CONTENTS

Computer Fundamental

Full form of computer fundamental:-

2G = Second Generation

3G = Third Generation

A/D = Analog to digital

ANSI = American National Standards Institute

ASCII = American Standard Code of Information Interchange.

BASIC = Beginners All-Purpose Serial-Interaction Code.

CAD = Computer Aided Design.

CASE = Computer – Aided Software Engineering.

CD = Compact Disk

CD-R= CD- Recordable

CD- ROM = Computer Disk Read Only Memory

CD- R/W = CDRead /Write

COBOL = Common Business Oriented Language

CPS = Characters per Second

CPU = Central Processing Unit.

CRT = Cathode– Ray Tube

CU = Control Unit

D/A = Digital – to – analog

DAT = Digital Audio Tape

DBMS = Data Base Management System

DVD = Digital Video / Versatile Disk

EEPROM = Electrically EPROM

EPROM = Erasable Programmable Read Only Memory.

FAT = File Allocation Table

FEP = Front– End Processor

FM = Frequency Modulation

FORTRAN =Formulas Translation

FTP = File Transfer Protocol

CUI = Character User Interface

GUI = Graphical User Interface

HTML = Hyper Text Markup Language

HTTP = Hyper Text Transport Protocol

I/O = Input and Output

IBM = International Business Machines

IC = Integrated Circuit.

IP = Internet Protocol.

ISO = International Standards Organizations

ISP = Internet Service Provider.

KB = Kilo Bytes.

LAN = Local Area Network.

LCD = Liquid Crystal Display.

LED = Light Emitting Diode

MAN = Metropolitan Area Network.

MB = Mega Bytes

MHZ = Mega Hertz

MP3 = MPE g-1 Audio layer -3

MS – DOS = Microsoft Disk Operating System

MTNL = Mahanagar Telephone Nigam Limited

NIC= Network Interface Card

OMR = Optical Mark Reader

OS = Operating System

PDF = Portable Document Format

P-ROM = Programmable Read- Only Memory

RAM = Random Access Memory

Rom = Read Only Memory

TB = Tera Bytes.

TCP = Transmission Control Protocol

TCP/IP =Transmission Control Protocol / Internet protocol

UPC = Universal Product Code

USB= Universal Serial Bus

VCR = Video Caste Recorder

WAN = Wide Area Network

WAP = Wireless Application Protocol

WLL= Wireless Local Loop

WMA = Windows Media Audio.

WWW = World Wide Web.

XHTML = Extensible Hyper Text Markup Language

Q1. How many task of the computer?

Ans. There are three task of thecomputer.

1. Get input 2. Process that input.
2. Gives Output.

Q2. Explain characteristics of computer?
Ans. Characteristic of computer:-

1. Speed → A computer is very fast device it can perform in a few second, the amount of work that a human being can do in an entire year.
2. Accuracy → The accuracy of computer is constantly high. Computer done all the work in correct manner. It makes home task,if human being make mistake to give the command to the computer than it produce error otherwise it work in accurate manners.
3. Large and perfect memory→as human being has the power of remember unit way as like computer has the memory to store the data.
4. Logical Design: - Computer has the capability of the logical design.
5. Versatility → we can use computer in different area in business forour life and can do also more than one task few second.
6. No Feeling→ computer does not have no felling like humanbeing.
7. Communication Capability → we can send message by the computer andwe canalso send e-mail with computer.

Q3. Explain the uses of computer?

Ans. Uses of computer in different areas:

1. Computer is used in school and college for education purpose
2. Computer is used in industry for much purpose.
3. Computer is used in banking for collection of large amount of data.

4. Computer is used in police department for taking finger print of criminal.
5. Computer is used in railway and airline department for reserve ticket.
6. Computer is used for design the make buildings.
7. It is used in telephone exchange for make telephone bill and control enquiry.
8. Computers are used for electric department for making electricity bill.

Q4. Write the detailed of computer generation?

Ans.:- Computer generation: - "Generation" in Computer talk is a step in growth of the computer industry. Original the term Generation was used to distinguish between year version hardware technologies.

First Generation (1942-1955):-

In First generation "vacuumtube was very big in size. It is Impossible to take one place to another place it had about Tune weight of vacuum tube for control and amplify signals.

Advantage:

Vacuum tubes were the only electronic computer and faster calculating device they could perform computations in millisecond.

Disadvantage:-

1. It is very big in size.
2. It was big so that it could not be taken from one place to another place.
3. Unreliable.
4. It was very costly.
5. Air conditioning required.

Second Generation (1955-1964):-

A decode invented second generation developed the transistor a smaller and more reliable. It replaced the "vacuum tube".

Advantage:

1. Smaller in size.
2. More reliable
3. It was not costly.
4. Less prone to hardware clusters.

Disadvantage:

1. Air conditioning required.
2. Frequent maintained required.
3. Commercial production was difficult and costly.

Third generation :- (1964-1975):-

After two generation the third generation developed the advent of “Micro electronics” technology made it. This new technology was called “it integrated circuit “(ICS).

Advantage:-

1. Smaller in size.
2. Even more reliable
3. Easily portable
4. Totally general purpose
5. Less power requirement.

Disadvantages:-

1. Air- Conditioning required in many case.

Fourth generation (1975 onwards):-

In fourth generation developed very large scale integration developed. It was very important for commercial production.

Advantages:-

1. Small in size.
2. Very reliable.
3. Maintenance is required.
4. Totally general purpose.

Q5. Explain the component of a computer system?

Ans. Component of a computer system:

Hardware:-Represents the physical component of the computer (i.e , the components) that we can see and touch like input device, output device, CPU, floppy disk , hard disk etc. Hardware part can be classified in the following Categories:-

1. Keyboard.
2. Mouse.
3. Motherboard.
4. Power supply.
5. Monitor.
6. CPU.
7. Printer.

Software: - Software represents the set of programs that given the operational of a computer system and makes the hardware run. Software can be classified the broadly in two categories.

1. System software.
2. Application software.

Q6. What is CPU and parts of CPU?

Ans.: CPU (central processing unit):- The central unit and the arithmetic logic unit of a computer system are jointly known as the CPU. It is the brain of computer system.

Parts of CPU:

1. Memory Unit (MU): This is the part of CPU. In this part you can see the memory unit of the computer system.
2. Control Unit (CU):- Control unit will control the operations of all parts, does not carry out any actual data process operations.

Or

This unit generates timing and control signal to activate particular part of at a particular time to perform part a task.

3. Arithmetical and Logical Unit (ALU):-This is also part of CPU.This part is used for calculation and all comparison.

Q7. What is monitor and write the types of mode?

Ans. Monitor is the screen for the user on where user can see message which is given input by him.

1. Mono.
2. Color.
3. Monitor.

Q8. What is keyboard?

Ans. Keyboard is an input device. We can enter any data and matter through the keyboard in the system.

Q9. What is mouse and write types of mouse?

Ans. Mouse is an input device. It is just like direction keys. Through mouse the user can be selected any matter and also fill any color.

1. Scroll mouse.
2. Optical mouse.

Q10. What is printer and types of printer?

Ans. Printer is an output device. It is used to print a matter.

1. Dot matrix printer.
2. Inkjet printer.
3. Laser printer.

Q11. What is memory and what are types of memory?

Ans. Memory: - Storage power of computer is called memory. The basic purpose of computer memory is to provide a means of storing and retrieving data for the purpose of data processing. These are two design

issues associated with it.One is the manner in which data is to be stored in the computer memory and second location address of the required data in the computer memory.

The memory is divided into a large no. of small parts. Each part is called a cell or memory location is assigned a unique number called address.

Memory has mainly two types:

(a) Primary memory: -It is also called the main memory or the central memory. This memory is resided on the motherboard.

It has two types:

1. RAM (Random Access Memory):-It is a bind of memory that held's the data on which the work is being done to get the output. RAM is the temporary memory of a computer it is designed for feeding for matter into the computer at high speed.

When we turn off the computer this temporary memory gets disappeared. This is the reason why we should save our work on a second storage device before turning off the computer.

2. ROM (Read Only Memory):- ROM hold the data cannot be re-written on it. It is non- volatile memory and does not lose when we switch off the computer.

Other uses of ROM are:-
It holds the instruction and data that control various peripheral units of computers it contains the instruction for the computers to get started.
Difference between RAM and ROM.

RAM	ROM
1. It is Read/Write memory.	1. It is read only memory.
2. It is volatile in nature the moment power is switched off and the memory gets erased. Its storage like a temporary memory.	2. It is non-volatile its storage is permanent.

(b) Secondary Memory: - The second memory is the external memory. Example of secondary storage devices are÷

Hard disk: - A magnetic disk is a circle metal plate / platter coated on both sides with a magnetic material. In a disk pack of 6 disks there are 12 surfaces. Top surface of list and bottom of last are not used for reading or writing to surface is used for storage purpose. Top of first and bottom of last are used for error detection and correction capacity of disk can be measured let us

say there are to surface each surface has 512 tracks and each track has no storage and each sector can store 512 byte.

Typical capacities of hard disk available today in the market are 814 MB, 4GB, 2GB, 40GB, and 80GB, 500 GB etc.

Floppy disk: - A low cost plastic magnetic disk storage device use and small computer system also called a floppy disk:-

1. They are ideallysuit for copy carrying data from one machine. The floppy is actually enclosed in a play jacket that protects sit from beat and electrical snacks.
Floppies are commonly found in the sizes namely s. 3/4 "and 3.5" typical storage capacities of floppy are 1.44 MB Compact disk (CD): With demand for higher and more reliable secondary storage,new types of secondary storage medium stored getting popular. This medium is the compact disk. Typical storage cup could be any anywhere between 700MB 4GB Data.A CD can be used to store numeric alphabet audio and video data.

Difference Between primary storage and secondary storage:-

Primary storage	Secondary storage
Temporary	Permanent
Volatile	Non-volatile
Fast	Slow
Limited capacity	Very large capacity
Cost high	Cost is less
Access speed is high	Access speed is low
Direct access of data	Direct access or sequential depend on the device.

Folder:- A folder is a container of files, Like a sub directory in disk. A folder can also contain another folder.

Bit (binary digit):- A binary digit is 0 and 1.

Byte:- A group of 8 bits is called bytes.

1024 Byte	1 Kilobyte
1024 Kilo Byte	1 Megabyte
1024 Mega Byte	1 Gega Byte
1024 Gega Byte	1 Petta Byte
1024 Petta Byte	1 Tera Byte
1024tera Byte	1 Etta Byte
1024 Etta Byte	1 Zetta Byte
1024 Zetta Byte	1 Yetta Byte

Modem: - Modem is a device attached to computer that can converts digital signals to analog signal.

Q12. What is booting and types of booting?
Ans. Booting: - Loading the operating system is called booting.

Types of booting:-
1. Warm booting: - When computer is ready to perform the comfort is called warm Booting.
2. Cold Booting: - The process in which the computer checks all files.

Q13. What is virus?

Ans. Virus is an infectionlike in food. This is entered in the computer without knowledge of the computers and the user. It enters with the help of floppy,CD, and net.

Q14. What are two types of virus?

Ans. There are two types of virus:-

1. File virus – A file virus destroys the existing files and commands.
2. Boot sector virus – The boot sector virus decreases the speed of computer when the computer booted.

Q15. What is activity of virus?

Ans.

1 It decreases the speed of system.
2. A virus sometime destroys the main memory of the functions.
3. It stops the functions.
4. A virus destroys the data by over writing on the program.

Q16. What is the prevention of virus attack?

Ans. Prevention:-

1. Install the antivirus in your system.
2. Properly update your antivirus.
3. Never used the software that is not original
4. It’s necessary that don’t use borrowed software.

Q17. What is networking and types of networking?

Ans. The combination of two or more computers is called networking.

There are three types of networking:-

1. LAN (Local area networking)
2. WAN (Wide area networking)
3. MAN (Metropolitan Area Networking)

Function of Computer

Q1. Function of computer?

The following are the function of the computer:-

1. It accepts the data through input device.
2. It stores the data in the memory.
3. It processes the data in the C.P.U.
4. It gives the information to output device.
5. It does the mathematical equation, subtraction multiplication and division.
6. It does the logical equation such as compare the values.
7. It stores the information permanent and retrieves the information for further utilization.

Q2. How many types Computer organization?

1. Hardware.
2. Software.
3. Human ware.
4. Firm Ware.

Classification of computer organization

Computer organization can be classification four categories as follows:-

Hardware: -It is the visible and touchable part of systems.It can refer to circuits, printers, keyboard, card reader etc.

The hard ware organization is classifies into four categories are:-

A. Input devices.
B. C.P.U.
C. Output devices
D. Secondary storage devices.

A. Input Device: -This is used to feed data or instruction through input device like keyboard and mouse etc. That is called input device.

B. C.P.U. (CENTRAL PROCESSING UNIT):- It is connected to different unit by bus.It is used to provide communication between different parts. It is combination like mind, hurt and nervous programs. It is only stores the data and information but it controls the overall functions of the system. It is called central processing unit. It is making up of three unit ALU, controls unit and memory.

Function of C.P.U.

I. It stores the data as well as instructions.
II. It converts the data into the instructions.
III. It issues command/order to all the units.
IV. It carries out data processing and sends output/information to the output device.
V. It performs mathematical and logical operations.

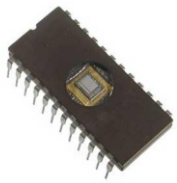
Parts of C.P.U.

1. Memory :-

Like a human being, computer system also has a memory. Memory is used to store the data as well as instructions and programmers. It is primary storage device. It is also known as immediate access storage device.It is made of metal oxidesemi conductor (MOS).ThisMemory is classi ed inthreetypes:-

1. RAM.
2. ROM.
3. Cache Memory.

1. RAM (Random Access Memory):- It is main memory of system.It is a temporary memory and not working after switched off the system and also called a volatile memory.
2. ROM (Read only Memory):- It is now available storage. The data not washed out as soon as the computer is switched off. It has special program, Bootstops look to load your system from operating system.



Types of ROM:-

1. PROM (Programmable Read Only Memory)
2. EPROM (Erasable Programmable Read Only Memory)
3. EEPROM (Electrically Erasable Programmable Read Only Memory)

Cache Memory: - It is high speed RAM. It acts as a temporary buffer. It is used to speed up processing.

2. ALU: It holds intermediate value during calculation. This is known as arithmeticallogical unit. This is used to perform arithmetical equation. Such as Addition, subtraction, Multiplications, division and logical equation such as and,or,not,comparison.
3. C.U:- It controls the interpretation as well as execution of program. This is a burn of the entire unit existing in C.P.U. All the operations done in the C.P.U. are controlled by the control unit. It gives the command to other unit what to do and what not to do.

Functions of control unit:

1. It gives command to transfer the data from the input device.
2. It gives command to transfer the data from A.L.U. It is a mathematical or logical operation.
3. It gives command to transfer information from A.L.U. Through memory and then in output device.
4. It fetches the data itself for processing.
5. It gives the programmers into memory when we needed.
6. It instructs the other units to do or perform a particular operation as instruction given.

Output Device: -The is used to give the required or result information. Example of output device is VDU, Printer,Magnetic Tape and disk Secondary Storage Device. This is used to store the programmed permanently. This is also knows secondary memory.

V.D.U. (VISUAL DISPLAY UNIT):

1. Introduction: - To produce a video must members of the pc family require a display adapter, a special circle board that is normally plugged into one of the computer expansion. The display adapter connects the computer to the display monitor through a chip called CRT controller. The type of display screen or

monitor used has a very important effect on the program design. There are many types of monitor that can be used.

Printers:

Printers are today the most famous output device used in computer. A hard copy output can be obtained from a printer. Printers can be classified into input and no him part printers.

1. Dot matrix printer (impact)
2. Daisy wheel or latter quality printer(impact)
3. Chain printer(Impact)
4. Band printer (impact)
5. Inkjet printer (non-impact)
6. Laser printer (non-impact)

But the most famous printer used mostly with the pc family.

i. Dot matrix printer: -It has a print head withover the paper and character in the form of a 5”7 dot matrix. The printer project an appropriate combination of pins to print a character. Their speed is generally specified as character per second. These are available from 80-360 (or 450) character per second.

ii. Inkjet printer: - It works through ink on the paper that’s why it is knows as inkjet printers. Its resolution is very much high as compare to dot matrix printer. This type of printer is less expensive then laser printer.

iii. Laser or non impactprinters: - Non impact printers function differently power from impact device. They do not strike the papers surface but instead may use how power lasers or then or electro static techniques to print character. They have extremely high printer cannot prepare multiple reports with many carbons and cost more than impact printers. They are quieter to operate and offer many characters style to print.

Types of Computers:

According to size memory, shapeand storage capacity. The computer can be classified into two categories:-

1. General purpose computer (G.P.C.)
2. Special purpose computer (S.P.C.)

1. Special purpose computer: - This type of computer is designed for specific task such of computer used in U.S. submarine computer to train, airport.
2. General Purpose computer: - This type of computer is designed for general purpose.This type of computer to perform various types of programmer. This is further classified into three. Categories:-

    1. Analog (ii) Digital computer (iii) Hybrid computer.

    1. Analog Computer: - This is computer which designed by analog circuits, using active as well as passive electronic components which works the basic of continuous data. The type of computer is used in instrument and trail processing units.

    2. Digital Computer: - This is a computer which is designed by digital circuit using LSI (large scale integration)and VLSI (very large scale integration) chips, which work on the basic of

discrete data. This type of computer is used in business offices, Industries and in many other fields.

3. Hybrid Computers:- Hybrid computer is the combination of analog and digital computer which work on the both of continuous and discrete data. Such type of computer is very effective to control real time events which occur in the area of process industry, defense and space exploration cat scam is the example of hybrid computer.

