Layers

Application	User Interface
Presentation	• How data is presented • Special processing such as encryption
Session	Keeping different applications' data separate

Role of Application Layers

Application	User Interface
Presentation	• How data is presented • Special processing such as encryption
Session	Keeping different applications' data separate
Transport Layer	
Network Layer	
Data Link	
Physical	

Role of Data Flow Layers

Physical	• Move bits between devices • Specifies voltage, wire speed and pin-out cables

Role of Data Flow Layers

Upper Layer Data

TCP Header	Upper Layer Data

IP Header	Data

MAC Header	Data	FCS

0101110101001000010

Application
Presentation
Session
Transport
Network
Data Link
Physical

Upper Layer Data

TCP Header	Upper Layer Data

IP Header	Data

MAC Header	Data	FCS

0101110101001000010

Application
Presentation
Session
Transport
Network
Data Link
Physical

De-encapsulating Data

| Application |
| Presentation |
| Session |
| Transport |
| Network |
| Data Link |
| Physical |

Upper Layer Data

TCP Header

Upper Layer Data

IP Header

TCP+ Upper Layer Data

MAC Header

IP + TCP + Upper Layer Data

0101110101001000010

LAN Topologies

Define the manner in which the network devices are arranged

Categories of LAN Topology

Topologies

Bus   Ring   Star
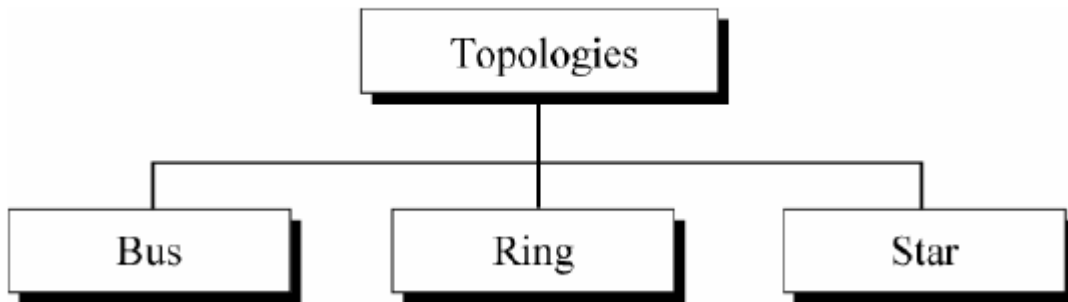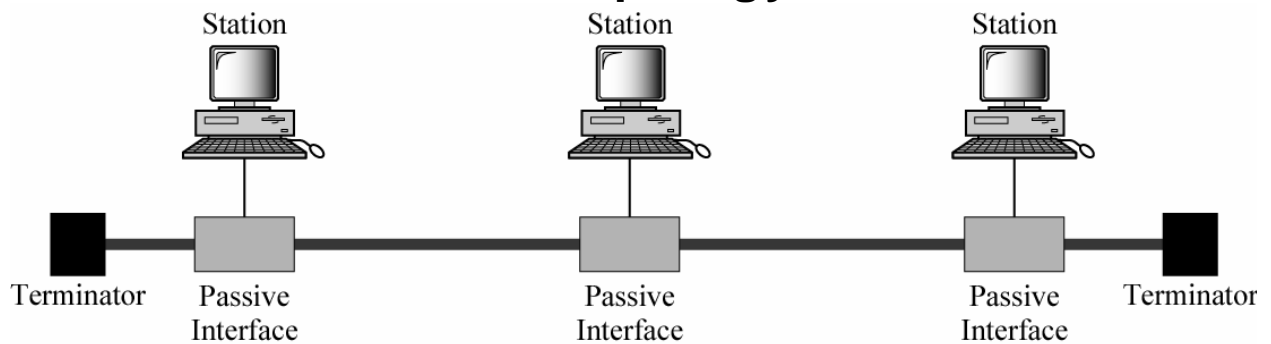
Bus Topology

Star Topology
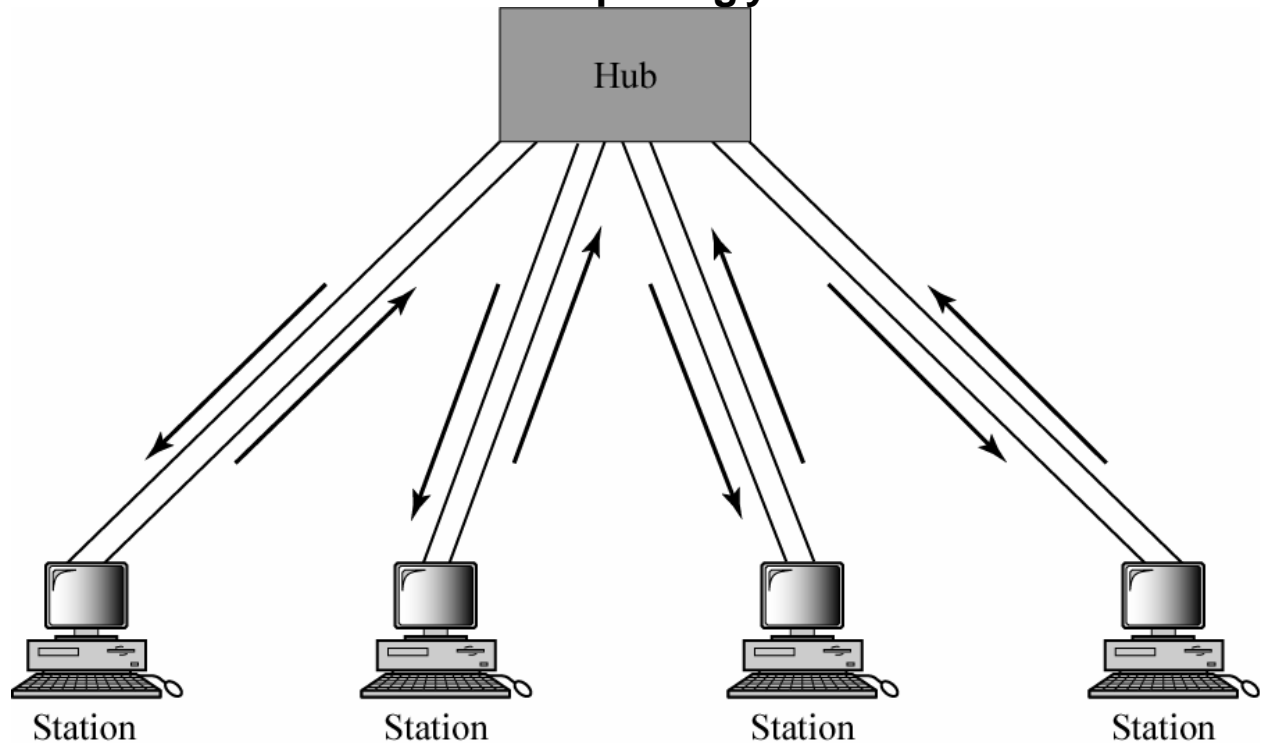
Network Segment

An electrically continuous piece of a bus based Local Area Network
A portion of a network set apart from other network sections by a bridge, router or switch
Each network segment supports a single medium access protocol and a pre-determined bandwidth.
The more stations are on a network segment the more divided this bandwidth is.