Software: - It is the set of instructions, proceed user or logic when computer of then loaded into computer hardware enable it to perform a specific task. It is like a current following through a circuit. It is untouched part of the system. It is the invisible and soft part of the system. Software is further classified into two categories:-

1. System software
2. Application software.

System Software:-This type of software is designed to operate and control the system and extended the existing recourse, these types of software are prepared by computer supplies.These types of software are like:-

i. Operating system
ii. Complier, interpreter
iii. Utilities, programmer's utility tools
iv. Computer language

1. **OperatingSystem**: - Operating system is that system which is used to boot or load the system. It acts as a translator between user and computer. It is not only worksas translator but it also superwise the overall activities of the computer. It perform a number of essential jobs such as controls the input and output device such as control, printer and disk drives. Following are the example of operating system.
   A. MS-DOS B. UNIX C. WINDOWS.

2. Application software: - Application software isa collection of programs, which are used to handle task in the field of business scientific, government agencies etc. This may be provided by the computer manufacture or supplier but in many cases the user produces his own application programs called programs.

3. HumanWare:-

This is user which operates the computer system. The computer works according to the command given by the operator, so we can say that it is the controlling power as well as brain of the system.

4.FirmWare:-

This is the combination of some part of hardware as well as software. It has one important job to perform i.e. It has to see that all the hard work units function correctly and do then jobs properly and efficiently. This is also called operations software work as Firmware.

Types of disk:-
1. Floppy disk.
2. Hard disk.

1. Floppy disk: -This is circular in space and connects of a Mylar, coated on the base of a flexible disk. Due to flexible nature it's named as floppy. Different sizes of floppy are available such as 3.5" and 8.25". Its capacity may be 360 kb to 12 MB. It may be further classified as:-

(a) Low density single side
(b) Medium density double sides.
(c) High density double side.

Structure of a floppy: - Magnetic surface which is coated with iron- oxide is organized into track and sector. It is covered with a thick paper jacket to protect the magnetic surface.Floppy disks are very delicate and should be handled properly. The various parts of a floppy disk are described as under. The various parts of a floppy disk are described as under.

a) Drive spindle hole: - This disk has a large hole at the centrecalled as drive spindle hole. This is used to load or mount the disk then on to the drive. It is also known as mount slot.

b) Pressure pad slot: - The Read/Write head used for reading/writing data from or to the diskette comes in direct contact with the diskette only through read /write head aperture slot.

c) Write project notch: - This notch is located on the upper side of disk, when covered;it prevents information from being recorded on the disk. It prevents the information from being changed or erased. When uncovered information can be recorded. In 5.25 “diskette am masking is temporary the sticker on 3.5” diskette a slide switch is used for write protection.

d) Exposed recording surface:- This surface is made of metal oxide, which is used to read the data magnetically.
e) Index hole: - A small hole present near the amount hole of the disk called index hole. It is used for locating the area to be accessed by the read/write head.
f) Permanent label:- It contains disk manufacture and capacity information.
g) Temporary label:- An adhesive backed label following the contents of a disk to be identified.

Hard disk: - Hard disk similar to floppy disk in which it stores information, but it can there much more information then floppy disk. It works much faster than a floppy disk. A hard disk is made of analuminium platter and is encased in a scale disk proof case. Multiple access arms and read/write heads are used with disk packs. The arm move in and out to read/write the data. Each are has two heads for accessing, the two surfaces once attached to system unity the hard disk are not taken out and here it is called a fixed disk.

Hard disk was developed to overcome the problem disk was presently damaging the floppy disk capacity of a hard disk is measured in Mega Bytes and they are generally of 120MB, 200MB, 260MB capacity.

File Manager: - A file manager is a program which permits programmer to erase, copy update or delete files on the disk. A file is a collection of information supplied by the programmer which is stored on the disk as a single entity and an accessible by a name. A directory of files stored on the disk as also maintained by the file manager. The directory help is also stored the disk. The directory includes file have sixes of the data time and unused memory capacity of the disk etc.

BIOS → The abbreviation BIOS stands for BASIC input output system. Some system programs that manage the computer’s operations are stored in ROM as fire ware. There programs the mostfundamental types of supervisory and support work. They provide essential services that all programmers need. There services programs for subroutines called Basic input output services. They are referred to as BIOS or ROM-BIOS. Each program performance one specify task such as

writing some characters to the CRT reading some data from disk theory or reading a character from the keyboard etc. All these are done using software interrupt instruction.

The services provided by ROM-BIOS are:-

- Print screen.
- Video services.
- Disk services.
- Serial port (RS-232) services.
- Cassette port services.
- Keyboard services.
- Parallel port (printer) services.
- Boot stop services and soon.

Data Communication and Communication Packages.

Introduction: - Data communication is the process of electronically sending data from one point to another linking and one computer to other permits the power and recourse of that computer to be tapped. It also makes possible the sharing and updating of data at different locations.

Computer that are physically located close to each other, either in the same room building can communication data through a direct cable link computer located for a port use a special form of data communication telecommunication. The process of using communication facility such as telephone system and micro wave relay to send data between computers is a form of data communication sometimes refers to as telecommunication or teleprocessing.

Form of data transmission:-

There are two forms of data transmission

- Analog data transmission.
- Digital data transmission

Analog data Transmission: -The transmission of data in a continuous wave form. The telephone system is an example of a system designed for analog data transmission.

Digital data transmission: - The transmission of data using distinct end off electrical states. Recall that data in digital form are represented as either (on (1) or off (0)). Because the data communication is faster and more efficient than analog, it would see that all data Communication between computers would be in digital is possible.However, that is not case totally digital is possible, however, the telephone system, an analog system, is used for a great percentage of data communication. Because it is the largest and most widely used communication system is place. Because of the expense in valued in converting to a digital system in place. Because of the expensive in valued in converting to a digital system or running a duplicate digital system, a method was devised allowing the digital data to be transmitted over telephone lines. The process is called modulation.

Modem and its type: - The word modem stands for modulator- demodulator. Data in computer is form as digital signals. However, because telephone lineswere designed to transmit the human voice they format data as analog signals for communication between computers to take place over a telephone line the digital signal most convert to an analog signal before it is transmitted. After its journey over the telephone bug the analog signal must then be recourse back to a digital signal to that it can be used by the receiving computer. The process of converting a digital signal to an analog signal is called modulation.Demodulation is the process of reconverting the analog signal back to a digital signal.

i. Internal direct- connect modem.
ii. External direct connect modem.

Twisted- pair cable:-It is the oldest and till most common transmission line. It consists of copper wires twisted into pairs. These lines are used in established communication network throughout the world for both voices as well as data transmission.

Co-axial cable:-It consists of a study copper or aluminum wire wrapped with spacers to insulate and project it. The insulation minimizes the interference and distortion of the signal the cable carries. Groups of coaxial cable may be bundled together in a big cable for erase of installation high quality co-axial cables can be placed underground and loud on the floor of lakes and oceans. They allow high- speed data transmission.

Communication Channel Configuration

The following two are the principal communication channel con gurations:

- Point to point.
- Multi point.

Point to point Configuration: - In a point to point configuration a device (e.g., a terminal or computer) is connected directly to another device by a dedicated communication channel, given those device sole us of that channel point to point channel can be an insufficient and costly configuration of a terminal is not active enough to step the time busy.

Multipoint: - Another configuration is multipoint channel configuration in which three or more device are connected to the some line. The multi-point configuration uses the communication channel more efficiently and reading amount inters cabling needed, which ultimately lower its cost. Two methods are used to determine which device gets access to a channel.

- Polling and.
- Contention.

Polling: - In polling, the computer check each device, one at a time, to see if the device has a message to send. If the device has a message ready, transmission being, ifnot, computer moves on to the next device to pal it.After its all deviceshas been individually the process being again.

Contention:- Contention method puts the device in control, i.e. Each device monitor the communication change to see if the channel is free if the channel is free the device will send its message if the communication channel is being used the device will wait for a pre-determined as mount of time and will try again. This process willrepeatifthe channel is free.

Modes of data transmission: - The following are three needs using which the transmission of data over communication channel takes place.

- Simplex
- Half – duplex and
- Full – duplex

Simplex Mode: - It the simplex mode, data can be transmitted in only one direction. Advise using the simplex mode of transmission can either send or receive data, but cannot do both.

Half – duplex mode:- This mode allows a device to send and receive data,but not at the sometime. In other words, the transmission canoccur in only one direction at a time. An example is a citizens band (CB) radio where the user must either listen, but cannot do both at the sometime.

Full- duplex mode: - The most sophisticated of these transmission modes is the full duplex mode, which allows a device to receive and send data simultaneously for example a telephone system using full duplex mode allow the user to talk and listen at the sometime. Telephone systems are either the half duplex or full duplex mode.

File- Transfer Protocols: - file transfer protocol are sets of rules for transfer of data. Protocols ensure the error- free transfer of data. They are usually supplied as built-in option that can be selected as the user needs them. Some programs also allow the user to define a specific control.

Password Protection :- A password future allows the user to create passwords that give protection to field, dialog directions, and other protection of the communication program so that unauthorized people connect access them. This feature is valuable if sensitive data are involved, or if several people have access to the communication program.

Electronic Mail System: - It refers to the variety of method used to electronically transmit mail and message almost anywhere in the world. To send and receive E-MAIL with a personal computer must be equipped for communication.

Working: - There are two ways to create the message to be sent:

- Use a micro- computer and on-line editor available in the E-MAIL system.
- Use a micro computer and a word processor and then upload to the E-MAIL service.
  A typical transmission might process as file user.
- The sender access an E-MAIL system.
- The sender keys or uploads the message into the computer.
- The sender tells the computer where to send message.
- The sender issues the command to E-MAIL the message.
- The message is received and can be read immediately at the terminal or faced in the thread print's file shape where it can be retrieved and displayed or printed at any time.

E-MAIL Types: -There are two general types or electronic mail.

- An in house network.
- An External network.

In house network: - Connect error some of the employs within a business. In house systems are generally configured in one of the ways.

- As local Area network (LAN):- Here the PCdoesn't need to be equipped for telecommunication to be includedin the network.
- As an internal communication system where and PC, use a modem and telephone lines instead of LAN.
- As a dedicated system, where special device are used exclusively for the transfer of E-MAIL and voice communication.
  External systems take one of the two different forms:-
- As telex where message are received and then printed.
- As part of a commercial information.

Benefits:-

- Faster than traditional mail.
- Less expensive to prepare and read mail.
- Signal message can be sent to multiple addresses simultaneously.
- Receiver doesn't need to be on the line at the same time as the sender.
- A busy person doesn't need to be interrupted to receive the message.
- Message can be printed on paper.

Drawbacks:-

- Expensive to set up and can be expensive to operate.
- Electronic 'junk Mail' has merged.
- Doesn't guarantee that E-mail system will be compatible.
- Difficult to ensure privacy and security of E-mail.

Computer Network.
Introduction: - An arrangement consisting of two or more than two computer is called a computer network. A computer network is created when several computers are linked by data communication channels. Each computer in a network can haveits own processing capability and can also share hardware, data files and programs.

Why uses computer Network?

The needs of a computer network are due to:

- Linked resources.
- Desire to share the resources
- Cost Reduction

Today, that's a limiting view, because the most important recourse is information. Network links is share information and the same is achieved by recourse sharing.

Key Issues for Computer network: - The following are the major key issues to be trashed out very carefully before we go for a computer network:-

- Network of nodes: - Whether participating nodes are homogenous in nature?
- Topology: - Which of the computer topology has to be followed? Computer topology accounts for the physical arrangement of participating computer in the network.

- Interconnection Type: - Whether Interconnection type is point, multipoint or broadcast type?
- Reliability: - How reliable our network is?
  Reliability aspect includes error rate, recovery procedures.
- Channel capacity Allocation: - Whether allocation of channel capacity is time division or frequency division.
- Routing Techniques: - Whether message between nodes are to be routed through: Deterministic, stochastic and distributed routing techniques?
- Models: - Which of the models I.E .Analytical models, queuing models. Simulation models measuring mint and Validation models are applicable?
- Channel capacity: - What are the channel capacities of the communication lines connecting nodes?
- Access: - Whether computer access in the network is direct access or through a sub-network?
- Protocols: - What levels, stands and formats are to be following while established communication between participating nodes?
- Performances: - How is higher performance of computer network achieved? Response time, time to connect recourse utilization, etc. Contribute towards performance of computer network.
- Control: - Whether centralized control, distributed control of participating nodes of computer network is suitable?

Types of Computer Network

The three basic types of networks are:-

- Local Area Network (LAN)
- Metropolitan Area Network (MAN)
- Wide Area Network(WAN)

Local Area Network: - A local area network (LAN) is two or more computer directly linked within a small well defined area such as a room, building or group of closely placed building. A LAN may be made up of only micro computer or any combination of micro computer and large system.

Metropolitan Area Network: The computer network which connects the computer in the different parts of the same big city like metropolitan city may be referred to as Metropolitan Area Network (MAN).

A LAN usually consists of the following.

i. Two or more computer.
ii. Peripheral device such as printers and hard disk drives.
iii. Software to control the operation of the computers or other devices connected to LAN
iv. Special cables, usually coaxial or fire optic to connect the computer and other device.
v. A plug-in board to handle the data transmission. A benefit of a LAN is the reduction of hardware costly because several computer and user can share peripheral devices such laser printers hard disk, color plotters and modems. Another advantage is the user can share data.
   The length of the cable connecting a computer to a LAN also varies depending on the LAN, most lanes allow cable of about 1000 feet, but some allow cables to of several miles to be used.

The data transfer speed range from several thousand bits per second to around 10 million bits per second. The programs that control the LAN also. Some programs allow the use of more than one operating system; others allow only one. On some LAN's file access is limited to one user at a time; on other more than one user access a file simultaneously.

Hardware Requirements for LAN

The following are Major hardware components devices required for establishing LAN:

- Transmission Channel.
- Network Interface Unit (NIU)
- Servers
- Work station.

Transmission channel For LAN

Generally four types of channels are used for data transmission in a LAN these are:

- Twisted pair cable.
- Co-axial cable
- Fiber- optic Cables
- Radio Waves

Severs & Workstations

One of the Major benefits of implementation of LAN is sharing expensive such as storage devices printers etc. This is achieved through providing severs on the LAN.

It is dedicate computer that controls one or more recourse. This contains both hardware and software interface for LAN.

Three major categories of services used in LAN are:-

- File server
- Printer Server
- Modem

In networking, file server is used to share storage space for files, besides providing storage space for files. In a LAN environment, it is used for taking backup, and also to provide gateway to other servers within and between LAN.

Wide Area Networks (WAN)

A wide area network (WAN) is two or more computers that are geographically dispersed, linked by communication facilities such as telephone system or microwave relays. This type of network is usually limited to use by large corporation and government agencies because of the high cost involved in building and maintaining them.

A WAN is a network that links separate geographical location and the network can be a public system or any of the various packet switched services provided by the public tale- communication agencies.

The main difference between a WAN and LAN is that, the LAN is under the complete control of the owner, where as the WAN needs the involvement of another authority like telecom department. LAN is successful and capable of handing very high data transfer rates at low cost because of the small area covered. Besides LAN have a lower error rate than WAN.

Hardware Requirement for WAN:-

There are mainly four hardware devices which are required to establish linkage between geographically separated computers. These are:-

- Bridges.
- Routers.
- Gateways.
- X25 Standard Interfaces.

Bridges: - Are used to connect two lanesthat use the identical LAN protocols over a wide area. The bridges act as an address filter which picked up packets from one LAN that is intended for a destination on another LAN and passes these packets on the network. In case the distance between two lanesis very large than the user is required to apply two identical bridge at either end of the communication links.

Router: - Router is aspecial type of device that can be used to connect networks that may not be similar.Such type of devices provides connectivity between twolanesor two over large geographical distance of the OSI models.

Gateways:-Gateways are used to connect two dissimilar lanes. The terms gateways and router are used interchangeably.A router operates at the network layer whereas a gateway operates on the application layer of the OSI models.

Network Topology:-

Each computer or device in a network is called a node. How these nodes are connected is the networks topology. A network can be arranged in one of four different topologies:-

- Star Network.
- Ring Network.
- Tree Network.
- Fully- connected Network.
- Multi-drop Network.
- Collapsed- Star Network.

Criteria for Selection of network Topology

The main considerations in selection a particular topology are:-

- The availability and cost of physical communication lines between nodes and line band width.
- The capability of a node to route information to other nodes.
- Delays due to routing of information.
- Maximum distance.
- Vulnerability to link or equipment of stations.
- Cost.
- Reliability of communication between nodes when there is a breakdown of a line or a node.

- Strategy of controlling communication between nodes in the network centralized or distributed.

OSI Models of Network Architecture

Open System Interconnection (OSI) is a 7- layer model used to allow computer and their associated software and peripheral devices to communicate in structured manner across a variety of telecommunication networks.

- Application layer: - This layer provides the interface directly to the user application.
- Presentation layer: - This layer is concerned with presenting the data from one device to another in a format understandable by both.
- Session layer: - This layer established the correct protocols for communication between the lower layer's communication function and upper layer's processing functions.
- Transport layer: - This layer acts as a bridge between the layers above and below, and establishes the quality of service required by layers above.
- Network layer: - Layer handles call set up network routing and traffic – flow control.
- Data link layer: - This layer established error free data transmission between the network and the attached devices.
- Physical layer: -This layer handles the physical movement of a stem of data on and off the network and defines the physical properties of the network/ device interface.

Internet and Its Applications

Introduction: - Internet is one of the best flowers guide by 'Information technology'. It is the latest buzzword among the computer users and users of the information centers now-a-days. Everyone, whether he is working in the field of IT (information technology) or not, is very anxious to know about it and use it. Internet is a world-wide computer network that contains a large collection of information which could be made available to us on our computer. The Person having internet connection can retrieve any information of individual interest.

What is Internet?
Internet is the abbreviation of Internet work system. The Internet in the home for a vast, word wide system consists of people, information and computers. Alternatively it is also described as a network of networks because there are more than 95,000 easily accessible through the internet. It appears differently to different people, Internet is the largest and most complete learning tools for a group of people with varied educational backgrounds and interests.

OR

Internet may be defined as network of networks that are:-

- Interconnected physically.
- Capable of communication and sharing data with each other.
- Able to get together as a signal network.

OR

Internet can be defined as the largest world-wide inter-network system which is the cheapest and fastest means to:-

- Get information.
- Provide information.
- Compile information.

Teachers, students, business men and other can share ideas instantly across vast distances. For scientific and research community. Internet is an essential and undependable tool. Through internet scientists can gain and enjoy instant access to the world's most advanced facilities and discuss their research problems with others, working in the same world.

History of Internet:-

ARPANET (Advanced Research Project Agency Network) laid the foundation of today's internet almost three decades ago. It was established to test the security of a network. In 1982, TCP/IP become the protocol suit for APRANET and lead to one of the first references an on "Internet "of connected networks.

NSFNET (National Science Foundation Network Known as the back bone of internet come into existence in 1986 and until 1995 NSFNET was operated by ANSC (Advanced Networks Services) a research oriented non- profit company set up by merit network , IBM (international Business Machines Organization) and MCI (Microwave Communication inc). In 1990 under a co-operative agreement between NSF and merit. When this contracted after 1995, the running and maintaining of the backbone has been taken over by Internet services provide like America on – line. MCI and sprint in the United States. On an overall basic IETF (Internet Engineering Task Force) represented by the government and academic organizations largely governs the Internet.

Benefits of Internet:-

Internet is playing a very important role in the national development by extending the following major benefits to the citizen world- wide.

- Education
- Publishing
- Shopping
- Advertising
- Financial services
- Government and Regulations
- Careers.

Believe us; you can perform any task related to the computing of IT. Some of the few topics available on internet are Arts and Culture, space and astronomy. Travel and Geography International Affairs, Environment and nature, science and Technology. Hardware and Software Requirement for internet

The minimum hardware and software required to get an Internet connection is as follows.

- Computer.
- Modem.
- Linkage Mechanism.
- Communication Software.

Linkage Mechanism: - The following are the methods using which linkage can be established on the internet.

- Dial-up STD Telephone
- Leased Telephone Line
- VSAT (Very Small Aperture Terminal)

Communication Software: - These days modems come with all types of communication software and if these are not supplied as a part of modem delivery, then it is either exclusively requested from the vender or Internet is loaded with all kinds of freeware and share ware.

Applications of Internet

Internet being a network of networks spread worldwide is capable of offering the following major services.

- E-mail
- Mailing lists
- User net News Groups
- WWW (World Wide Web)
- Miscellaneous tools

E-mail (Short Volume Transfer Services)

E-mail stands for electronic mail.E-mail is one of the most popular components of the Internet. They are about 4.62 million's. E-mail boxes worldwide almost a question growth of sure in E-mail sites during 1991-93. By using a system that can generate millions of unique addresses, Internet's addressing scheme is called the Domain Name System (DNS) which creates address including name, geographical location and other conceptual information.

- .Com: Commercial used for business organization.
- .Net : Network site E.G. BSNL, UUNET
- .Gov: Government E.G. Parliament house.
- .Edu: Educational E.G. Universities collage.
- .Mil: Military E.G. Ministry of defense.
- .org: Non-commercial organization.

In case of geographical location of the server the address would carry an extension e.g.
.in: - For India
.uk:- For united Kingdom
.nk:- For Hong Kong and So on.

World Wide Web (WWW)

Www offers facilities to the users to share information with others. The WWW servers can publish text and graphics including sound and Video. This is the fastest growing part of the internet. The web is vast network of internet service, including FTP and News , one of the best to let the world know about what you have to offer is to advertise and in this age of the Internet, advertising means putting up w.w.w pages. The WWW servers are designed to handle documents exited using HTML (Hyper Text Markup Language) format. What makes HTML document unique is their ability to include hyper text link that facilities rapid access to:

- Other locations within some document
- Other document on the same site
- Document at another site

A capability that makes the web so powerful HTML also supports internal references to external object, such as image file. The web is based on HTTP (Hyper Text Transmission Protocol) whichsupports a

client / server model. The protocol covers operations ranging from simple get commands to complex authentication mechanisms.

Web Browser:-

Web Browser is a powerful tool used to browser the cyber space and is mainly used to access pages of the World Wide Web. The web browser controls a web server and sends a request for information and receives the information and then displays it on the user computer. By clicking on the hyper text links on a page it is possible to jump from one internet site to another regardless of its location.

Examples:-

- Microsoft Internet Explorer
- Netscape communication's Netscape navigator

A web- browser can be graphical or text oriented and can make the internet easier to use. A text oriented browser shows the user only the textual matter: A graphical browser allows the user to see more of what WWW has to offer such as a graphics, photographs and multimedia.

Present day web browsers are very versatile and allow performing the following.

- Chat with other users on-line.
- Play games with others on- line.
- Access on-line multimedia including radio and video broadcasts.
- Visit web-sites.
- Contributing articles.
- On-line shopping
- Send and Receive E-mail.
- Read and send articles in news group.
- Using reminder services of E-mail.
- Searching person's details.
- Sending gift and flowers.
- Download files at your machine.
- Search for information on the internet.
- Subscription to electronic newsletter journals etc.
- Participating in contests.
- Creating your own web-site and so on.

Internet Addressing:-

Internet addressing is a systematic way to identify people, computers and internet recourses.
Internet address can mean many different things. An internet protocol (IP) address is an identifier for a particular machine on a particular network on a network and IP addresses are also referred to as IP numbers and internet addresses. The IP addresses have the following characteristics:

- IP addresses are unique.
- No two machines can have the same IP number.

- IP addresses are also global.
- All machines connected to the internet agree to use the same scheme for establishing and address.

An IP address consists of four sections separated by periods and each section contains a number between 0 to 255.
The network portion of the IP address is allocated to ISP (Internet Service Providers) by the Inter NIC, under authority of the internet Assigned numbers Authority (IANA). ISP then assigns the host portion of the IP address to the machine on networks they operate.

Evolution of Internet:-

Internet is the mother of all networks. Internet actually stored off in all the late 1960's and has been growing ever since. In 1993, things changed to a lot, with the introduction of a new technology, called the World Wide Web (www). Slowly and slowly we have reached to internet courage for internet is crossing day by day. Privatization of internet services will definitely motivate the corporate sector to go for generation wide internets in a very big way. The evolution of internet is non-stop and is still continuing with change in technology.

Band width: -

Bandwidth is defined as the carrying capacity of the communication channel on the net. Internet has a small bandwidth and this normally doesn'tseem to move much faster. Users are typically connected to the internet using 28.8 kbps dialup modems, 640r 128kbps or 100mbps and even lines or 1.5mbps lines.

On the other hand, Internet have a larger band width and on Internet's even the slowest LAN today have 10mbps Either speeds, while more modern lanesoffer 100 mbps and even faster speeds, which is very difficult on Internet.

Why Internet is becoming so popular?

Every organization goes for its own interest and Ever convenience. Intrudes are like digital wax houses for storage and retrieval of organization's information, whichis vital and sign function importance for organization. The seasons for the popularity of internet technology are not difficult to enumerate. The following are the main reason for its popularity:-

- Saves huge amount of money
- Easier to install
- Simplicity of operation
- Saves time of workers by sharing common and new recourses
- Reusability of the same internet technology.

Pre-Requisites establishing on Internet

We need to set up an Internet is enumerated as under.

Network: - A functional and a working LAN is the medium of internet for an Internet. This is the most essential requirement for an Internet. The network servers and so can the clients as long as they all support TCP/IP.

Hardware: - The hardware should ideal be at least one machine dedicated to hosting Internet services. The desirable's minimum configuration of such a web server machine is as follow.64MB, 4GB hard disk, 32 x CD-ROM drive, SUGA/VGA Monitor, Mouse, a Compatible Drive with SCSI Controller.

Software: - Software required for Internet will vary from site to site depending for upon the existing installation at our proposed site for Internet. At the bare minimum one needs a mail- server and a web server.

TCP/IP:- The TCP/IP stand for transmission control protocol, Internet protocol and it is the protocol of the Internet and once they protocol for any Internet also. This should be installed and configured on all servers and nodes participation in the Internet.

Mail Servers: - In also one of the essential components for establishing Internet. It is one of the application that everyone would like to enjoy and will be one that produces the most immediate results in terms of increased productivity from reduced turnaround time at reduced cost.

Web Servers: - This facility may be treated optional in the beginning Ultimately, the most visible part of our Internet with be the Web- pages put up. To get them up, we need a web server. These range from personal Web- servers to heavy duty free ware, Shareware or commercial once. Networking operating system these days come with bundled web servers.

Q.1. Whatis paint?
Ans. We can start in window, in accessories a program named paint brush' or paint. In this program we can create picture drawing etc. There are many tools in it with the help these tools, we can create beautiful picture and fill them with colors.
Extension → .BMP

Tools Box.

1. Free from select: - With the help of this tools we can select any part of any picture in any shape.
2. Select: - With the help of this tools any part of picture select only in rectangle shape.
3. Eraser: - With the help of these tools we can erase the picture.
4. Fill with color: - With the help of we can pick color from any picture and fill it another picture.
5. Pick color: - With help of this tool we can pick color from any picture and fill it another picture.
6. Magnifier: - With the help of this tool we can do double or triple our picture and see this magnifier.
7. Pencil: - With this tool we can create drawing as we create a note book.
8. Brush: - With tools we can fill color and draw a line of different shape and width.
9. Text: - With this tool we can write text in different size and style in our drawing or outside the drawing.
10. Air Brush: - With this tool we can fill color as a spray.
11. Line: - With this tool we can draw a straight line different size.
12. Curve: - With this tool we can draw curved line and curve a line only two times.
13. Rectangle: - With this tool we can draw rectangle and square different border.
14. Polygon: - With this tool we can draw a polygon.
15. Ellipse: - With this help of this tool we can draw an ellipse and circle with different border size.
16. Round Rectangle: - With the help of this tool we can draw rectangle and square round angle.

File Menu:-

New: - From this option we can open new blank file will be open.
Open: - From this option we can open any existing file.
Save: - From this option we can save our picture and matter with a name.
Save as: - With this option we can save our picture with a different name without selection for file.
Print Preview: - With this option we can view the page before printing. This will work when printer will be installed.
Print: - With this option we can print out our picture or drawing but when printer in attached with our system.
Set as a wallpaper: - If we want to set our picture as a wallpaper. Then this is used but our file should be save before doing this can be set in two different styles as a tiled or as centered on the screen.
Send: - If we want to send our picture to anybody them this is used. This will work only if internet is installed.
Exit: - With option we can come out of this program in the desktop.

Edit Menu

Undo: - With this option we can reverse the last three actions of active file.
Repeat: -With this option we can repeat our last three action of active file.
Cut: - With this option we can cut the selected text or object.
Copy: - With this option we can copy selected picture or text.
Paste: - With this option we can paste in cut copies text or picture.
Select all: -With this option we can select all file a one time.
Clear selection: - With this option we can clear the selected text or picture and we can't paste it.
Copy to: - If we want to copy our selected picture another file then this option used.
Paste from: - If we want to paste the matter of any file to our file then will be used this option.

View Menu

Tool box: - With this option we can on/off the tool box.
Color box: - With option we on/off the color box.
Status bar: - With this option we can on/off the status bar.
Text tool bar: - With this option we can on/off the text tool bar.
Zoom: - If we want to in big small size our drawing or picture then this option will be used.
View Bitmap: - When we click on this only working area will be appear and other all the brush will be disappear.

Image Menu

Flip/Rotate:- With the help of this option we can flip/Rotate any picture or text horizontally, Vertically and rotate any angle (90,180,270).
Stretch/Skew: - From this option we can stretch and skew our picture horizontally and vertically.
Invert Color: - From this option white color will be change in to black color and black color change into white color and other color will be change correspondently.
Attributes: - From this option we can change the height and width and black / white color our picture (screen).

Clear Image: - From This option our picture or drawing will be clear.
Draw opaque: - To on/off the background of selected part (only background of page)

Color Menu

Edit Color: - From this option we can take color then the color which are in the color box. With this we take custom also.

Help Menu.

Help Menu: - Help topics →this option gives we help about the topic in the paint brush.

Help about paint: - This option gives us help about the paint brush.

NOTEPAD

Notepad is a small text editor for reading and writing text we called it short length text file notepad can also be used to type program me for language or application such as, HTML. Java. It can create file that can have up to about 80000, creates by default the word wrap feature that automatically move. The type words to the next line. Commonly notepad files are saved with the extension is .txt(text)

File Menu:-

New: - From this option we can open new blank file.
Open: -From this option we can open any existing file.
Save: - From this option we can save our file with a name.
Save as: -With this option we can save file with a different name without affection of profile.
Print: - With this option we can print of our text when printer is attached with our system.
Page setup: - This option is used for set the page before printing this will be used when the printer will be installed.
Exit: - This command is used to close notepad.

Edit Menu:-

Undo With this option we can reverse the last three action of active file.
Cut: - With this option we can cut the selected text.
Copy: - With this option we can copy the selected text.
Paste: - With this option we can paste cut and copied text.
Delete: - With this option we can delete the selected text.
Select all: - With this option we can select our current all file at a time.
Date/Time: - With this option we can insert date and time in active file.
Word Wrap: - This option in used to move the type words to the next line.
Set font: - With this option we can change the style, size of font and we can do it bold italic and underline.

Search Menu:-

Find: - With this option we can find any word of our text.
Find next: - When we click this option next word will be appear.
Example :- If we want to find ‘n’ in our text then click on find and then click find next ‘n’ will be appear as select.

WORDPAD

Word pad is a small word processor. It word processer is a software package which have the facility of creating and editing a document. We have calling it small word processor as it does not have the full feature of a word processor. But it contains some feature of word processor. It does not have the feature like sealing check grammars checks. But it have some important feature like edit a document we can see a document before printing that how it will appear after printing word pad feature is also available in this program. Word pad file are saved with an extension is .RTF (Rich Text Format)

Word Wrap: - When the words do not fit in a line then it automatically goes to the next line. This features is known as word wrap.

File Menu:-

New: - From this option we can open a new blank file.
Open: - With the help of this option we can open any existing file.
Save: - With this option we can save our file with a name.
Save as: - With this option we can save our file again with a different name without any affection of profile.
Print:-With this option we can print out of our document when the printer will be installed.
Print Preview: - With this option we can view our document that how it will look on the paper before printing.
Page Setup: - With this option is used to set paper before printing. This work when printer will be installed.
Send: - If we want to send our document to anybody then this is used. This will be used only if internet will be installed.
Exit: - This option is used to come out from word pad.

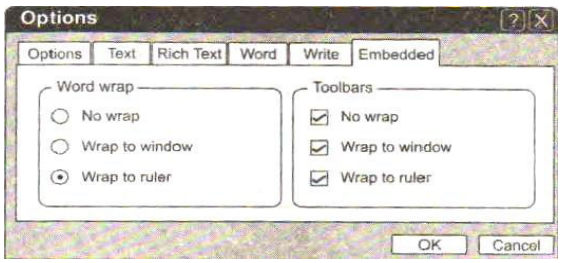
Edit Menu:-

Undo: - With this option we can reverse the last action of active document.
Cut: - With this option we can cut the selected text or object.
Copy: - With this option we can copy the selected text or object.
Paste: - With this option we can paste the cut or copied text or object.
Paste special: - With this option we can paste the contents with special format such as a word pad document object picture etc.
Clear: - With this option we can delete the selected text or object.
Select all: - With this option we can select all documents at a time.
Find: - With this option we can search any specified text within formatting you specify.
Find next: - With this option we can search the next character.
Replace: - With this option we can replace the specified text with another text with formatting.
Links: - With this option we can create links with another file in active document.
Object properties: - With this option we can view the properties of linked object such as types, size, modification etc.

Object: - With this option we can edit change the selected object.

View Menu:-

Toolbar: - With this option we can show or hide the toolbar.
Format bar: - With this option we can show/ hide the Format bar.
Ruler: - With this option we can show/hide the Ruler bar.
Status Bar: - With this option we can show/ hide the status bar.
Option: - With this option we can show/hide the toolbar, format bar, status bar, ruler etc. and we can set the wrap to window wrap to ruler and no wrap ext.



Insert Menu:-

Date and Time: - With this option we can insert the date and time in active document at the instruction point.
Object: - With this option we can insert any object such as Bitmap Image, Calendar, Word Pad document etc. in active document and display it as a icon etc.

Format Menu:-

Font: - With this option we can change the style and size of fonts.
Bullet style: - With this option we can insert bullets in active document and also show and hide it.
Paragraph: - With this option we can set the alignment such as left, right center and we can set the file left and right margins and first line etc.
Task: - With this option we can set the table position and use it in active document and we can also remove the set position.

Help Menu:-

Help Topics: - With this option we can see the all important about the topics of word pad.
Help about word pad: - With this option we can check the full information about word pad.

Window:-

Latest version of window is window vista Feb 2007.

Q1. What is Window?

Ans. MS Windows stand for ‘Microsoft wide interactive network developed for office work solution’ MS Windows got this name because it runs separate rectangular shaped boxes known as ‘Windows’.

Windows is like a user friendly operating system that is very easy to learn. Windows have changed the way we communication with the computer Microsoft Corporation. USA in the year 1995, developed windows.