Broadcast Domain

A **broadcast domain** is a region of the n etwork on which the devices will receive broadcast frames from devices *within* the same region.

Collision Domain

A collision domain is form ally defined as a single CSMA/CD network in which there will be a

collision if two computers attached to the system both transmit at the same time.

CSMA/CD

• Carrier Sense Multiple Access/Collision Detection

• A set of rules determining how network devices respond when two devices attempt to use a data channel simultaneously (called a *collision*).

• The CSMA/CD m ethod is internationally standardized in IEEE 802.3 and ISO 8802.3.

Connecting Devices
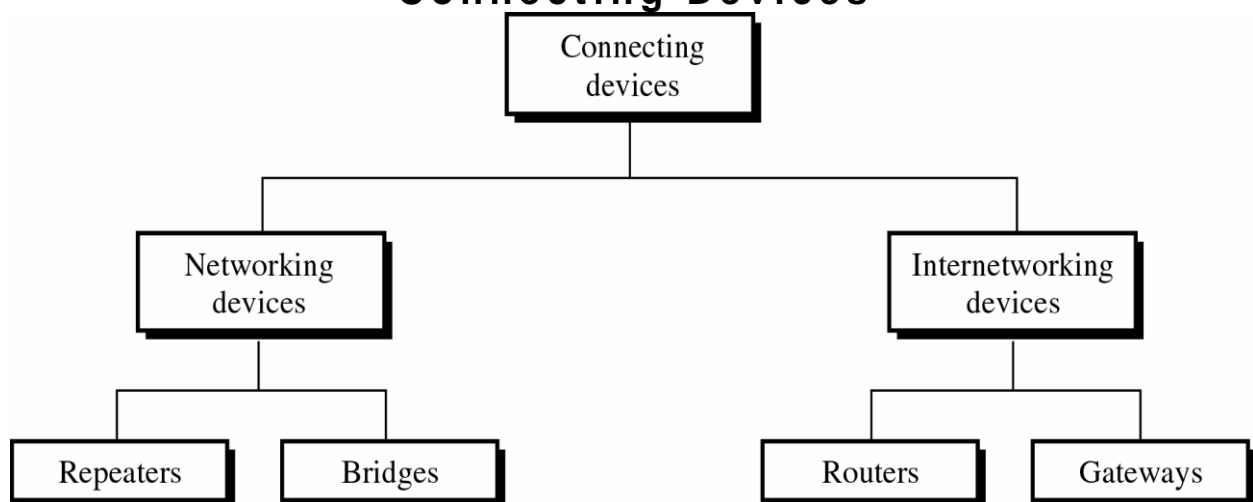
HUB

A connection device for networks.

A a passive network device (physical layer) that allows network nodes to com m unicate with each other

Th e packet received on each port will be broadcast to all ports on the Hub.

Bandwidth is shared between all connected devices

REPEATER

Amplifies the received signal on an Electro Magnetic or optical m edium and retransm its it along the next leg of the m edium