Windows has the screen having the boxer on all four sides, to perform a specific work. MS windows execute one computer program within its one window. Therefore several programs can be executed at the same time, each in its seven times. The first version of windows was named as windows’98’ was the second up graded version of windows known as XP has been introduced in the market most of the

computer in India are available preloaded with windows '98' here are different version of MS Windows. The most popular are:

MS Windows NT. MS Window 95, 98, 2000.

Q.1. Explain general features of MS Windows?

Ans. General Features of MS Windows- GUI (Graphical User Interface). A graphical user interface is a means by which the computer can be given Commands, Which are to be performed are displayed on the screen in the form of pictures. WXSIWYG (What you see is what you get): When the document is printed on the paper, the printout will look exactly like the document is displayed on the screen. That is the text will be printed using the same character size, text formatting, alignment and pictures if any included in the file will be printed at the position it is displayed on the screen.

It enables the user to run a number of programs a time. It course the data bases messaging and telephony software linking to provide a system wide architecture for application development.

Q. What are parts of window screen?

Ans. Parts of MS windows screen:-

1. Desktop: - The screen area on which windows are displayed.
2. Icon: - The icons are displayed at the left side of desktop.
   Three types of Icon:-
   i. Folder
   ii. Program
   iii. Document icon.
3. Taskbar: - The Taskbar is positioned at the bottom of desktop by default.
4. Start button: - The start button is positioned at the left side of taskbar by default. It is used to execute the application, to shutdown the computer.
5. Time indicator: - The time indicator displays the system time.
6. Mouse pointer: - The arrow, which mouse on the screen when, moving the mouse.

Mouse: - Mouse is a pointing device. It is also the primary input device for MS windows.

IBM- all three buttons are used

Microsoft: - Only two buttons are used.

Activities of Mouse: - Mouse point, click, double click, drag, right click use to display the shot cut menus.

Q.1 What is MS-Word?

Ans. Microsoft word is a word processer. It contains the full features of complete word processer such as auto text, auto-correct, auto format, auto shapes, inserting picture from word art, clip art and from another file.

In word we can create table and chart for different formatting. It contains the advance feature of formatting the document, such as page borders, columns, bullet style changing case etc.

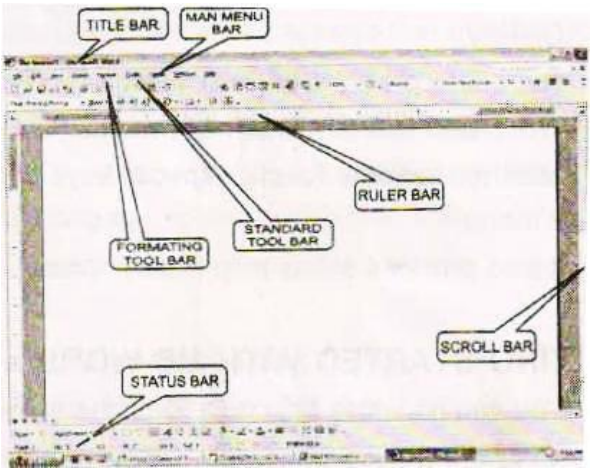
In MS-Word we can protect our document with trace change or protect our document, so that another user can't make changes or protect command .It provides the feature of displaying help about each command of MS-Word.

Features of Word:-

1. Creating a new document.
2. Saving the document.
3. Printing the document.
4. Inserting the contents of clip board with special as hyperlink format.
5. Linking another existing file with the document.
6. Searching specified text and replacing that with another text.
7. Inserting auto-text, symbol, caption, picture etc.
8. Formattingdocument with different formatting commands.
9. Creating table and chart.
10. Protect the document.

Contains of MS-Word Screen:

1. Standard Toolbar: - There are a number of toolbar which allow you to select various tools for working in word. This one is the standard which has all the icons of various file options etc. It has been clubbed with the formatting bar of the previous version.
2. Title bar: - Permanent feature of word which shows you the name of the file on which you are working and at the end has the version buttons has like close, Restore and Minimize.
3. Menu bar: - Like in other programs word also version commands which can be accessed by clicking at the menu options under these menu heads.
4. Starting point: - This is the starting point of your text on the document. This is the point from where you would start typing normally.
5. Ruler: - Using this ruler you can see now much of the line you have consumed by typing.



6. Vertical Scroll bar: - For a larger text in the document, you can scroll the vertical bar to see the text at various positions.
7. View buttons: - Word allows you to word in various views of the document. Using these buttons you can go from one view to another.

8. Status bar: - This bar will always show you, your current position as for as the text goes. It will tell you the page number, line number etc.
9. Horizontal scroll bar: - Sometimes the width of the text is such that it cannot be displayed on the whole screen. This bar is then used to see the text on the text left or right.
10. Task Pane: - New to word, it tells you the various options available to you, so that you can click them there installed of going to the various menus. Most of these options which are shown there are at your wish. You can choose the various other options. Supposing you are not using Drawing tools, then do not for drawing toolbar. Similarly you can choose the various buttons on the standard toolbar so, actually before starting to work with your word, it is always advised that you have the word turned up to your linking or your working style. For this we will devote the next full chapter on customizing word to our linking.

File Menu:-

1. New: -It is used to create a new blank file.
2. Open: -It is used to open or ends a file.
3. Save: - With this option we can save the active document or word with a file name or word document format.
4. Save As: - Save a file with another file name.
5. Close: - With these options we can close the active document.
6. Save as web page/HTML: -Can save the active document as HTML format with the extension on HTML which we can use on web browsers such as Microsoft Internet explorer.
7. Versions: - Save the versions of current document with separate comment for each version.
8. Web Page Preview: -We Can view the active document a web browser available in our system.
9. Page setup: -With this option we can set the pages setting for active document file or default setting. We can set the pages setting for active document before printing how different view as you specify.
10. Print preview: -With this option we can view the current document before printing how different views as you specify.
11. Print: - We can print out the copies of active document with the help of print option.
12. Send to: - This option contains the command to send the active document to another location with the help of Internet.
13. Properties: -We can view the properties of active document such as creation data modi cation data, total number of pages.
14. Exit: - With help of this option we can close the MS-Word.

Edit Menu:-

1. Undo: - With the option we can reverse the last actions in active document.
2. Redo: -We can repeat the last actions in active document.
3. Cut: - Cut the selected text or object and put it in to clip board.
4. Copy: -We can copy the selected text or object put it in to clip board.
5. Paste: -We can paste the contents or objects of clipboard at the insertion point.
6. Paste special: - Clipboard with special format such as a word document object, picture etc.
7. Paste as hyperlink: -With this option we can paste the contents of clipboard hyperlink format.
8. Clear: - With the options we can clear the selected text or object without putting it in clipboard.
9. Find: -We can search for any specified with formatting you specify.
10. Select all: -Select the complete document at a time.
11. Replace: -We can replace the specified text with another text with formatting.

12. Go to: -We can set the insertion point any point of document, such as page, line section, comment foot note, end note, heading etc.
13. Links: - With this option we can create link with linked file in active document.
14. Object: - With this option this options we can edit/change the selected object.

View Menu:-

1. Normal: - Switch to normal view which is the default document view for most word processing tasks, such as typing, editing and formatting.
2. Web Layout: - Switches the text document to web layout view, which we can editing view that display your document as it well appear in a web browser.
3. Print Layout: - To print layout view document as it will print layout view use more system memory, so scrolling may be slower ,especially if your document contains may picture or complex formatting.
4. Outline: - Switches to outline view, in which you can examine and work with the structure of your le in classic out line from work in outline view whenyou need to organize and developed the content of your life.
5. Toolbar: - Display or hide toolbar, select the check box next to next to the toolbar name. To hide a toolbar clear the check box.
6. Ruler: -Display or hides the horizontal ruler, which you can use to the position object change paragraph indents, page merging and other settings.
7. Document map: -Turns on and off the document map, a vertical plane along the left align of the document structure. Use the document map to quickly browse a long or line of your location in it.
8. Header and Footer: -Adds or change the text that appears at the top & bottoms of every page or side.
9. Footnote: - With this option we can add/ change the existing end one (end of document) available in active document.
10. Comments: -Existing comment's (information about selected text) available in current document.
11. Zoom: - Controls how large or small the current file appears on the screen.
12. Full screen: -Hides most screen element so that you can view more of your document. To switch back to your previous view, press escape.

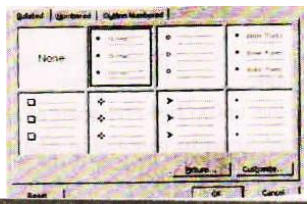
Insert Menu:-

1. Break (Insert Menu): -it is used to insert a page break, column break or section break at their insertion point.
2. Page numbers: -it is used to insert a page number that automatically update you add or delete pages.
3. Date and time: -Add the date and time to an individual slide using the format you choose. If you want to add the date & time to every slides use the header and footer command in (view menu)
4. Auto text: -Click the Auto text entry you want to insert into your document.
5. Field: - Insert a field at the insertion point. Use fields to insert a variety of information automatically and to keep the information up to date.
6. Symbol: -Insert symbol and special character from the font that are installed on your computer.
7. Comment: -Insert a comment at the insertion point.
8. Caption: - Insert caption for table's figures equation and other items.
9. Cross reference: - Insert a cross reference to an item in a document.
10. Picture: - (I). Insert Clipart: -open the clip galleries where you can select the clip art image you want to insert in your file or update your clip art collection. In power point, this command is available only in slide and (matter) notes view.
    (II) We can insert an existing file; auto shapes word art, chart, text box etc. In our life.
11. Text box: -Draws a text box where you clip or draw in the active window. Use a text box to add text box- such as caption or call out to your picture or graphics.

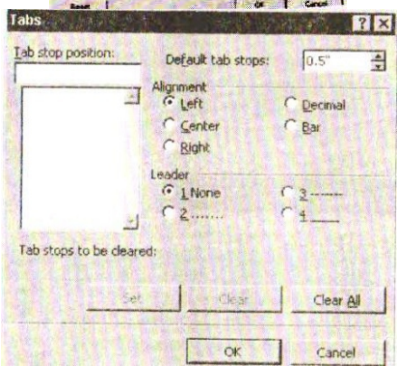
12. Object: - Insert an object such as ¾ such as drawing, word art, text effect or an equation ¾ at the insertion point.
13. Bookmarks: - Creates bookmark which you can use to mark selected text, graphics tables or other items.
14. Hyperlinks: - Insert or edits the hyperlinks you specify.

Format Menu:-

1. Font: - It is used to change the font and character spacing formats of the selection text.
2. Paragraph: -Changes paragraph indent text alignment, line spacing, pagination and other paragraph format in the selected paragraph.
3. Bullet and numbering: - In words, adds bullets or numbers to selected paragraph and modifies the bullets and numbering formats.→

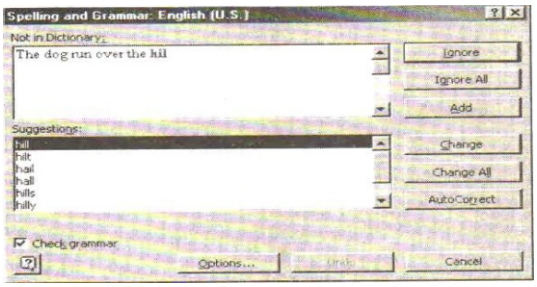


4. Borders and shading: - Add borders and shading to selected text, paragraph pages, table cells or picture.
5. Columns: - Change the number of columns in a document or section of a document.
6. Tabs: - Sets the position and alignment of tab and determine the type of leader character for each tab step.→



7. Drop cap: -Formats a letter, word or selected text with a large initial ¾ or “dropped” ¾ capital letter. A “drop cap” is traditional the first letter in a paragraph and it can appear either in the left margin or dropped from the base line of the rst line in the paragraph.
8. Change Case: - Changes the capitalization to selected text.
9. Auto format: - Analyzes the content of the active file and then automatically format the file. If you want to change the automatic formatting option before auto formatting begging. Use the Auto format command (Format Menu) inserted of clicking.
10. Style gallery: - Customizes the look of your document by using style from other templates.

Tool and Menu:



1. Spelling and Grammar: - Check the active document for possible spelling grammar and writing style errors, and displays suggestions for correcting item. To set, spelling and grammar checking option, click option on tools menu, then click the spelling and grammar tab.
2. Language: - (I) designate the language of selected text in a file that contains more than one language. The spelling check automatically used the dictionary for then designed language.
   (ii) Language Thesaurus: - Replace a word or phrase in the document with a synonym autonym or related word.
   (iii) Language Hyphenation: - Reduces the raggedness of right edge of text by inserting hyphens in words.
3. Words count: - Counts the number of paper word character, paragraphs lines in active document function marks and special symbol and are also include in the word count.
4. Auto Summarize: - Automatically summarize the key points in the active document you can use the auto summarizes command to create an executive summary or an abstract.
5. Auto correct: - Sets the option used to correct text automatically as you type, or to store and reuse text and other items you use frequently.

6. Track changes: - (i) High light changes to cell contents in a shared wordbook are including moved and pasted contents and inserted and deleted rows and columns.
   (II) Accept or Reject changes→ Reject changes finds and selected each tracked change in a document so that you can review accept or reject the change.
   (III) Compare document→ Compares an open edited document with the original document and marks any different type in the edited document.
7. Protect document and unprotect document: - Prevents changes to all or part of an online form or document except as specific you can also assign a password so that other users can not open this document mark revisions or fill in parts of an online form when a document is protected this command changes unprotect document.
8. Mail Merge: - Produce from letters mailing label, envelops catalogs and other types of merged document.
9. Envelopes and label: - Creates an envelopes or a signal mailing label or insert the same name and addresses on an entire sheet of mailing label.
10. Latter Wizard: - Runs the letter wizard which helps you quickly creates letter.
11. Macro: - (I) Macros→ Open the macros dialog box, where you can run edit or delete a macro use record new macro to record a serial of action as a macro of click visual basic write a macro.
    (II) Macro record new macro/ stop recording→Record a new macro or stops recording after you start recording a macro.
    (III) Visual Basic→ Open the visual basic editor, in which you can create a macro by using visual basic.
12. Template & Add-Ins: - Attached at different template to the active document load, add in program, or updates a document style. Also loads additional templates as global Templates so you can use their macros, Auto text entries, & custom command setting.
13. Customize: - Customizes toolbars buttons menu commands & shortcut key as assignment.
14. Option: - Modifies settings for micro-soft office programs such as screen appearances printing, editing spelling & other options.

Table Menu:-

1. Draw table: - Insert a table tool bar, after you draw in insert the table drag inside the table drag inside the table to add cells, Columns, or rows. You can create cells of columns, Borrow, In Microsoft word; you can even create a nested table.
2. Insert: - Insert a table, columns rows cells at the insertion point in table.
3. Delete: - Deletes the table, rows, columns insertion this point in table
4. Select: -Select the table, columns rows, and cells in table.
5. Merge cell: - Merges the selected cell in to signal cell.
6. Split cell: - Splits the selected cell into number of columns & rows you specify.
7. Split table: - Split the table from the insertion point into two points.
8. Table Auto format: - Applies a format in current table from the predefined table formats.
9. Auto fit: - Sets the width of table according to contents, window width & distribute the columns & news width evenly.
10. Heading row repeat: -Sets the rows as a Heading of a table, so that you can't short the rows. Sets the heading from top to bottom.
11. Convert: - Convert the context of a table into text with work you specify or text in to a table.
12. Sort: - Sort the contents of the table according to fields in ascending, descending order, so that you can view the record of table according to specified table.
13. Formula: - Use a formula on numeric data of table such as sum, average, product & available in MS-Word.

14. Hide/Show Gridline: - Displays or hides dotted gridline to help you can see which cell you are working in.
15. Table properties: - Displays & sets the table properties such as columns width, rows height, wrapping etc.

Window Menu:-

1. New Window: -Open a new window with the some contents as the active window so you can view different parts of file at the same line.
2. Arrange All: - Display all opens files in separate windows on the screen. The Arrange command marks it easier to drag between files.
3. Split: - Splits active window into panes or removes the split from the active window.

Help Menu:-

1. Microsoft word help: -The office assistant provider help to show or hide the assistant.
2. Office Assistant: - Display the definition of command menu, option or icon any available on screen.
3. Office on the web: - Connects to the Microsoft office website where you can get up to data information & help on office programs.
4. About Microsoft Word: -Displays the version number of this program copyright, label & licensing notice. The user organization namesthe software serial number & information about your computer & your operation system.

Q.1 What is Microsoft Excel?

Ans. Microsoft Excel is a powerful spread sheet program that allows you to organize data, complete calculation, make decisions, graph data, develop professional looking reports, publish organized data to the web, and access real-time data from series. Excel files are saved with the extension .xls. The four major parts of Excel are:-

Worksheets: - Worksheets allow you to enter calculate, manipulate and analyze data such as number and text. The term worksheet means the some as spread sheet.

Charts: - Database manages data for example once you enter data onto a worksheet, excel can sort the data, search for specific data and select data that meets a criteria.

Web Support: - Web support allows Excel to save work- books or parts of a work book in HTML format so they can be viewed and manipulation using a browser. You can also access real-time data using Web queries.

The Excel Worksheet: - When Excel starts, it creates a new empty worksheet Called Books. The worksheet is like notebook. Inside the work book are sheets, called worksheets. Each sheet name displays on a sheet tab at the bottom of the workbook. For example, sheet is the name of the active worksheet displayed in the workbook called book. If you click the tab labeled sheet 2, Excel displays the sheets 2 worksheet. A new workbook opens with three worksheets. If necessary, you can add additional worksheets to a maximum of 255. This project uses only the sheet worksheet. Later project will use multiple worksheets in a workbook.

The Worksheet: - The Worksheet is organized into a rectangular grid containing columns (vertical) and rows (horizontal). A column letter above the grid, also called the column headingindentifies each column. A Row number on the left side of the grid, a called the row\ heading, identifies each row. With the screen resolution set to 800×600, twelve columns (A Trough) and twenty- five rows (1 through 25) of the worksheet display on the screen.When the worksheet is maximized as shown on the next page. The intersection of each column and row is a cell. A cell is the basic unit of a worksheet into which you enter data. Each worksheetin a workbook has 256 columns and 65,536 rows for a total of 16,777,216 cells. The column heading begin with A end with IV. The Row heading begin with 1 and end with 65,536. Only a small fraction of the screen at one time.

A cell is referred to by its unique address or cell reference which is the coordinators of the intersection of a column and a Row. To identify a cell, specify the columns letter first, followed by the row number. For example cell reference refers to the cell located at the intersection on column and row.

One cell on the worksheet, designated the active cell, is the one in which you can enter data. The active cell is identied in three ways. First a heavy border surrounds the cell; second th e active cell reference displays immediately above column. A in the Name box and third, the column heading A and row heading light up so it easy to see which call is active.

The horizontal and vertical lines on the worksheet itself are called gridlines. Gridlines make it easier to see and identify each cell in the worksheet. If desired, you can turn the gridlines off so they do not display on the worksheet, but it is recommended that you leave then on.

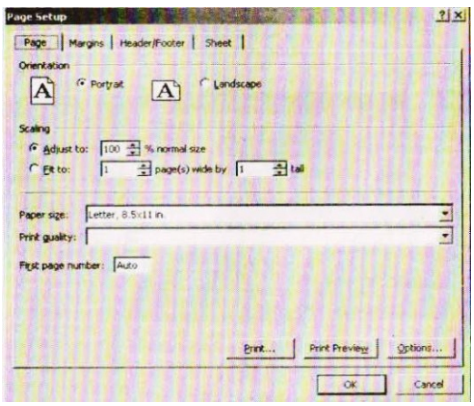
Q1. What is Excel?

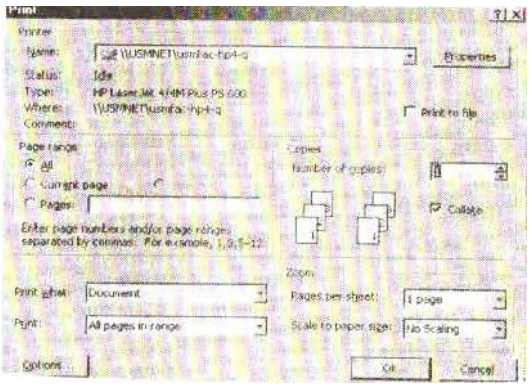
Ans.:- Ms-Excel is a window based spread sheet developed by Microsoft Corporation. It includes all standard features of a spread sheet package like Automatic recalculation, graphs & function. It also includes several advanced utilities like the facility to include other object with in a spread sheet Private table & from designing. There are three by default sheet are in a workbook. We can take maximum 255 sheets in a workbook. There are 256 columns & 65536 rows are in a worksheet.

1. Window based application: - Excels has toolbar shortcut menus, auto correct etc. It makes excel easier to learn for the user window.
2. Workbook: - Workbook is contains that hold one or more than one worksheet.
3. Auditing: - This is a feature which checks a worksheet for errors. It can be used select different at cells.
4. OLE (Object linking & embedding) Support excel worksheet can contain any object link a document a picture. This is known as object linking and embedding.
5. Data entry forms: -you can create custom data entry forms with in a worksheet validation rules & formatting can be include it in a forms.
6. Data Analysis features : - Excel contain powerful tool that help in data analysis private table Microsoft carry & data maps tool allow user to present data in different ways.
7. Work sheet: - A work sheet sometime called a spread to nothing more than a large playing from made up to rows & columns.
8. A cell: - A cell is the intersection of a row & columns the upper most cell is “A1”.
9. Rows: - The rows are numbered from top to bottom, analog the left edge of the worksheet. The First row is1 numbered the last row is numbered 65536.
10. Columns: - Column are labeled format left to right with letter the rst column is A and second is B & show on unit Z. You reach then on column of the worksheet IV is the 256 columns.
    A through IV the last columns of the worksheet IV is the 256th columns.

File Menu:-

1. New: -From this option we can open a new blank workbook.
2. Open: - From this option we can open the existing workbook.
3. Save: - From this option we can save the workbook with a new name.
4. Save as: - From this option we can save the existing workbook as a webpage that is with the extension of HTML.
5. Webpage preview: - From this option we can see the preview of the webpage (actually a excel page & saved as a webpage) in the web browser.
6. Page setup: - From this option we can set the margins of the page.→
7. Print Preview: - From this option we can see the preview of the text before printing how it will look after printing. If it is suitable to us than we set margins from this page set.
8. Print: - From this option we can print our text, graphics what so ever in our sheet.→
9. Exit: - From this option we can come out from the excel.





Note: - The option like page setup print preview print will work the printer is attached with the computer otherwise not.

Edit Menu:-

1. Undo: - It reverses the action performed up to sixteen time.
2. Repeat: - It repeats the reversed action.
3. Cut: - From this option we can cut the selected part.
4. Copy: - From this option we can copy the selected part to duplicate of the selected part.
5. Paste: - From this option we can paste the cut of copied part of the text etc.
6. Paste special: - From this option we can paste the cut or copied part of the text etc. In a special formatwe can also create linking in this manner and the changes made in the source will be accepted by the linked text. By clicking the option transpose the rows will changes in columns & the columns will change in row.
7. Paste as Hyperlink: - With this option we can paste the cut or copied part as hyperlinked text.
8. Fill: - With this option we can fill the text left, right, up, down to the selected cell we can also generate series with it we can also auto fill from this option.
9. Clear: - From this option we can clear the contents, formats, comments etc.
10. Delete: - From this option shift other cells associated with it.
11. Delete sheet: - With this option we can delete the sheet. The deletion of sheet is permanent.
12. Move or Copy sheet: - From this option we can create copy of the existing sheet with same contents.
13. Find: - From this option we can find the specified text.
14. Replace: - With this option we can find & also replace it with new specified text.
15. Go To: - From this option we can go to the desired location.
16. Links: - With this option we can create linking with other files.

View Menu:-

1. Normal: - From this option we can see normal view and see the default view for the tasks in excel.
2. Page break: - From this option we can view break of the sheet.
3. Toolbar: - From this option we can on on/off different toolbar.
4. Formula bar: - From this option we can on/off formula bar.
5. Status Bar: - From this option we can on/off status bar.
6. Header and footer: - Adds or changes the text that append at the top & Bottom of every sheet. This option will work when printer is attached.
7. Comments: -From this option we can turn on/off the comments.
8. Custom view: - From this option we can create different view of a work sheet.
9. Full screen: -This option hides most of the screen elements we can more on the document (sheet). If we want to come back to normal view then click close full screen and press the escape key.
10. Zoom: -These options how large or small the currents file appear on the screen.

Insert Menu:-

1. Cell: -From this option we can insert cells starting at the insertion point. By insert cells we can also shift other cells in rights and down. We can insert also a row or columns.
2. Row: - From this option we can insert row above the insertion point.
3. Columns: - From this option we can insert columns to the left of the insertion point.
4. Worksheet: - From this option we can made worksheet in a workbook. By default three sheets are present in a workbook. We can insert maximum of 255 sheets in a workbook.

5. Chart: - From this option we can insert chart of the selected table and we can use worksheet data. De nition of chart -A chart is a graphic representation of worksheet data. Values from worksheet cells, or data points one displayed as bars, lines, columns, pi slices or other shapes in the chart. Some different types of chart are→ Bar chart, column chart, line chart, Doughnut chart , Reader chart, XY (Scatter) chart, 3-d area chart, 3-d bar chart, 3-d column chart, 3-2 line, 3-d pie chart 3-d + surface chart etc.
6. Function: - From this option we can take different function & can perform different types of calculation withhelp. This option provides different categories regarding function and if also gives help related to the particular function.
7. Comment: - From this option we can insert comment to cell or cells we can view comment indicator & comment box & can also view comment indicator only.
8. Picture: - From this option we can insert picture from file, auto shape etc in the worksheet.
9. Objects: - With this option we can insert objects from different location to create objects.
10. Hyperlink: - This option is used create linking with another file.
    Steps to create hyper linking: - Only any text select it Go to the insert menu click on hyperlink. A dialog box will open click the browser button to choose the file to which you want to open choose the file and click on ok. Now by clicking the text (Which you selected) the desired (linking) file will open.
11. Name: - From this option we can create a name for a cell or change of cell & can also paste it later.

Functions name and use

1) ABS (absolute): - Returns the absolute value of a number, a number without its sign.
   Syntax→ =ABS(-14) ANS.=14
2) Average: - Returns the average (arithmetic menu) of its arguments, which can be numbers or names, arrays or references that contain number.
3) Char.: - Returns the character specified by the code number from the character set for your computer.
   Syntax→ =Char (65) Ans. = A.
4) Code: - Returns a numeric code for the rst character in a text string in the character set used by your computer.
5) Column: - Returns the column and number of a reference.
6) Count: - Count the number of cells that contain number & numbers within the list of arguments.
7) Counts: - Counts the number of cells that are not empty & the values within the list of arguments.
8) Count blank: -Counts empty cells in a specified range of cells.
9) Dollar: -Convert a number to text using currency format.
10) Even: -Rounds a number up to the near, even integer negative numbers are adjusted away from zero.
11) Exact: - Compares two text string & returns true if they are exactly thesame false otherwise (case-sensitive).
12) Exp: - Returns a raised of the power of a given number.
    (ExponentialValue).
13) Fact: - Returns the factorial of a number equal to 1*2*3*---------number.
    (Factorial)
14) Find: - Find one text string with in another text string & returns the number of the starting position of the found string (case sensitive)
15) If: - Returns one value of if a condition you specify evaluates to true and another value of it evaluates to false.
16) Int.: - Rounds a number down to the nearest integer.
    (Integer)

17) Left: -Returns the first (on left most) character or characters in the text string.
18) Len: - Returns the number of character is a text string.
19) Lower: - Converts all upper case letters in a text string to lower case.
20) Max: - Returns the largest values in a set of values ignores values & text.
21) Min: - Returns the smallest number in a set of values ignores value & text.
22) Mod: - Returns the reminder after a number divided by a divisional.
23) Mode: - Returns the most frequently occurring, or repetitive value in an array or range of data.
24) Now: - Returns the serial number of the current dateor time. See help for information about serial number.
25) Odd: - Rounds a number up to the nearest odd integer.
26) Pi: - Returns the value of pi 3.14159265….. Accurate to 15 digits.
27) Power: -Returns the result of a number raised to a power.
28) Product: - Multiplies all the number given as arguments & returns the product.
29) Proper: - Capitalizes the first letter in each word of a text staring & converts all other letter to lower case letter.
30) Replace: - Replace part of a text string with a different text string.
31) Rept.: - Repeats text a given number of times, use repeat of fill cell with a string of instances of a text staring.
32) Right: - Returns the last (or right most) character or characters in a text string.
33) Roman: - Converts on Arabic numerical to roman as text.
34) Row: - Returns the row number of a reference.
35) Sqrt.: - Returns a square root of number.
36) Substitute: - Replaces existing text with new text in a text string.
37) Sum: - Add all the numbers in a range of cells.
38) Today: - Returns a number that represents today's date, in micro- soft excel date time code. When today is entered in to cell, micro soft excel formats the number as a date.
39) Upper: - Converts a text string to upper case :-

A	B	C	D	E	F
1	Name	Hindi	Math	Sci.	English
2	Ram	45	45	67	56
3	Raj	56	56	50	45
4	Mohan 65	45	67	36	
5	Raju	56	45	78	34

1. = ABS(-45)

Ans. = 45

2. =ABS(C_2+d_2)

Ans.=90

2= Average (10, 20, 30)

Ans. 20.

3 =Char (65)
Ans.A(Capital Letter)

4 = Code ("a")
Ans. 97

5 =Column()

Ans. 5

6 = Concatenate(“Ram”, “Kumar”)

Ans. Ram Kumar.

7 = Count (A_1: c_5)

Ans. 8

8 = Counta(b1: b5)

9 =Counta blank(B_1:B_5)

Ans. 2

10 =Dollar(32)

Ans. $ 32.00

11 =even (45)

Ans. 46

12 =Exact (B_2, C_2)

Ans. True.

13 = Exp(1)

Ans. 2.718282

14 =Fact(5)

Ans.120

15 =Find(“A”, “Ram Kumar)

Ans. 2.

16 =int (23.67)

Ans.=23

17 =Left(“Ram”, 2)

Ans. Ra

18 =Len(“Ram”)

Ans. 3.

19 =Lower (“Ram”)

Ans. ram

20 =Max(B_2:E_2)

Ans. 67

21 = Min(B_2:E_2)

Ans. 45

22 =Mod(20,3)

Ans. 2

23 =Mode(B_2:E_2)

Ans. 45

24 =Now()

Ans.Date& Time

25 =Odd(44)

Ans. 45

26 =Pi()

Ans. 3.14

27 =Power(2,3)

Ans. 8

28 =Product(2,3)

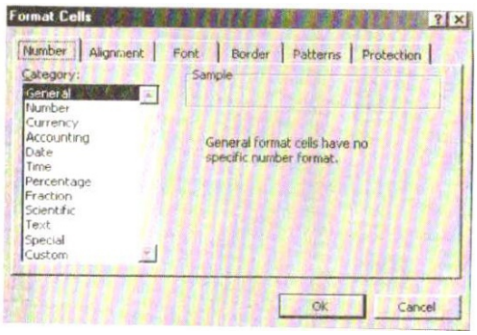
Ans. 6

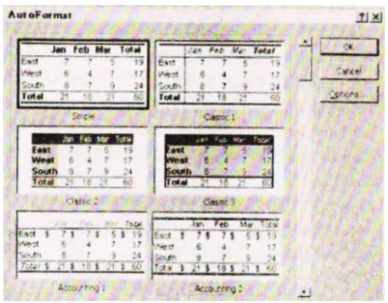
29 =Proper(“ram Kumar”)
Ans. Ram Kumar
30 =Replace(“Ram Kumar”, 3,1,”vi”)
Ans. Ravi Kumar
31 =Rept(“Ravi”,5)
Ans. Ravi, Ravi, Ravi, Ravi
32 =Right(“Ram”,2)
Ans. Am
33 =Roman (45)
Ans. XLV
34 =Row ()
Ans. 23
35 =Sqrt(49)
Ans. 7
36 =Substitute(“Ram Kumar”, “m”,”vi”)
Ans. Ravi Kumar

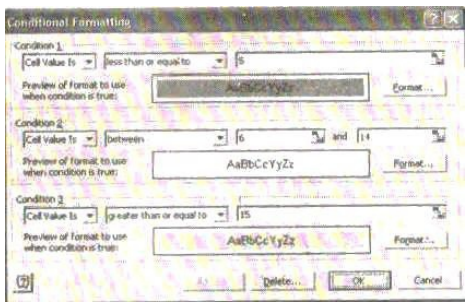
37 =Sum(35, 34, 36)
Ans. 135
38 =Today()
Ans. To show Date.
39 =Upper(“Raj”)
Ans. Raj

Format Menu

1. Cells: - From this option we apply format to the selected cells. If sheet is protected them this option will not work.
2. Row: - From this option we can apply format to the selected row. We can change height of the row. By default it is 12.75. We can add contents in it. We can also hide or unhide the rows.
3. Auto format: - This option provides a combination of format which we can apply on the selected cells. →
4. Column: - From this option we can apply format to the selected column. We can change the standard width of the columns is 8.43. We can also hide or unhide the column.
5. Sheet: - With this option we can rename a sheet apply background to a sheet & also hide or unhide the sheet.
6. Conditional formatting: - This option provides a formatting on the selected cells specified by some condition given by us.→



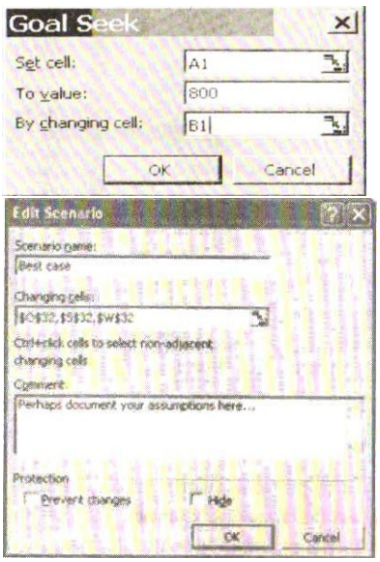




Tools Menu

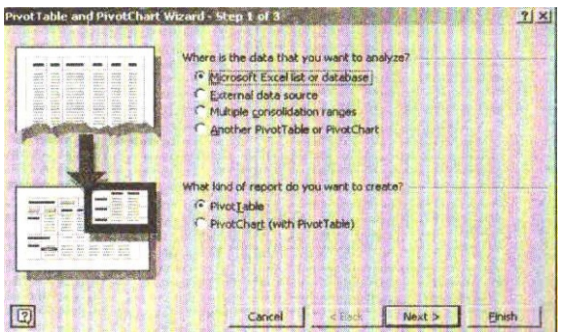
1. Spelling: - From this option we can check the spelling mistakes & also correct these by suggestions given by it.

2. Auto- correct: - From this option spellings are correct automatically which are wrong while writing in it. We can also add more words in its dictionary.
3. Protection: - From this option we can protect the sheet by providing it password do that nobody can make change in our sheet.
4. Track changes: - With this option we can highlight the changes made in our original sheet and can also accept or reject these changes.
5. Goal Seek: - With this option we can adjust the value in specified cell until it reaches the target value from the dependent cell.→
6. Scenarios: - With this option we can create and save the sceneries which are the set of data &we can use these latter when required.→
7. Macro: - With this option we can create & delete macro (macro is just recording) and we can use of recording later.
8. Auditing:- With this option we can trace the precedents, dependents errors &we can also rename these arrows.
9. Customize:-With this option we can customize the macro, command and ok.
10. Option: - With this option we can change the settings in the office.