Repeaters are used to interconnect the segm ents in the Local Area Networks
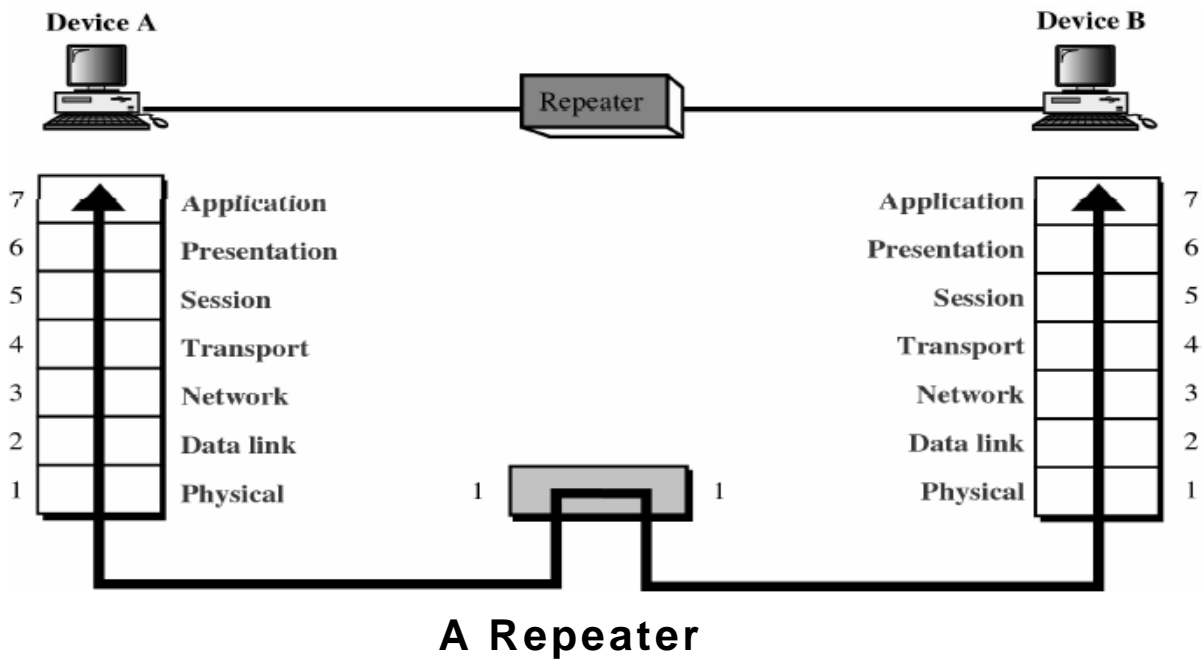
Function of a Repeater
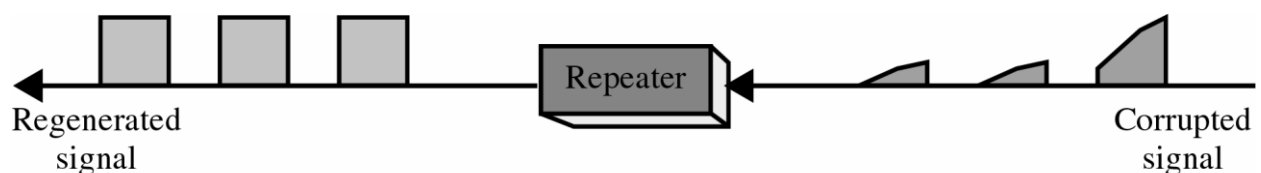
(a) Right-to-left transmission.
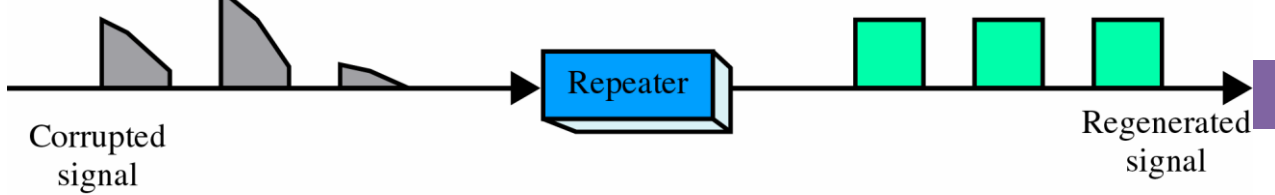
(b) Left-to-right transmission.
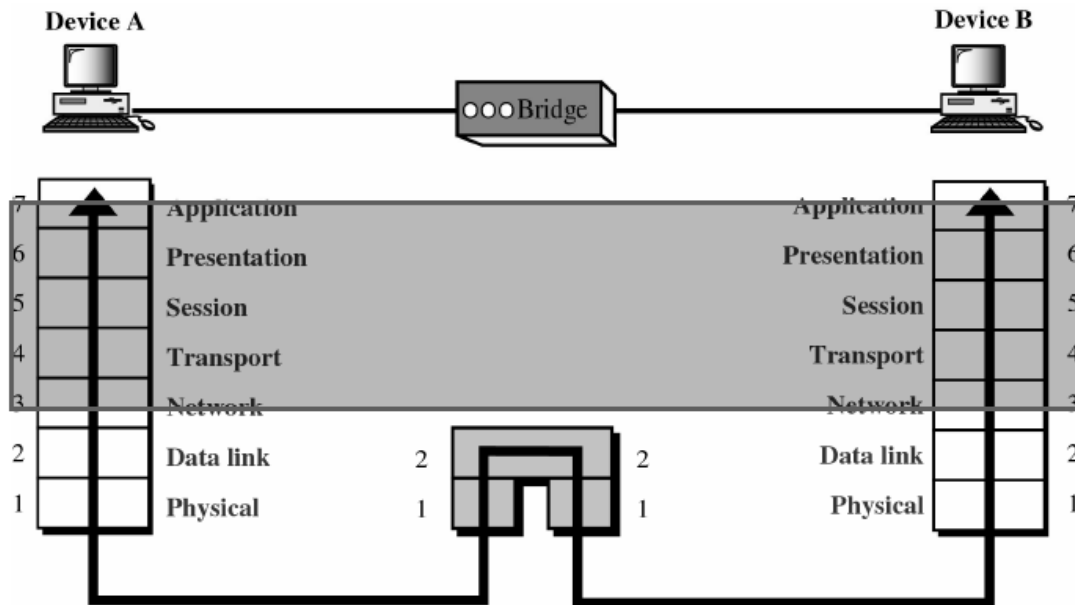
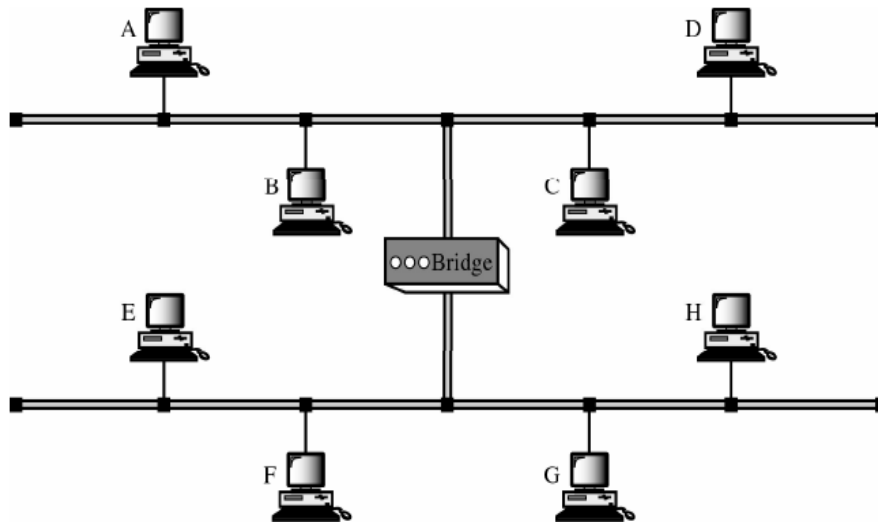# A Repeater in the OSI Model

A Repeater
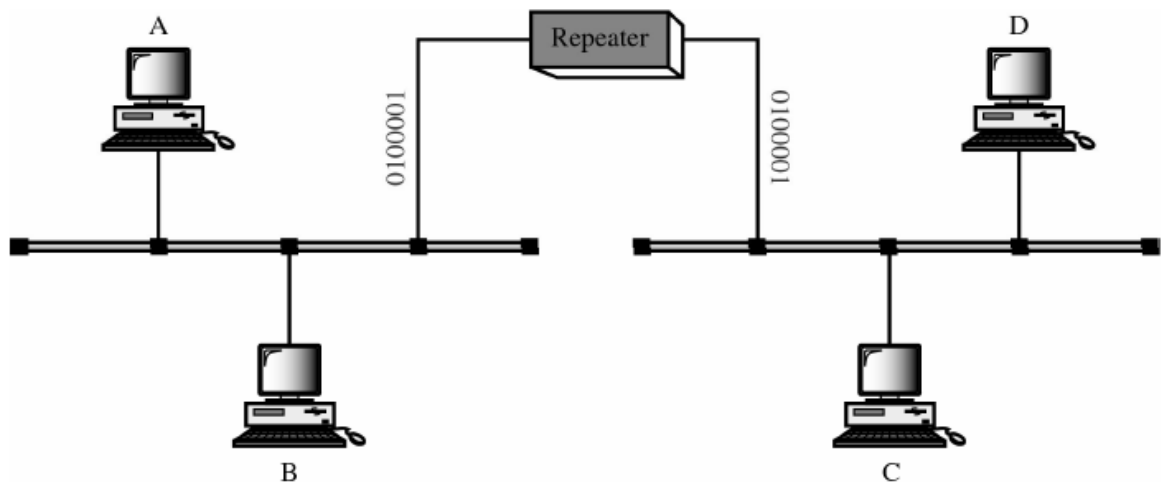
BRIDGE

- A layer 2 network device
- A network bridge is an abstract device that connects multiple network segments along the data link layer
- Used to segment LANs
- Provides m ore control on the Network Traffic
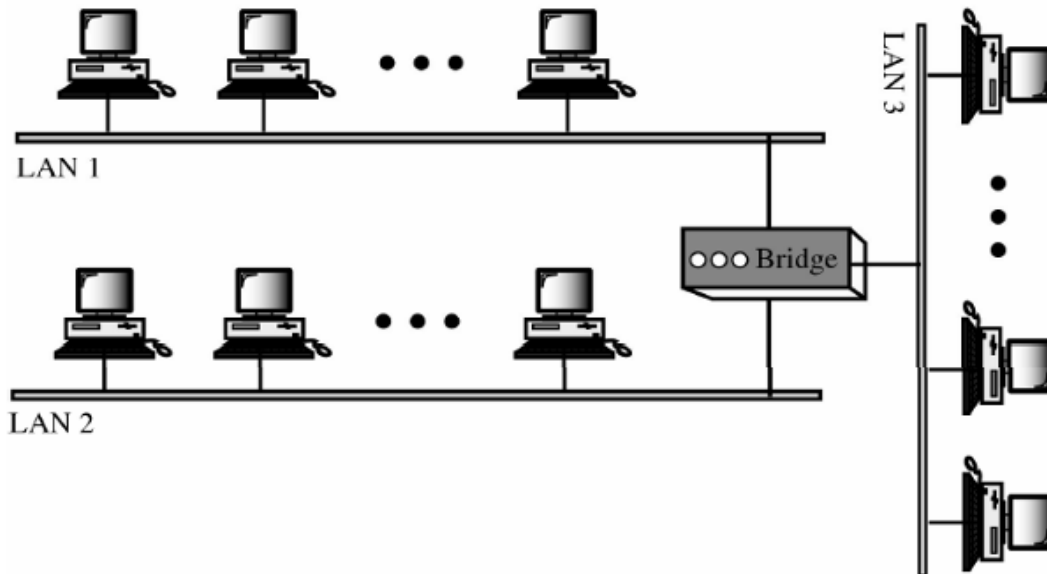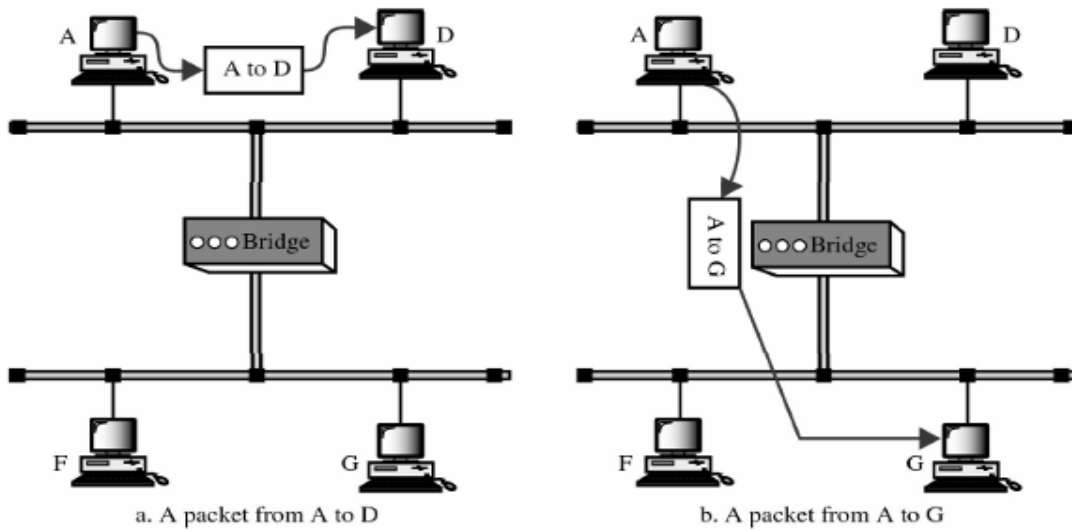
A Bridge in the OSI Model