Data Menu

1. Sort: - From this option we can sort data in ascending as descending order according to the title and we can use label given to it. At a time we can sort data according to three levels.
2. Form: - With this option we can use data form to see, change, add, delete & find records in the list.
3. Subtotals: - It calculates the subtotal & grand value for the labeled columns which we select.
4. Validation: - It sets the validation for cell as selected cells which data is valid to enter in the selected cells for a particular type.
5. Table: - It creates a data table based on the input values & the formulas we define.
6. Text to Columns: - It separates text in one cell on a worksheet in to columns by using text to columns wizard.(Wizard: - It defines as step by step procedure).
7. Consolidate: - It summarizes the data from one or more source area & display it in a table.
8. Pivot Table & Chart: - With this option we can create a table & chart selected to data in more modifying from this option we can create a table & its chart with the help of pivot wizard.



Window Menu

1. New window: - With this option a new window open with the same contents of the active window so that we can see the different parts of the data at a time.
2. Arrange: - With this option we can arrange different window in different types or tiled, horizontal, vertical & cascade etc.
3. Hide: - With this option we can hide the active window.
4. Unhide: - With this option we can unhide the hidden window.

5. Split: - With this option we can split the active window in to panel etc.
6. Freeze panes: - It freezes the top pane left pane or both of the panes.

Help Menu

1. Microsoft excels help: - It gives the help of the topic related to Ms-Excel.
2. About Microsoft Excel: - It gives description about the Ms-Excel.

MICROSOFT POWERPOINT

Power Point:-Power Point is a full feature presentation that is used by millions of people around the world. Power Point is used to design presentation for a variety of presentation medium including computer based display shows you can also add sound animation to your slide. Power Point file are saved with extension .PPT (Power Point Presentation).

Three step for creating a slide in PowerPoint.

Auto content wizard.

Design template

Blank presentation

Presentation: - In Power Point presentation is a collection of slides, handouts, speaker note, & your outline. These are all in one file. As you create slides you are creating a presentation. IT should look & giving a format that carries through from beginning to end. Slide is just like a drawing sheet. It is used to create presentation.

Slides: - Slides are the individual pages of a presentation that are called slides.

Hand Outs: - To suggest the presentation handout is provides to the audience, there are smaller version of slides & containing additional information & like company name & address.

Speaker Notes: - These are smaller version of slides along with displayed notes & used by the speaker for their own reference.

Outline: - it shows only the slides utility & main text of slides without formatting that is called outline.

Feature of presentation package.

i. Marking slides with text & graphics.
ii. Formatting text.
iii. Changing slides layout.
iv. Having the same background picture for allslides.
v. Including picturefrom other places.
vi. Taking the data from other software package.
vii. Printing presentationslides.
viii. Designing presentation slides are shows where slides are shows one by one.
ix. Having special transition effects.
x. Including sound, clips.

1. Auto content wizard: -The auto content wizard which guides you through creating a new presentation based on the type of information you want to present. It provides content suggestion for getting information across to specific Audience.
   It also provides are designed background.
2. Design template: - This design template which provides a large selection of predesigned Background. But does not provide content suggestion.

3. Blank presentation: - To blank presentation which allows adding your own content as well as your background and designing choice.
4. Open as existing presentation: - It allows you to open a presentation that has already been created.

File Menu: -

1. New: - To open a new slides presentation.
2. Open: - To open an existing slides presentation
3. Save: - To save active slide presentation.
4. Save as:- Save the active slide presentation with different names.
5. Close: - To close the current slide presentation.
6. Save as HTML or web page: - Save the current document in hypertext markup language formats.
7. Pack & go: - It is a series of six dialog boxes which is help us to sort auto content wizard.
8. Web page preview: - To see the preview of web page/HTML files in a web browser.
9. Page set up: - Display or change the size & presentation of the current slide presentation or hand notes.
10. Print: - To print the current slide presentation.
11. Send to: - To send the message with the help of internet.
12. Properties: - Display a properties display showing information about the current slide presentation.
13. Exit: - To come out from the PowerPoint

Edit Menu: -

1. Undo: - To delete the just last action.
2. Repeat: - To reverse the undo part.
3. Cut: - To cut the selected part.
4. Copy: - To copy the selected part of painting, writing etc.
5. Paste: - To paste the cut or copied part.
6. Paste special: - To paste the selection part especially such as, picture formatted unformatted.
7. Paste as Hyperlink: - Create a link to another application.
8. Clear: - To delete the selection part.
9. Select all: - To select the whole slides presentation.
10. Duplicate: - To create a duplicate copy of selected & slide presentation.
11. Delete slide: - To delete current selected slide.
12. Find: - To find as specifies word, letter.
13. Replace: - To replace any word, letter line with another text.
14. Go To: - To go any line, section number in the current slide presentation.
15. Properties: - To see the properties of current slide presentation.
16. Links: - We can create link with another slide.
17. Object: - To add change the selected object.

View Menu: -

1. Normal: - To make the normal view of slide.
2. Slide view: - It is displayed as part of PowerPointnormal view. Slide view presentation one slide on the screen of a time.
3. Slide Sorter: - With this option we can set all slides of our presentation format as like with text & picture in a time.
4. Note page view: - In this option we can type notes & speaker's notes on any slide.

5. Slide show: - It is display your slide one by one the full screen with animations & transitions.
6. Master view: - Display the slide master where you can set default layout & formatting for all the slides except title slide.
7. Black & white: - With this option we can see our slide in black & white format.
8. Slide miniature: - It shows the miniature size of our slide in a slide with text & picture.
9. Toolbar: - To display or hide the toolbar PowerPointwindow.
10. Header and Footer: -We can type header in the top of our note page or handout & footer in bottom of slides, note page or handout we can type in our slide note page, handout, date, time slide number also.
11. Comments: - It is used to show or hides view the comments.
12. Ruler: - Display or hide and show the horizontal and vertical number.
13. Zoom: - The zoom feature allows you to adjust the one screen magni cation.
14. Guides: - To display moveable guide lines & which is used to align object in slide.

Insert Menu: -

1. New slide: - To insert a new slide in your current presentation in adifferent type.
2. Duplicate slide: - To insert a duplicate slide of any slide in slide.
3. Slide number: - To insert the no. of slide in your presentation.
4. Date and Time: - To insert date and time in any slide or all slides in your presentation.
5. Symbol: - To insert different types of symbol in your slide.
6. Comment: - With this option we can give any comment on any slide. That is a reminder & suggestions for the presents or views.
7. Slide from outline: - With this option we can insert an outline from another application such as Ms-Word.
8. Slide from files: -With this option we can insert another presentation in our presentation slide.
9. Picture: - To insert any picture from clipboard nature charts etc.
10. Text box: - To insert text box to write any text in your slide, anywhere.
11. Movies & Sounds: - We can insert movies & sounds in our slide presentation sound to audio & movies presentation sound to our system. We can see movies in power point slide presentation.
12. Chart: - To insert any types of chart in our slide.
13. Table: - We can make table in our slide with the help of insert table.
14. Object: - It is used to linking the file with our slides & to insert any other program with our slide.
15. Hyperlink: - To linking the file with our slide on another file in our slide on a particular selected word.

Format Menu

1. Font: - With this option we can change the style size, language, color of our text.
2. Bullets & numbering: - To display the different type's bullets & numbering without heading.
3. Alignment: - We can set our text in left right, center, justify, slides with the help of alignment.
4. Line spacing: - With this option we can changes the space of line.
5. Change case: - With this option we can change the case (upper, lower, sentence to goal) logic text.
6. Replace font: - With this option we can replace the font of selected past.
7. Slide layout: - With this option we can apply a new slide layout from slide layout box.
8. Slide color scheme: - With this option we can change the color of our slide.
9. Background: - To change the color of our slides background.
10. Apply Design Template: - To apply any design in our slide from template box.
11. Color & Lines: - To change the color of our text and text box lines & background of text box.
12. Object: - To format the selected object.

Tools Menu

1. Spelling: - To check the spelling errors and also to correct them.
2. Language: - To check the language.
3. Auto correct: - The auto correct automatically correctsthecommon errors & symbol or we type them .We can also add new word & symbol.
4. Macro: - To record new macro & to see any recorded macro in any slide.
5. Customize: - To add & delete the any menu items & their option.
6. Option: - To set the option setting.

Slide Show

1. View show: - It is used to see the any slide on full screen.
2. Rehearsal timings: - To set time of slide show on full screen one by one.
3. Set up show: - The set up show dialog box contents this way in which a slide show will be run on full screen on window screen, control by esc, without animation etc.
4. Action Button: - Action button are object that automatically specified action during the viewing of a slide show. They can be edit to selected slide or to all slides to create shortcut for commonly perform tasks such a returning to first slides as to previous slide. They may also be used as hyperlink to website or to open other file.
5. Action setting: - The action setting dialog box is used to assign a function or hyperlink to a slide object. Most open an action button, action setting control the way this items will response when accessed during a slide shorter presentation.
6. Custom Animation: - To add or change animation effect on the current slide. Animation effect includes sound, text & object moving & movies that occur in during a slide show.
7. Animation preview: - Run all the animation effect on the current slide. Animation effect includes sound, text & object moving & movies that occur in during a slide show.
8. Animation: - Run all the animation effect for the current slide in a slide miniature window so you can see how the Animation will look during the slide shows.
9. Slide transition: - Adds or changes the special effects that introduce this slide during a slide show.
10. Hide slide: - If you are in slide sorter view hide the selected slide. If you are in slide view hide the current slide so that it does not display during the slide show.

Window

1. Arrange All: - To display all open file in separate window on the screen.
2. New: - To open a new window the same content as the active window. So you can view different parts of a file at the same file.
3. Document: - To open any document from the opened document.

Help

1. Help: -With this option we can take disruption about any option.
2. About PowerPoint: - It tells us about PowerPoint. It's version etc.

What is Database?

A database is a collection of selected information or we can say a database is a place where information is stored. It can also be referred to as a collection of tabled. A database contains record and fields. A database consists of one or more tables that stored selected data.

What is DBMS?

It is known as database management system. DBMS is a software program which helps in storing and manipulating the information. Shorting information in a particular order search of a particular criterion and prepare reports.

What is RDBS?

A relational database system is a database that allows you to group its data into one or more designed table that can be related to one another by using field common to each related tables.

What is RDBMS?

RDBMS known as Relational database management system. A RDBMS is a system that provides the facilities of storing regarding updating data in the database and allows the user to create relationship between versions table as we can say a relational database that allows you to group. Its data into one or more designed table that can be related to one another by using field common to each related tables. The relational can then be used to perform complex research and produce detailed reports.

What is Access?

M.S Access is nothing but most widely used relational database management system. Access (A Relational database) Utilizes two or more tables containing data arranged in row and column to cross-reference and contrast a field database is limited to single tables.

Elements ofDatabase

Tables: - A table is a collection of related table, table is basic element of the database record and fields compound make up the tables.

Records: - Records is a collection of different types of information about the same subject. Tables organize data into row called record. In this way we can say that a record is a collection of related data.

Fields: - Tables organized data into columns called fields,each field (column) contain information of a certain tape for all records or we can say each individual part of records is known as the field.

What is database Window?

The database window is where all elements of an access data base and brought together when we open a data base.The database window displays information about the database and each types of object it contains.

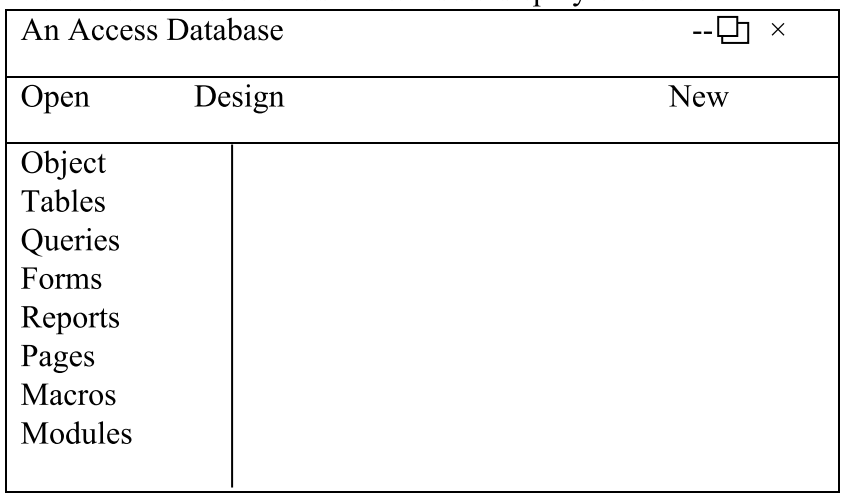
We can use database window to Access database object in a database as follows Tables, queries, forms, report page macros, modules.

Starting M.S Access

Click on start button program M.S Access a start up dialog box appears on the screen in which there are option: -

A. Blank Access Database: - Used to create a new Access Database.
B. Database wizard page and project: - Used to create required table from pages and projects in step by step manner.
C. Open an existing file: - Used to open an existing database * Creating a database* The Steps to create a computerized database are listed as under-
   1. Identify the information to be stored.
   2. Identify and create tables to hold the information.
   3. Define a primary key to each table.
   4. Join the tables using a common field.
   5. Create forms if requested to data entry.
   6. Create queries to quickly searching information.
   7. Create report if required

   After the database created the window display on screen link this-



1. Creating Tables→
   Access has 3 way of creating tables.

a) Crating tables entries.
b) Design View
c) Table wizard using

I. Design view: - In design view we can create first the design of the table and then enter data in data sheet view. The very first thing in design view
Is to create the field same and specify their types. There are given below step to create a field.

a) Enter the field name exp. Name class Roll No.
b) Select its type exp. Number Text number data.
c) Description.
d) Set its properties (optional).

* A field name can be up to 64 characters long*
* Understanding field types*

1. Test: - Entries can be up to 255 characters.
2. Memo: - Used for field that are long than 255.
3. Number: - Used for number fields (1,23,….)
4. Date/Time: - Used for Date/Time field
5. Currency: - Used when we need different currency formats.
6. Auto number: -Used when the record are to be automatically numbered.
7. Yes/No: - Used when only two answers are there.
8. Ole: - Used for picture sound fields graphics.
9. Hyper link: - Text on combination of text and number stories as text and used as a hyperlink address.
10. Look up wizard: - Used to create a field that lets the user select a value from a field in another table.

Understanding field properties

1. Field size: - Is used to set the maximum length of data to be stored in the particulars field.
2. Format: - This property is used in order to set the display layout to the field select a predefined format example. If you have created a price text box you can sets. Its formats property to currency and its decimal property.
3. Input mark: - This is used to set a pattern for all data to be entered in the field. You can input mark properties to make data entry easier and to control the values a user can enter in the field box. For example. Youcould create an input mark for phone number field that shows you exactly how to entry a new number (-)…….
4. Caption: - This property is used to change the caption of the field to be displayed in the table.
5. Default value: - This is used to set a default value for the field. A default value is that value which appears by default in the box.
6. Validation Rule: - We can set the condition for input of field value. Exampleonlynumber less than 60 are allowed in the eld.
7. Validation Text: -This property helps us define our own message when the validation rules in violated.
8. Required: - It has two value i.e. Yes or no yes means we can't help the field blank and no means that we can leave the field space blank.
9. Allow zero length: - Again it has two value when these are the zero length is allowed or not.

Using Tables Wizard

This is step by step produce of creating the design of a table and enters the data in the table. Its three steps process.

1. In the first step we select the type of table we want to create than select field wants to appear in our table.
2. In second step we give name to the table and also choose one of the option whether the computer may set a primary key or not or we ourselves will set primary key.
3. In the Three steps we have three options.

a. Modify the table design.
b. Enter data directly into the table.
c. Enter data using a form the wizard create form.

Relationship: -

Relationship means that two or more table are related each other. Relationship is required when we want to display from more than one table. Suppose we have created 3 tables of the student of a class name.

a. Addition Tables: - This table has 3 field name of the student class addition.
b. Fee detail: - This table has 3 field names of the student Roll No. Monthly fees.
c. Address: - This table has further 3 field student name father name village.

And we want to know the name Roll no. Class monthly fees father name and the village of particular student than we need the relationship established between the table we can retrieve the data from the same time.

Query

A query is used to extract information from the table. These can be used to select, change, add or delete record in your database. This information can be printed using report.

Create Query

Queries are the data related statement Retrieval. We can retrieve data from the table by creating query and run these queries. Queries are created in five ways.→

1. Design view
2. Simple query wizard
3. Cross tab query
4. Find duplicate wizard
5. Find unmatchedquery wizard.

1. Design View: - While creating design view query means that we first create the query and then run it. While designing the query we specify the tables from which we want to retrieve data and also specify the field names which we want appear in the output. We can also specify same condition on the display of the result and also displayed the result in sorted order.

1. Simple query wizard: - In data click query tab and click new in the new query dialog box select simple query wizard click ok we get dialog box including query, available field select field etc. First select the table or query or query name and after that select available field in selected field you want than click next with following the guide line click finish. The query by giving name appears in design view.

Creating a select query

You can design a simple select query or use the query wizard to help you design a query and then add criteria.

1 In database window click the query tab.
2. Click new button on the database window.
3. In new query box select design view or click ok.
4. In the show table dialog box that opens select the tables. You want included in your query by clicking add after each and close it.
5. Select a field from the pull down menu in a field cell inquiry design grid.