A Bridge

Multiport Bridge

Function of a Bridge

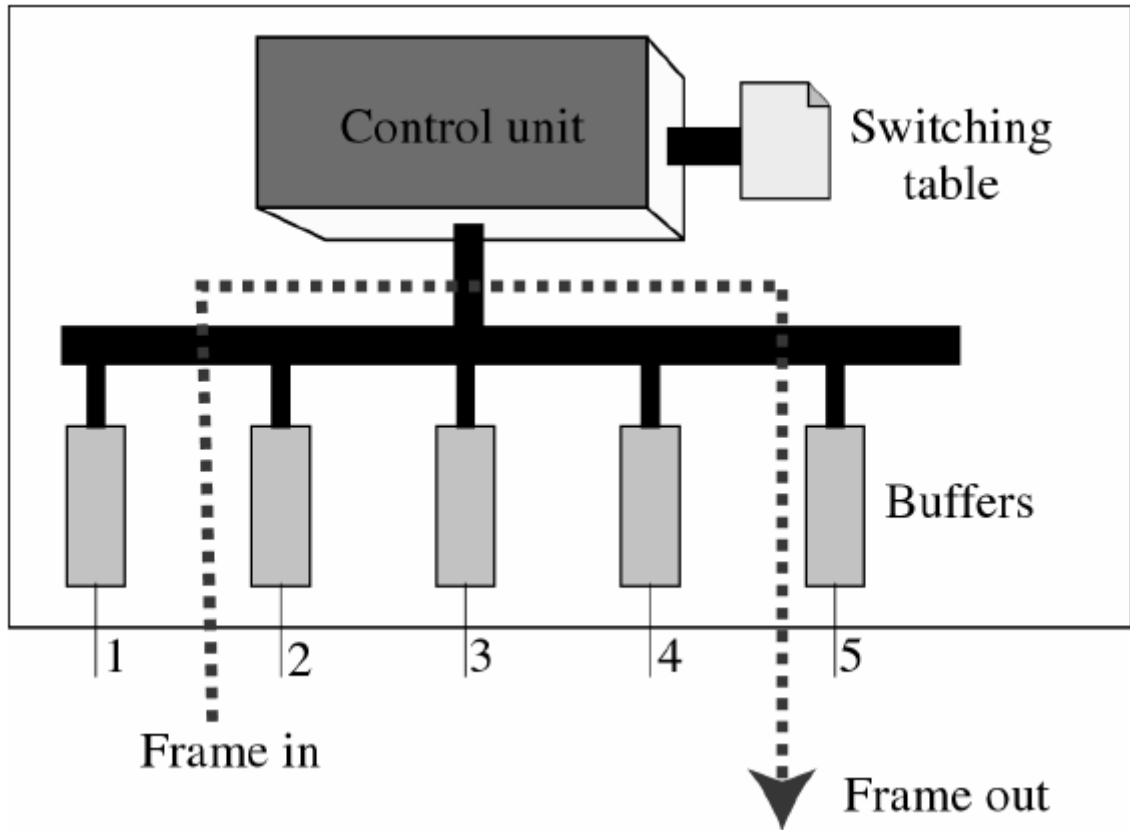
a. A packet from A to D   b. A packet from A to G

SWITCH

- A Layer 2 Network device
- Provides dedicated connection for Network Nodes
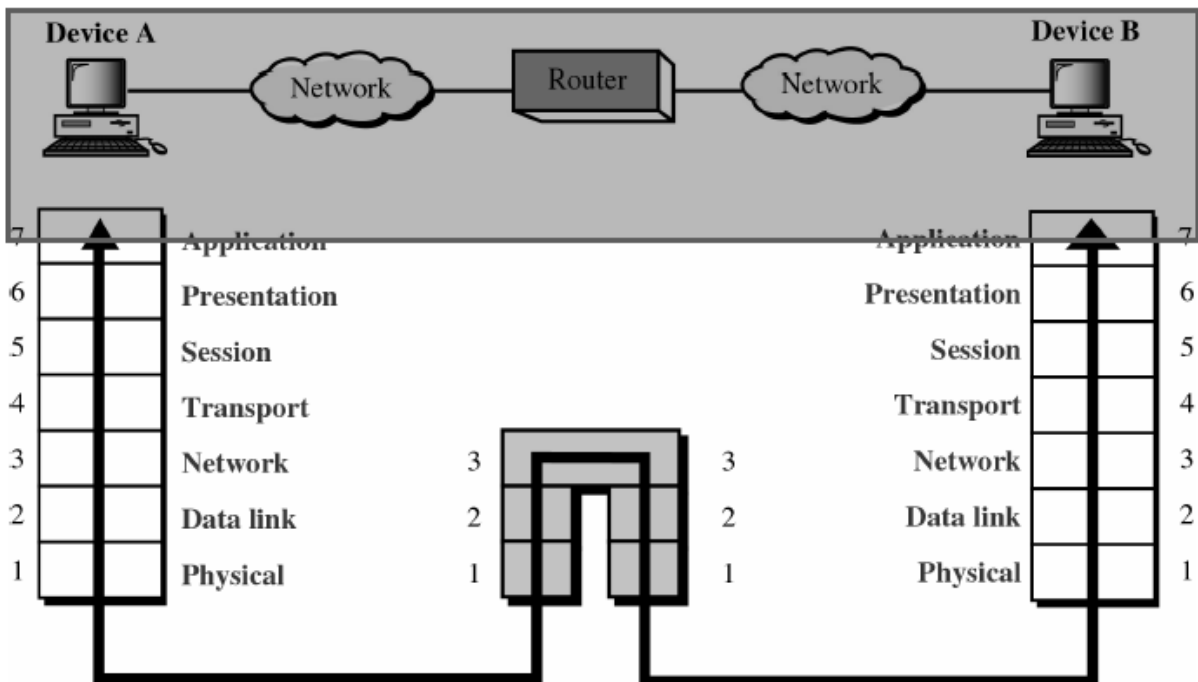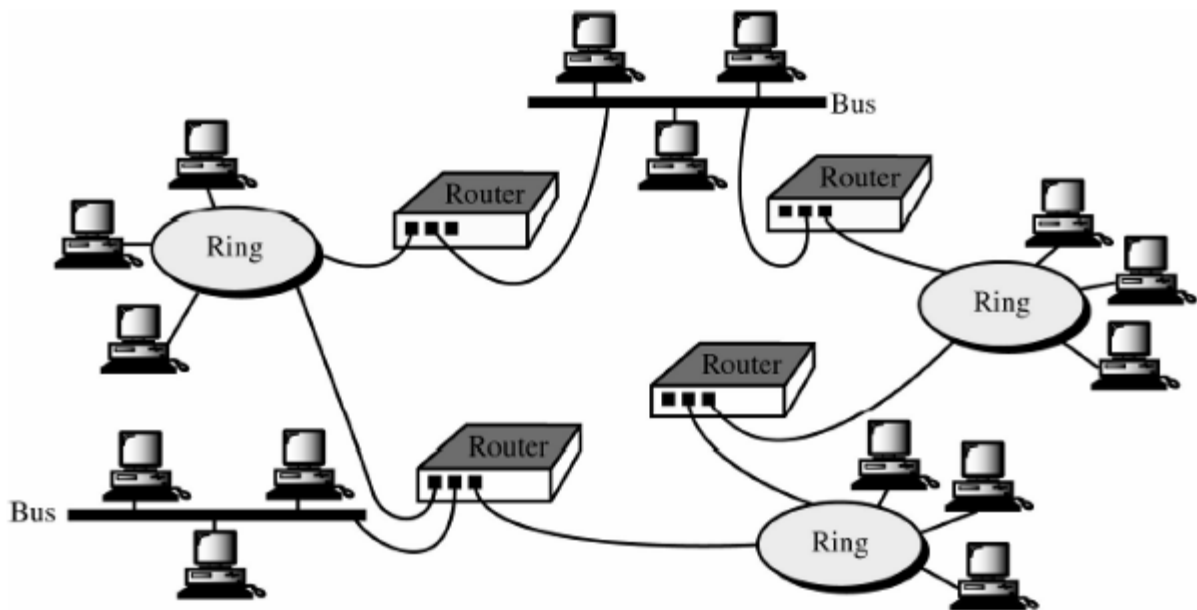- Provides dedicated bandwidth between source and destination ports

Switch

ROUTER
A Layer 3 Network device
Connects different networks
Responsible for routing packets based on the routing table

A Router in the OSI Model

Router s in an Internet

BROUTER

Combines the functions of Bridge & Router
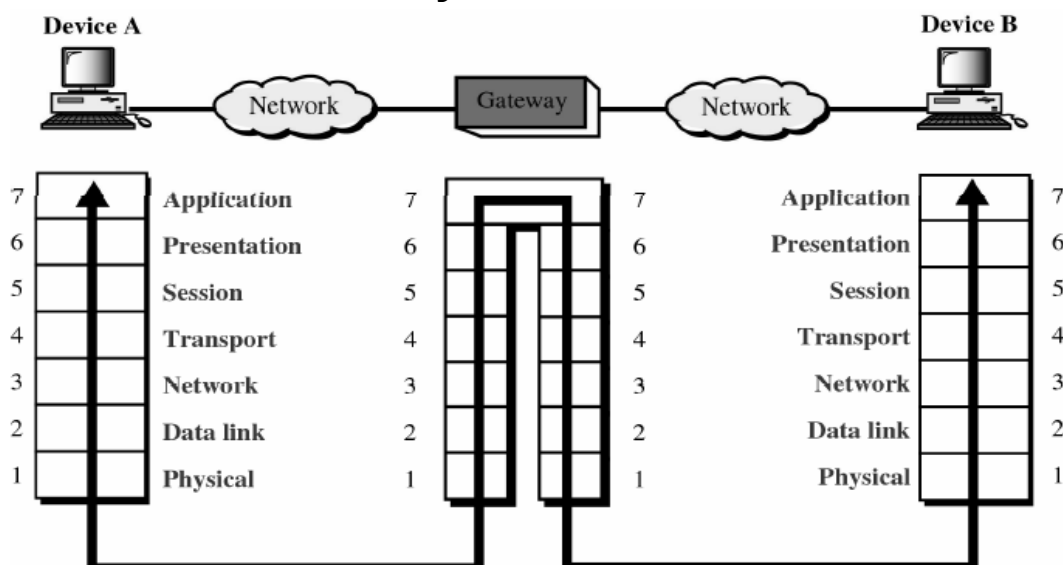Routes specific protocols like TCP/1P & IPX and bridges other protocols
Bridges some packets based on DDL information and routes other packets based on Network Layer
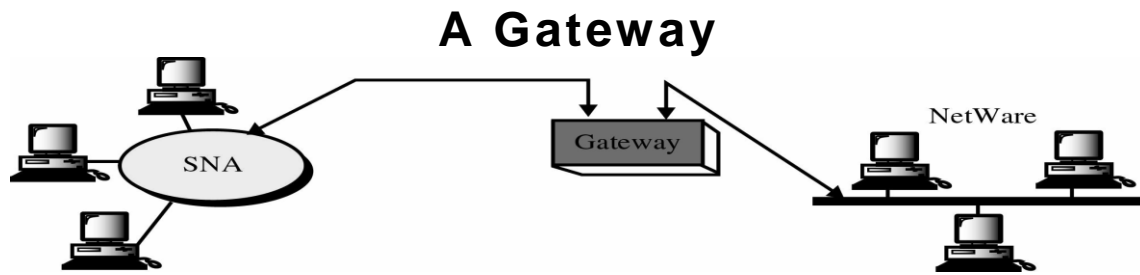
Gateways

Often used as a connection to a mainframe or the internet. Gateways enable communications between different protocols, data types and environments. This is achieved via protocol conversion, whereby the gateway strips the protocol stack off of the packet and adds the appropriate stack for the other side.
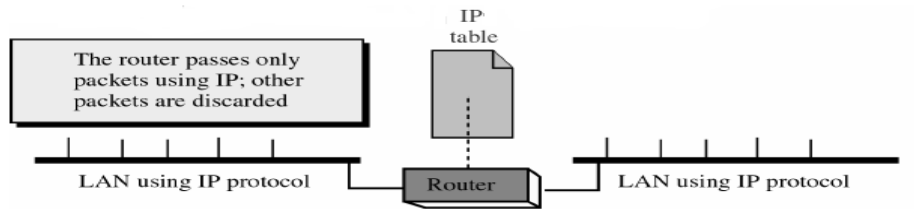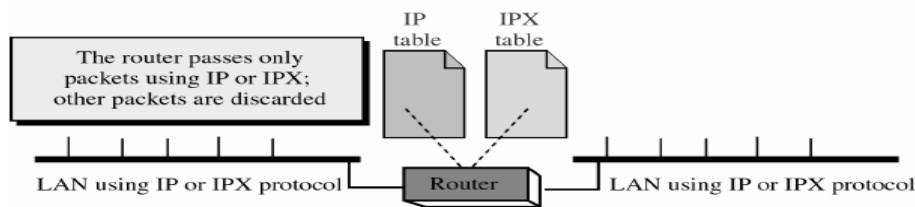Gateways operate at the application layer

A Gateway in the OSI Model

A Gateway

NetWare

SNA

Gateway

Single-Protocol versus Multiprotocol Router

IP table

The router passes only packets using IP; other packets are discarded

LAN using IP protocol | Router | LAN using IP protocol

a. Single-protocol router

IP table | IPX table

The router passes only packets using IP or IPX; other packets are discarded

LAN using IP or IPX protocol | Router | LAN using IP or IPX protocol

b. Multiprotocol router

Brouter

IP table

The brouter routes packets using IP; other packets are passed based on physical address.