6. Double click a field box in the appear portion of the selected query dialog box to add. It to the query design grid.

Adding Criteria is used to make query more specific

1 On the query tab click design button in the criteria cell for a field in the query design grid enter the number or text to match or enter own expression to match a range of values.
2 For the help in contrasting an expression sight. Click in creature for a field and choose build in the short out menu or click build in the Access toolbar.
3 In the expression builder dialog box click button to add the common operator and click the paste button to add items to the sub menus in the button section.
4 Click ok when you have finished building the expression click the run button to view the result.

Print a Query

1 You can also print the result of a query to obtain on result paper while the resulting data sheet query is open click print button from access toolbar or press Ctrl+Por from file menu choose print.

Calculate Total in a query

When same of data in the query data sheet is a numeric, you can easily sum and average of number in query data sheet or determine the minimum or maximum values.

1 In design view click on total button or from view menu choose totals.
2 A total row appears in design grid.
3 Choose anentered field from drop down list if you don't want total a field, don't include field in the query.

Find duplicate using query

Access provides wizard that helps you find duplicate field values in a table click the new button on the query tab of the data base window toolbar in the new query dialog box. Select find duplicate wizard click ok. Follow the wizard that might contain duplicate information and select the other field you want to display. On the first two windows the first wizard select the option as requested on the last page on the wizard type the name of query or accept the name and click finish.

Finding unmatched Record query

Access provides you wizard that help you find record in one table with no related record in another table. Click the new button on the query tab of database window toolbar. In the new query dialog box selected find unmatched query wizard click ok. Follow the wizard steps select the first table select the tables with record choose the field each record containing the some information and select that you want to display on the last page type a name for query and click finish.

Deleting table record using delete query

A delete query is an action query that select record in the select table with the query in design view choose delete query from the query menu. Specify all for each table from you which you want

record deleted (from) and then specify the field and criteria deletion (where) click the data switch view button to see record that will be deleted.

Appending table record using append query

An append query appends a group of records in one table to another table.

1 Create a new query selected the table containing the record you want to append to another table
2 With the query open in design view choose 'Append query' from the query type from the query menu.
3 In the append dialog box select the table to which the records will be added. You can specify a table in another database.
2 Click Ok.
3 Select the fields to be added adding criteria where necessary.
4 Click the data sheet view button to view the records that will be appended.
5 Click the design view button and turn to design view.

Run a query: - The records will be appended in the second table. You cannot undo the append action but you can stop the query while it is running by pressing Ctrl+ Break.

Creating a cross tab query

A cross tab query presents the information in spread sheet type format you can select the eld to use for rows and the field to use for the columns.

1 In the database window click the queries tab.
2 Click the row button on the toolbar.
3 In the query dialog box select 'Cross tab query wizard',
4 Click ok.
5 Follow the wizard steps shows on the next few pages clicking next on each page after filling the required information. Select the table or query containing the records up to three fields for the row heading a eld for the column heading and a calculation to include.
6 On the last page type a name for the query or accept the default name and click finish.
7 Run the query.

1. If you have not specified fields corre ctly and you receive an error message. You can use the wizard to begin again or you can work the query in design view.

Form

A form is used for data entry you display form wecan be displayed in two different ways from view and data sheet view. Form view usually shows only one record data time. Form can include field from more than one table and they can also contain calculated field that are updated depending on what you put in order fields.

Report

A report customizes data in format suitable for hard copy print out and distribution. Report can be perform and formatted to present data attractively and usefully group data or include subject to talks. These present of data you select in a printed format report can be based on table to show all the data from the given table on they can be based on queries to show only information that meets certain criteria.

Pages

A data access page is a web page creating on access that allows you to view enters or edits data stored in an access in database. Using data access page you can result create instructive form for user or a corporate intent.

Macro

A macro is an access object that executes certain task or a series of task each of these tasks are called macros.

Use of macros

Macros are used for reprehensive task that you perform in your database. This is done to same both time and effect. It can open the database various form likes table from query etc.

1 It close tables from records or any other which in open.
2 Run action query.
3 It executes any command from different menu.
4 Display information such as warranting to the user;.
5 It can move minimize,maximize, restore any window.
6 It can move data between tables.
7 It can start other application.

Create a macro

To create a new macro click on macro tab on the database window. Click the new button a blank macro view will be display as a dialog box.

You can enter the action name directly in the action column of the macro window or you can select on action on drop down list.

You can run macro once you have created them in Access. You can run it macro design window clicking the run button.

To print a Report

With the report open in print preview click the print button on access toolbar or press CTRL+P or from file menu choose print command.

Sorting and Grouping Record in a Report

A report can group together similar reports and it can also sort the entries with in groups. Sorting and grouping button on Access toolbar provides these facilities. In shorting and grouping dialog box use the drop down menu to select the field you want to group on or drag a field from the field list. Select the sorting a method for grouping if you want selects a second field to group within the first group. Click the new row for changing.

Chart and table

You can create a report in chart format which represent numeric information graphically and you can also create a report that print tables that we can be used for sending a mailing list. On report tab click new button in row button select chart wizard or select a table or query on based of report, select the field which you want included in your chart follow the guideline and give title and click on finish. It will convert your table and report into chart wizard.

Page Maker Basic

You can start Page Maker by using Start button, and going to Program, Adobe folder, Page Maker 7.0 folder and then clicking at Adobe PageMaker 7.0. There are other methods too, which will be discussed later.

Once started you will see the Adobe PageMaker 7.0 display screen and other copy right conditions. After you have done away with templates dialog box. You will get the blank page as shown here. This blank desktop is your work area and you would be working on it later on. It is a blank page with rulers on the top and left, scroll bars on the bottom and right side. Buttons for making the window minimum and maximum at the right hand corner. It even has the button for closing of the window. As long as you work on this desktop, the bottom of the screen will show the software name.

Moreover you have the tool bar on the screen. This tool bar is very important part of the software, so you must understand it's constitute first

The various tools on the tool box are:

Copy right: - Display the copy right of the software.

Pointer tool: - It is used to pick up graphics and text.

Text tool: - It is used to edit and select text.

Crop tool: - It is used in cropping the graphics.

Oblique line: - This tool is used to draw an oblique line.

Straight line: - This is used to draw a straight line.

Box: - This tool is used to draw a box.

Rectangle Frame: - This is used to type text inside a box.

Circle: - It is used to draw a circle or elliptical picture.

Oval frame: - It is used to type text inside a circle.

Rectangle tool: - This tool is used to draw a shape with more than 4 sides.

Polygon frame: - This tool puts the text inside the polygon.

Hand: - It is used to move the screen from left to right, top to bottom.

Zoom: - It allows you to zoom to see large or small.

Please note that this tool bar is moveable and you can place it any place on the screen. Now we come to the very basic of the Page Maker and understand what is there on the PageMaker screen.

A Page Maker screen looks like the one show on the next page. In the above picture, the following items of the PageMaker screen are shown:

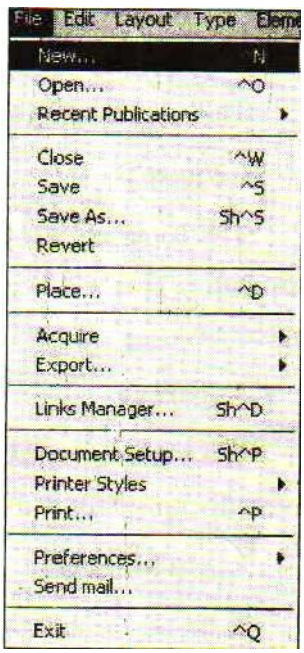
Standard tool bar: - This contains the name of the opened file.
Menu tool bar: - This tool bar contains all the menus
Formatting bar: - This tool bar the various tools for formatting
Top Ruler: - It shows the ruler on the top of the screen
Vertical Ruler: - It shows ruler on the side of the screen.
Master Page: - It shows the position of the master pages
Current Page: - It shows the current page number
Bottom Scroll bar: - For scrolling the pages left to right and back.
Vertical Scroll bar: - For Scrolling pages from top to bottom back
Tool box: - As described on the earlier page.

Another set of screen items of page maker screen are shown here:

1. Close button: - This button close the Page Maker
2. Toggle button: - This button allows you to toggle between maximum and minimum of screen.
3. Minimum button: - This button makes Page Maker into an icon(minimum)
4. Zero position: - It allows you place zero position on the screen.
5. Paper Size: - Outer Boundary of the paper.
6. Horizontal button: - Button for moving the screen horizontally.
7. Page boundary: - Boundary of the created page.
8. Text area: - Area where the text will be placed
9. Horizontal button: - For moving the screen horizontally.
10. Vertical button: - For moving the screen vertically.

Now that we have seen the various items of the screen.We concentrate on the items on the various menus. Each menu has a set of commands under it. We will try to see what each command does. Let us start from left right and the first menu is File menu.

File Menu:-



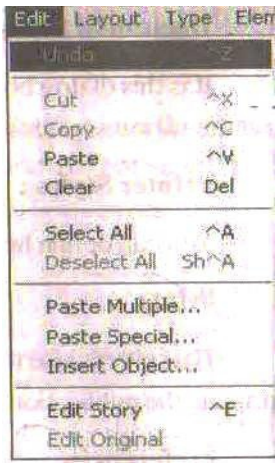
Various commands under this menu are:

1. New: - It is used to create a new blank file.
2. Open: - It is used to open or finds a file.
3. Recent Publication: -It shows you a list of recently opened publication for you choose one of them for opening.
4. Close: - With these options we can close the active document.
5. Save: - With this option we can save the active document or word with a file name or word document format.
6. Save As: -Save a file with another file name.

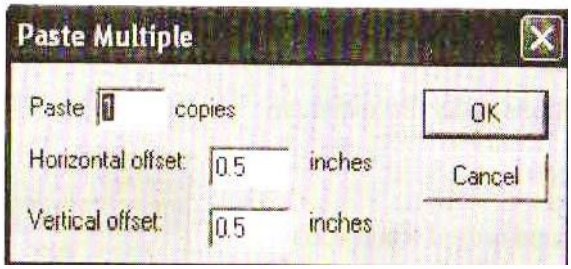
7. Revert: - This command is used to bestore the most recently saved versions your publication or template deleting all change made since the last time you saved the publication.
8. Place: - This command is used to place the text into the publication.
9. Acquire: - This command is active only if you have the scanner attached to your computer. This will help you in getting the scanned picture into publication.
10. Export: - Using the command you can export the selected text of the publication into a document file in the format select by you.
11. Links Manager: - It shows you the various links files in the publication.
12. Document Setup: - It is this dialog box which is given when you click at New. Here you set the various options of the publication.
13. Printer Style: - You can de ne here various styles for printing.
14. Print: - We can print out the copies of active document with the help of print option.
15. Preferences: - This command is used to customize your publication according to your preferences. If you have no publication open, the option you choose applies to any new publication you create after that.
16. Send Mail: - Using this option you can send e-mail.
17. Exit: - With help of this option we can close the PageMaker 7.0

Edit Menu:-

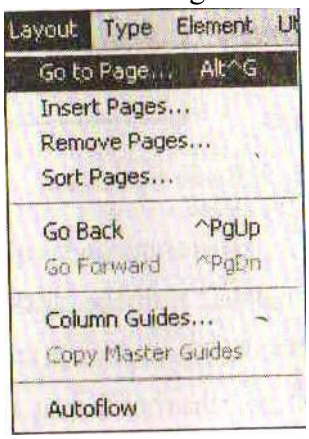
Various options under this menu are:-



1. Undo/Redo: - This command is used to reverse the last action taken by you. However, you can't undo all the actions.
2. Cut: -Cut the selected text or object and put it in to clip board.
3. Copy: - We can copy the selected text or object put it in to clip board.
4. Paste: - We can paste the contents or objects of clipboard at the insertion point.
5. Clear: - With the options we can clear the selected text or object without putting it in clipboard.
6. Select all: - Select the complete document at a time.
7. Deselect all: -Reverse of the above command, where you deselect all the selected text.



8. Paste multiple: -This command is used to paste more than one copy of the text or graphics.
9. Paste special: - Clipboard with special format such as a word document object, picture etc.
10. Insert Object: -This command is used an object in another program and insert is an embedded object with a Page Maker Publication.
11. Edit Storr:-Choosing the option you can select word processing mode of the Page Maker without closing the file in which you are working.
12. Edit Original:- This command is OLE based command which is used to start the original program in which this selected imported element was created. Once opened you can edit it and return back to Page Maker.



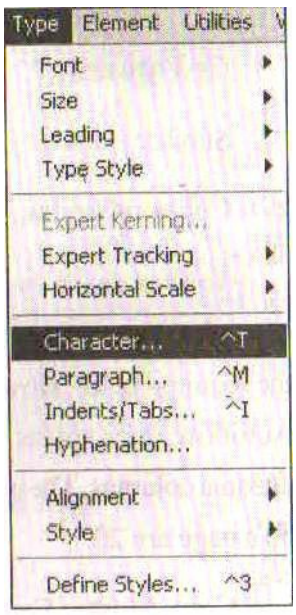
Layout Menu:-

Various options under this menu are: -

1. Go to: - We can set the insertion point any point of document, such as page, line section, comment footnote, end note, heading etc.
2. Insert Pages: - This command is used insert new pages into the publication. Page Maker 7.0 allows you to have a maximum of 999 pages in a publication.
3. Remove Pages: -This command is used for removing pages from the publication file. Remember the text or graphic on the removed pages will be lost by removing them. If the page you remove has text which is carried from and carried over and is part of the story, then Page Maker automatically joins the last word of the first word of the next to keep the story intact.
4. Sort Pages: -When you select this command, a dialog box will appear with all the pages of the publication appearing as boxes. You can then pick up any pages and place at it any other place. This way you can change all the pages and once done, click Ok, the new numbers will be allotted according to the new placing.
5. Go Back: -Pressing this command you will be able to go the previous page of the publication.
6. Go Forward: -Similar to above, you can go to the next page using this command.
7. Column Guides: -You can divide the page of the publication into different columns of equal size. You can create columns of unequal length by pulling+6 guides to the required place. However the text flow from a previous page, Using Auto flow, does not recognize this option and does not flow the text in unequal columns. The maximum numbers of columns that you can create on a page are 20.
8. Copy Master Guides: -This command is used to reflect the master page columns and ruler guides on screen. In case you want to set a different set of guides on the current page. Use the toggle option to hide it.
9. Auto Flow: -This command is used to flow the text onto the pages of the publication on its own from a loaded text icon. When auto flow is on, it flow the text into pages from columns to columns, if there are multiple columns. It also text around the graphics as per the setting of the text wraps. It adds pages on its own in the publication depending on the available of the text.

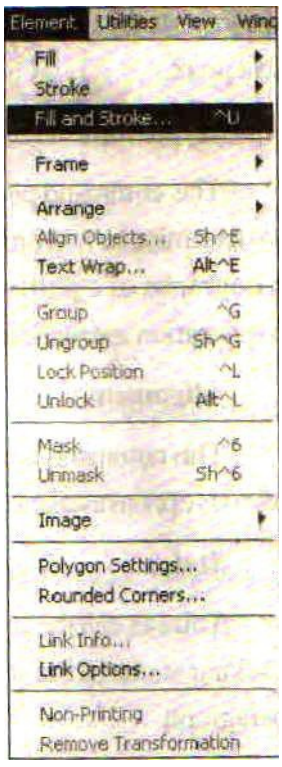
Type Menu:-

Various options under this menu are: -



1. Font: - With this option we can change the style and size of fonts.
2. Size: -This command is used to specify printed point size of selected text or of the next text you type.
3. Leading: -Leading is the blank space between the two lines of the text.
4. Type Style: -There are 6 main type of style to be used to Page Maker, They are normal, **Bold**, *Italic*, Underline, ~~Strikethrough~~.
5. Expert Kerning: -It is a method used for keeping the space between the two characters to a minimum. It examines a pair of letters in the selected text and turned them for optimum spacing.
6. Expert Tracing: -It adjusts the spacing of large blocks of text and does it with no regard to individual pairs of letters, as done in case of kerning.

7. Horizontal Scale: -This command is used to change the width of the character of the text. It is command to condense or expend the text in typesetting; setting the width of a particular text to 90% means a condensation of 10% and setting it to 110% means an expansion 10%.
8. Character: -This command is used to set most of the items of this menu at one glance. It has additional commands for setting the text in different position like Subscript, Superscript etc. You can even change the color of the text too from here.
9. Paragraph: - With this option we can set the alignment such as left, right center and we can set the file left and right margins and first line etc.
10. Paragraph Setting: -These setting are available in Paragraph dialog box which can be called by using the command **Paragraph** under the **Type** menu. As you can see from the dialog box, on next page, there are many options which can be used here. Let us see each of them. (You would notice here that the scale being used is Pica, 6 Picas make 1 Inch and 1Pica has 12 Point.
11. Indents: -Here you define how much of the left indent you want to give to the paragraph. We do not want to give any indent here.
12. First: -The amount of space you mark here will reflect in each Para being given that much of space to the first line of the Para. Let us give a space of one and a half pica to it.
13. Right: -We do not want the text o shift from right alignment. So leave it a 0.
14. Before: -By putting some figure here, you will leave that much space above each paragraph. Some we do not want to give any space here, we will leave it at 0.
15. After: -We definitely want some space after each paragraph. So we will leave 6 point space here which means that we are leave half a pica space after each paragraph.
16. Indent/Tabs: -These are mainly used to tabular matter. This command is used to set the tabs at places where once pressing the text may move to that point.
17. Hyphenation: -This command permits two separate operations. Its main purpose is to determine how words should be hyphenated in a selected paragraph or paragraph of a particular style. You can also use it to ad words and hyphenation instruction to your user dictionary.
18. Alignment:-This command is used to set the alignment of the selected paragraph. Various options available here are Left, Right, Centre, Justify and Force Justify.
19. Style: -You can call the style sheet on the screen by using this command. By clicking at one of the styles present. You can change the attributes of the paragraph.
20. Define Style: -This command is used to create edit, remove and copy various paragraph attribute which have been selected under its dialog box.