LAN using IP protocol | Brouter | LAN using IP protocol
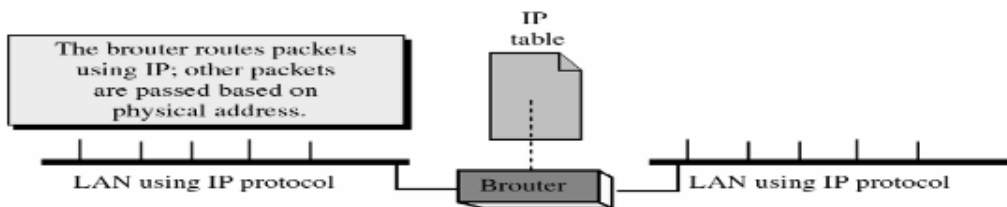
a. Single-protocol brouter

IP table | IPX table

The brouter routes packets using IP or IPX; other packets are passed based on physical address.

LAN using IP or IPX protocol | Brouter | LAN using IP or IPX protocol
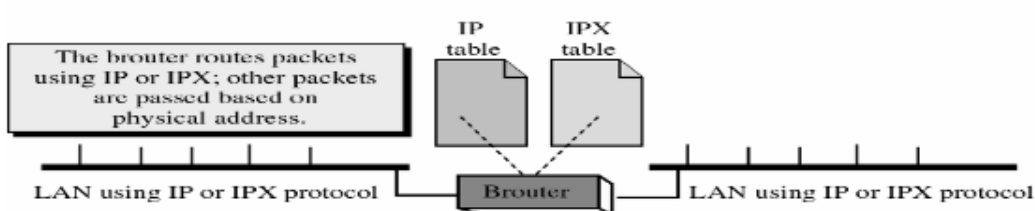
b. Multiprotocol brouter

Connecting Devices and the OSI Model

What is Internetworking?

Internetworking is the practice of connecting a computer network (LANs/WANs) with other networks through the use of gateways that provide a common method of routing information

packets between the networks. The resulting system of interconnected networks is called an *internetwork,* or simply an Internet.

The most notable example of internetworking is the Internet, a network of networks based on many underlying hardware technologies, but unified by an internetworking protocol standard, the Internet Protocol Suite, often also referred to as TCP/IP.

What is **Frame** Relay*?*

Frame Relay is a standardized wide area network technology that specifies the physical and logical link layers of digital telecommunications channels using a packet switching methodology. Originally designed for transport across Integrated Services Digital Network (ISDN) infrastructure, it may be used today in the context of many other network interfaces. It is a synchronous HDLC protocol based network. Data is sent in HDLC packets, referred to as "frames".

What are the Advantages of Frame Relay?

- •Because virtual circuits consume bandwidth only when they transport data, many virtual circuits can exist simultaneously across a given transmission line. In addition, each device can use more of the bandwidth as necessary, and thus operate at higher speeds.
- •The improved reliability of communication lines and increased error-
- handling sophistication at end stations allows the Frame Relay protocol to discard erroneous frames and thus eliminate time-consuming error-handling processing.

Flag	Frame Relay Header	Information	FCS	Flag

DLCI	C/R	EA	DLCI	FECN	BECN	DE	EA
876543	2	1	8765	4	3	2	1
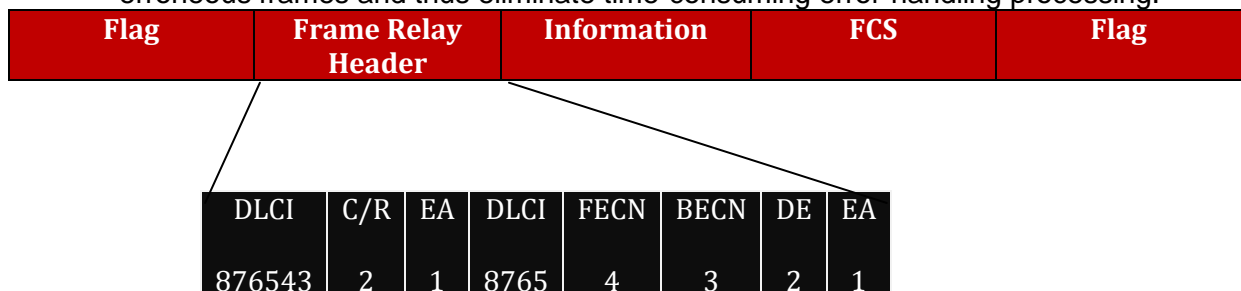
Frame Relay header structure

What is I-NET?

I-NET is a X.25 based packet switched Public Data Network. It provides extremely cost effective and reliable solution to your High Speed Wide Area Networking needs. It is based on Packet Switching technology with error free

transmission (BER better than 1 in 10^) with dynamic re-routing of calls (in case of route failures and congestion) and inter-connection of computers/terminals at different speeds and protocols.

What is ATM?

ATM stands for (Asynchronous Transfer Mode), is a network technology based on transferring data in cells or packets of a fixed size. The cell used with ATM is relatively small compared to units used with older technologies. The small, constant cell size allows ATM equipment to transmit video, audio, and computer data over the same network, and assure that no single type of data hogs the line. It uses asynchronous time-division multiplexing, and it encodes data into small, fixed-sized cells, has functional similarity with both circuit switched networking and small packet switched networking. It was designed for a network that must handle both traditional high-throughput data traffic (e.g., file transfers), and real-time, low-latency content such as voice and video. ATM uses a connection-oriented model in which a virtual circuit must be established between two endpoints before the actual data exchange begins. ATM is a core protocol used over the SONET/SDH backbone of the public switched telephone

Asynchronous Transfer Mode (ATM) is a technology that has developed since 1990 ATM is a broadband multiplexing scheme which allows the multiplexing of widely differing types of digital signals into a common digital stream.

 It provides primary mechanism for switching broadband ISDN (BISDN) and hence, discussion of ATM inherently involves BISDN.
Unlike traditional packet switching, ATM uses a fixed-frame structure called a cell. The ATM cell is 53 octets (in ATM bytes are called octets) long, of which 48 octets comprise the message and 5 octets the header. The cell structure was chosen for two reasons. The relatively small cell size reduces queuing delay for high priority cells in the event of congestion. Fixed-size cells may be switched more efficiently since the switch need not look for an end-of-cell indication.

Header (5 octets)	Information field (48 octets)
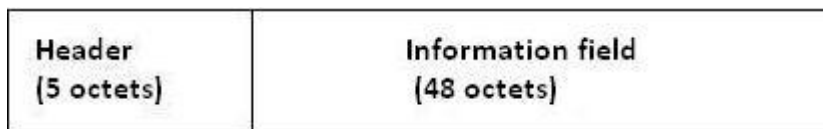
The header consists of several portions:

- **Generic flow control (GFC)**—This is a flag, which allow the bidirectional control of cell flow (data) to the network in the event the network becomes congested. It allows the user to define the traffic characteristics of the data that the network is to accommodate.

- **Virtual path identifier (VPI)**—This defines the virtual network path that will be used for routing cells across the network.

- **Virtual channel identifier (VCI)**—This is identifies the specific virtual channel/circuit (set of time slots) on which the cells will be carried between the point where the VCI is assigned and the point at which it is terminated or translated to new VCI.

- **Payload type (PT)**—This 1-bit field specifies whether the information carried in the information field is user data or network data.

- **Cell loss priority (CLP)**—This 1-bit field provides information to the network as to whether or not the cell may be discarded in the event of network congestion CLP=1 indicates that the cell may be discarded; CLP=0 indicates the cell may not be discarded unless to alternative exists

. **Header error-control**—A CRC field using the check polynomial

$$G(x) = x^8 + x^2 + x + 1$$

It is used error detection and provides capability for single error correction and very low probability of undetected burst errors of magnitude greater than 1.

Octet				
1	Generic Flow Control	Virtual Path Control		
2	Virtual Path Identifier	Virtual Channel identifier		
3	Virtual Channel Identifier			
4	Virtual Channel identifier	Payload Type	Reserved	Cell Loss Priority
5	Header-Error Control			

ATM Cell header field (user –to- network interface)

Octet				
1	Virtual Path Identifier			
2	Virtual Path Identifier	Virtual Channel Identifier		
3	Virtual Channel Identifier			
4	Virtual Channel Identifier	Payload Type	Reserved	Cell Loss Priority
5	Header-Error Control			

**ATM cell header field (network -to- node interface)**

Let us consider the concept of some what further. Virtual means that the connection is via a time slot as opposed to a fixed pair of wires. A virtual channel connection (VCC) connects to endpoints by means of the concatenation of a series of virtual Channel (VC) links. A virtual channel link is identified a by a VCI. A new VCI is assigned whenever the virtual channel link is switched. A virtual path connection (VPC) consists of the concatenation of a series of virtual path (VP) links, each consisting of a group of virtual channel link. Each virtual link is identified by a VPI, which is a common to all virtual channels in virtual path link. Within the VPC, each VCC is identified by a unique VCI. VCCs may have the same VCI within different VPCs. When a virtual path is switched, virtual channel remain unchanged and when virtual channel is switched virtual channel is also switched.
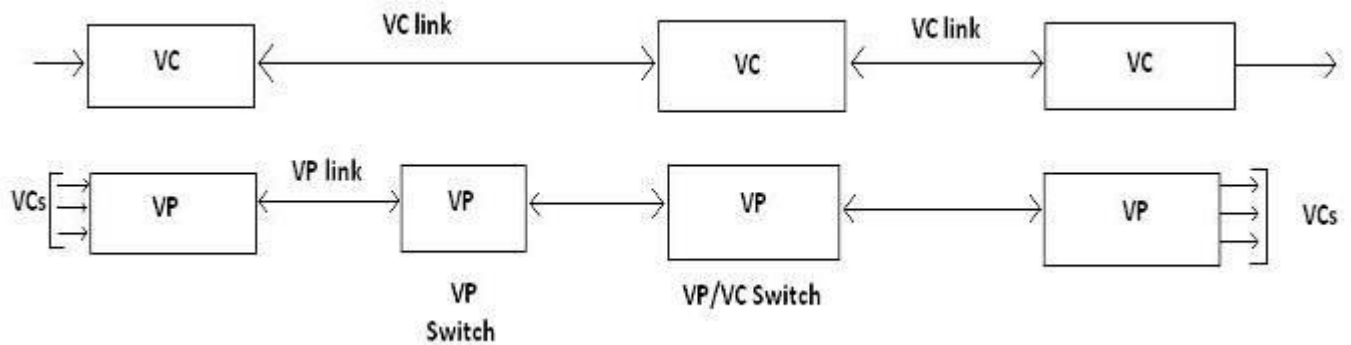
VP/VC link structure

- **ATM Structure**
- ATM is structured layer, as are many data transmission protocols. The ATM protocol model is pictured like that.
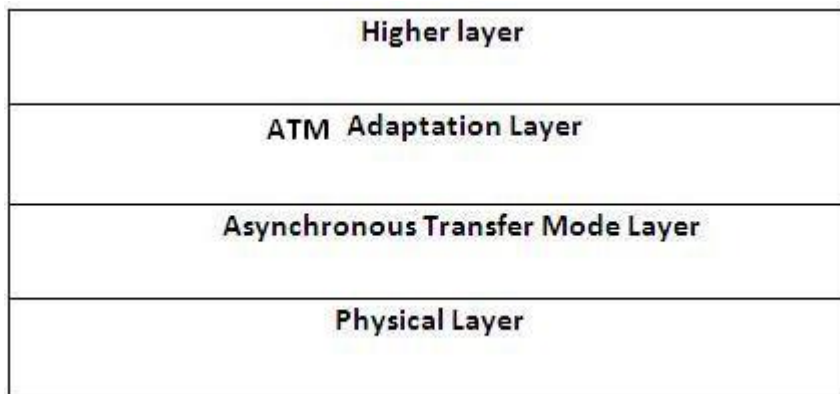
ATM structure

- **ATM services Classes**
- ATM can be dividing by little service class like Class A, B, C, D in the basis of bit rate, connection mode, Timing synchronization. In one chart it can be easily describable.

	Class A	Class B	Class C	Class D
Bit rate	Constant	Variable		
Connection mode	Connection Oriented			Connectionless
Timing synchronization sender/receiver	Required		Not required	

- **ATM categories**—ATM has few categories like
- 1.Continues bit rate service with reserved peak bandwidth

- 2.Variable bit rte with reserved bandwidth.
- 3.Variable-bit-rate service without reserved bandwidth
- 4.Reserved burst bandwidth.

- **Application of ATM**
- Perhaps the most significant application of ATM is broadband ISDN (BISDN). The two technologies have developed in close parallel. Other applications include video-on-demand, SMDS, video conferencing, and DS3 switching.