Element Menu:-

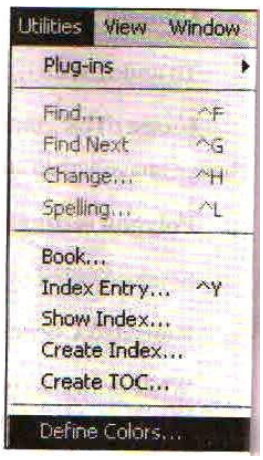
Various commands under this menu are: -

1. Fill: -This command is used to fill the box or circle drawn by you in the text, with the option available under this command. Most of them are the various types of lines in the box besides option for filling up with paper and sold.
2. Stroke: -This command is to select the size of the line drawn by you. It has various sizes of lines besides some of them being designed ones.

You can even have the option of having the line in reverse.

3. Fill and Stroke: -It is combination of the above two commands. Instead of selecting them one by one. You can select them together with this command.
4. Frame: -It has the various option of Frame, which you will read in a later chapter.
5. Arrange: - With this option we can arrange different window in different types tiled, horizontal, and vertical& cascade etc.
6. Align object: -It is another interesting commands which was not there in earlier versions. With this commands you can align text, graphics to various positions, like top of page, center of page etc.
7. Text Wrap: -It has the wrap options for you to decide which one to choose your text.
8. Group: -This command was herein most of the graphics software. Using these commands you can from a group of the items available on the page. It is like binding them together to form a block.
9. Ungroup:-Once group using the above command, this command is used to ungroup them.
10. Lock Position: -When you use this command with respect to some graphics, the graphic gets locked at that position on the page and cannot be moved anywhere else.
11. Unlock: -To unlock the above graphics, this command is used.
12. Mask: -This command creates a window sort of effect to see the text through the graphics which you are using.
13. Unmask: -To undo the above command, this command is used.
14. Image: -This command is used for image brightness, Image contrast, change image screen angle and image's screen patterns.
15. Polygon setting: -Set the number of sides which you want to have in your polygon.
16. Rounded Corners: -While drawing a box in Page Maker, you can the corners of the box in various options. This command lets you do that.
17. Link info: -This command used to view additional information about a link object selected in the publication.
18. Link Options: -This command is used to define whether the linked text or graphics to be updated along with the publication in use and also its frequency.
19. Non-Printing: -Using this command you can designate an object to be non-printing so that it does not get printed while printing the other contents of the page.
20. Remove Transformation: -Using this command you can remove the transformation used on the selected text or graphic.

Utilities Menu:-



Various commands under this menu are: -

1. Plug-ins: -This command has sub-commanded which list the various plug-ins which have been included in the software as additions. These are;
2. Add can't line: -Most of the time while using text for creation of a book, lea et, brochure, etc. It becomes necessary to carry the text from one page to another page which in not necessarily the next page. This leads to putting a line at the end of the first page as "Continued on Page no." Where the remaining text is carried over.
3. Balance columns: -Sometimes in the format you are required to balance the two columns of the page. This is mostly required the case of brochures, magazines, etc.
4. Build Booklet: -This allows you to create a copy of your publication in which pages are arranged for printing multi-page spreads or signatures, i.e. multiple pages printed on a single sheet when folded assumes the correct page order.

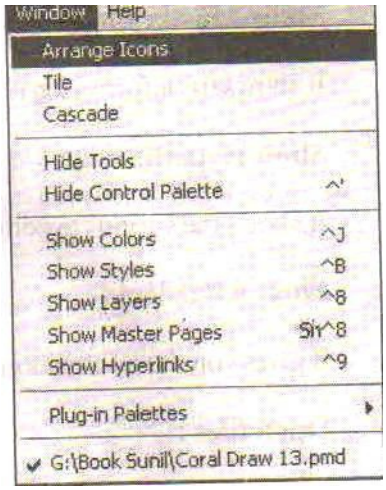
5. Bullets and Numbering: -Now it is easy to put in the text. These can be of your choice and can be replaced by special characters too. It also possible to number the paragraph the number style can again be changed according to your choice.
6. Change Case: -Using this commands you can change the case of the text from normal to all upper case, all lower case, etc.
7. Create Color Library: -This feature allows you to save a set of colors as a group and can be used by you in deferent publications so as to keep the continuity and
8. Drop Cap: -It is concept used to highlight the first character of the text in bold and bigger size. You have a choice to make it of any number of lines depending upon your text.
9. EPS Font Scanner: -This option allows you to include the font in your EPS files.
10. Global Link Options: -It allows you to change the options of links in the publication.
11. Grid Manager: -This command allows you to set up evenly spaced sets of ruler guide grids, custom ruler, Guides, and columns guides.
12. Key line: -This command allows you to us Keyline for a graphic.
13. Publication Converter: -It converts the publication to earlier versions.
14. Quick Time Media: -This command is used for working with Quick Time Software.
15. Running Header & Footers: -It is sometimes required to include on the top bottom of the page better known as Header or Footer, to have the first word of the pages the last word of the page as the case may be. This is very useful in case document like dictionary, directory, etc.
16. Save for service Provider: -This command is used by the service provider.
17. Show/Hide tool bar: -It is used to hide or show the floating toolbar in the publication.
18. Word Counter: -Run this command to find out the number of character, lines, paragraphs, etc. in your publication.
19. Find: - With this option we can find any word of our text.
20. Find next: - When we click this option next word will be appear.
21. Replace: - With this option we can replace the specified text with another text with formatting.
22. Spelling: - Check the active document for possible spelling and writing style errors, and displays suggestions for correcting item. To set, spelling checking option, click option on tools menu, then click the spelling tab.
23. Book: -This command is used to create a book of publication of the same book. This is very useful when you are going to create a Table of Contents or Index of the complete book.
24. Index entry: -This command is used to mark an index entry in the text.
25. Show Index: -This command is used to show the index before printing.
26. Create Index: -This command is used to create index on the basis of the entries marked for index.
27. Create TOC: -Create a Table of Contents from the entries marked to appear in the same.
28. De ne Colors:- This allows you to see the various colors which can be used in the text. It allows creating new colors of your own.

View Menu:-

This menu has the following options: -

1. Display Master Items: -This command allows the matter from the master page to be reflected onto the current page of the publication.
2. Display Non-Printing Items: -This command allow you to see even the non-printing items, like paragraph mark, tab character publication on the screen keeps zooming in for you to see the text in the bigger size.
3. Zoom Out: -Reverse of the above. With each zoom out, you will be able to diminish the size of the publication on the screen.
4. Actual size: -This command allows you to see the actual size of the publication on the screen.

5. Fit in Window: - It is another view of the publication where the whole page fits into the window of the screen.
6. Entire Pasteboard: -This command allows you to see the entire pasteboard on the screen.
7. Zoom to: -As you can see from the screen on the previous page, the various options are to see the publication in the various percentage of the publication.
8. Hide Rulers: -Hides or shows the rulers on the left and the top of the screen.
9. Snap to Rulers: -This command is used to position text block and graphic precisely on a page. When snap to rulers is on, any items you place or move is pulled to the nearest intersection of tick mark on the invisible grid defined by the rulers.

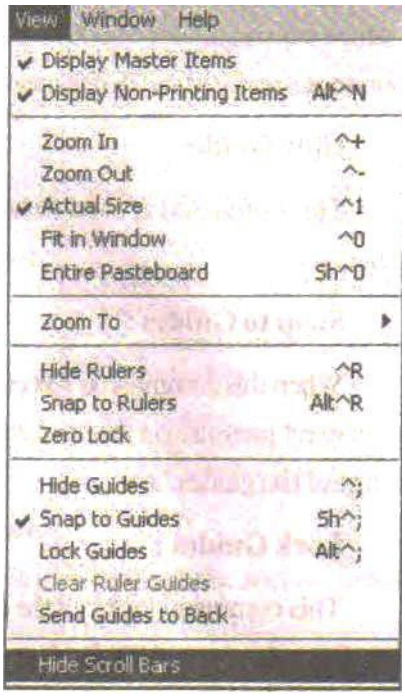


10. Zero Lock: -This command is used to lock the zero position so that you cannot change it accidentally. The zero point is the position at which the 0 of both horizontal and vertical rulers meet.
11. Hide Guides: -This command is used to hide the column ruler and guides on the page.
12. Snap to Guides: -When this command is selected all guides whether margin, column or ruler exert pressure on any tool, text or graphic when they are within short range of the guides.
13. Lock Guides: -This command locks all the column and ruler guides so that you cannot move them accidentally.
14. Clear Ruler Guides: -It clears all the ruler guides off the screen.
15. Send Guides to Back: -All the guides are sent back and not visible.
16. Hide Scroll Bars: -You can hide scroll bars through this command.

Window Menu:-

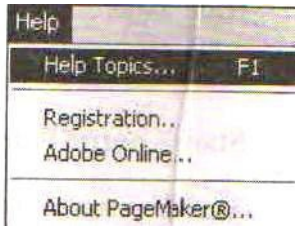
This menu has the following options: -

1. Arrange Icons: -This command is used to organize into rows. The icons of minimized publication are stored in the Page Maker program.
2. Tile: -This command arranges two or more window so that they appear side by like tiles on a floor.
3. Cascade: -This command is used to break the grip of the publication file, so that you can reduce its size and fit it into any place in the window to make available space for more files to be accommodated. It is mainly used when you have to open more than one file.
4. Hide Tools: -This command allows you to hide/show the tool bar off/on the screen.
5. Show Control Palette: -This command shows/hide the color palette on/off the screen.
6. Show Colors: -This command shows/hides the style of the publication.
7. Show Layers: -This command shows the palette.
8. Show Master Page: -It shows the information of various master pages.
9. Show Hyperlinks: -It shows the various hyperlink of the publication.
10. Plug-in Palettes: -It gives you the information about the various plus-INS



11. Open files: -It gives the information of any open file, including the current one.

Help Menu:-



This menu has the following options:

1. Help Topic: -This command will give you on screen the various help topics for you to choose from.
2. Registration: -This command allows you to register your software with the company, so that you can get later various and revisions.
3. Adobe Only: -This will take you to the website of the company.
4. About Page Maker: -This gives rise to the copyright page of the software.

Toolbar Options:-

Page Maker 7.0 has collected a set of commands which are often used in the form of a toolbar, where with just a click, you can access these commands. These commands are available under the various menu commands too, but this is a faster way of accessing them. This toolbar can be accessed from the Utilities Menu, plug-ins, and Show/Hide toolbar.

Various options on the tool bar are: -

1. New: - From this option we can open a new blank workbook.
2. Open: - From this option we can open the existing workbook.
3. Save: - From this option we can save the workbook with a new name.
4. Print: - From this option we can print our text, graphics what so ever in our sheet.
5. Find: - From this option we can find the specified text.
6. Character specs: -Opens the character dialog box.
7. Increase font size: -Increases the font size.
8. Decrease font size: -Decreases the font size.
9. Spelling: - From this option we can check the spelling mistakes & also correct these by suggestions given by it.
10. Fill and Stroke: -Open the fill and Stroke dialog box.
11. Paragraph: - With this option we can set the alignment such as left, right center and we can set the file left and right margins and first line etc.
12. Indents/Tabs: -Opens the Indent/Tab dialog box.
13. Bullet and numbering: - In words, adds bullets or numbers to selected paragraph and modifies the bullets and numbering formats.
14. Out dent: -Set the text to outer indent.
15. Indent: -Set the indent.
16. Insert Pages: -Insert dialog box is opened.
17. Remove Pages: -Select the pages for removal.
18. Frame Options: -Select the various frame options.
19. Text Wrap: -Opens the Text Wrap dialog box.
20. Blank: -Left blank for future use.
21. Picture palette: -Opens the picture palette.
22. Place: -Allows you to places files.
23. Photoshop: -Opens Photoshop software for you.
24. HTML-export: -Allows you to export data in HTML format.

Another very important command here is preference, which allows you to customize the Page Maker according to your needs.

Starting PageMaker 7.0:-

Now since we have to create a new document setup dialog box as shown here. Now, we have to fill this box, according to our specifications. We would be creating a page of size 5 inches x 8 inches and would set the details according. Attached Document setup dialog box with it.

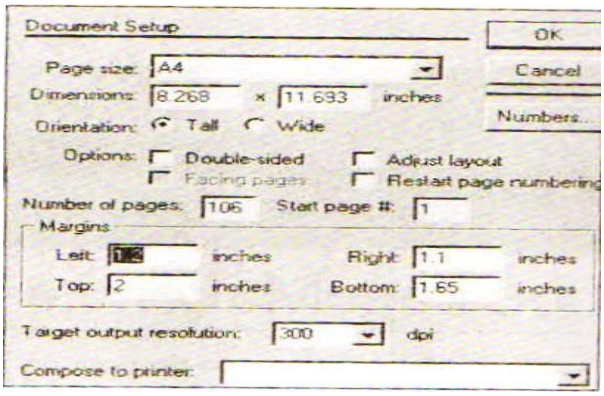
You can also start from any of the following ways:

1. Click at Page Maker 7.0 icon on the desktop.
2. Click Start button and then Programmed, Adobe, Page Maker 7.0

Checking the Page Size:-

Click at zero position box and drag the zero cross lines to the top of the page crossing. i.e. where the horizontal and vertical lines of the page meet on the top left corner of the page. You will now see the zero on both sides of the ruler, i.e., on the top and the left. Now with one side having zero, see the right side of the page, you will see that it point to 5 inches on the top ruler.

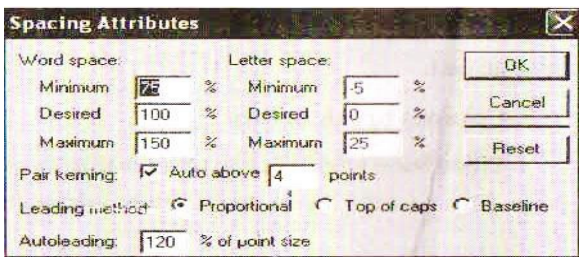
Similarly if you see the vertical rule, the horizontal line points to 8 inch on the scale. This confirms that our page is of the size 8 inches by 5 inches. Now onwards all the work will be done on this desktop. This is the actual page which will be printed as it is, once we put it through our printer.



Remember, these lines are just indicative and will not be printed while printing this page. These lines are called the guide lines and can be placed anywhere on the screen and can be drawn by dragging the mouse button on either of the ruler, i.e. on left or top. Now that we have the page ready, we would like to place some text on it. There is a convention that the text is always typed in a word processing program and them it is brought into the Page Maker. It has been there since the earlier versions of the software did not have the facilities of performing the various checks on the text, which most of the word processors have.

These are:- Spell checking, find and Replace, etc. Slowly and slowly all these have been added to the Page Maker software too and can be conveniently used on the text of the Page Maker. I have a different opinion about this. Since in most of the earlier offices where it was used, there were different operators for both word processing and page making. Thus the work was always divided like this. Moreover typing of the text in Page Maker is slow is slow compared to word processing. Either way to assume that the text has been typed in some word processor and proceed further and place the next.

1. Alignment: -The whole text is required to align from both sides so we would choose the option of justify.
2. Dictionary: -You can choose here one of the dictionaries loaded into the system. Here we choose the US English.
3. Keep Lines together: -Once clicked it ensures that the paragraph is not split over different columns, from page to page or over graphics that have text wrap attributes defined. This option is also useful for keeping a table together when all lines of the tables are in one paragraph. If a paragraph is longer than one column. Page Maker ignores this rule and breaks the paragraph at the column end.
4. Column break before: -This option when clicked ensures that the paragraph begins on a new page. This is useful if you want certain heading to always start from a new page.
5. Keep with next 0 lines: -This when clicked ensures that the last line of the paragraph is placed with a certain number of lines of the next paragraph and specify the number of lines (1, 2, and 3). This option is used to keep heading connected to their accompanying text.
6. Window control 0 lines: -This command specify now many line (up to 3) constitute a window, when that number of lines fall at the bottom or page range. Page Maker moves the lines to the next column or page to eliminate the window.
7. Orphan Control O lines: -This command speci es how many lines (up3) constitute an orphan. When that number of lines falls at the column or page, Page Maker adds one more line to the column or page to eliminate the orphan.
8. Include table of contents: -Once this is clicked it suggests that the paragraph or heading is to be included in the Table of Contents which will be generated later.
9. Spacing: -This allows you to control the spacing attribute in word and letter space, sots the pair kerning, leading method and auto leading percentage.



10. Indents/Tabs: -These are used mainly in case of tables or where you have to set the text in a tabular from. This command is also used to set the tabs at places where once pressing the text may move to that point.

You can click an icon to specify what kind to tabs you want to set. The various types of tabs an available are: -

1. Left: - for setting the text data, like the usual text.
2. Right: -For setting the numeric data, like the amount in Rupees which you must see that it is allied to the right.
3. Centre: -For setting the data which you want to centralize, mainly the heading of the tables.

4. Decimal: -For aligning the numeric data on the basic of decimals, like the numeric data which is available in decimals?
   These you can set it by clicking are a point on the ruler or by choosing an option from the position box.
5. Leader: -This is used to specify the type of leaders you want along with the tab. The various options are in the form of dotted lines, underlines, hyphen lines, nine and custom where you can set your own character to act as leader.
6. Position: -This is used to specify what you want to do relative to a specific tab you can: -
7. Add tab: -It adds a tab at a position specified in the edit box.
8. Delete Tab: -It deletes the tab from a position specifies in the edit box.
9. Move task: -It moves a selected tab from its current position to the position you type in the edit box.
10. Repeat tab: -It repeats a tab automatically setting a series of tabs at the distance between the selected tab and the proceeding tab or the tab ruler zero point.
11. Reset: -Once clicked it resets all the tabs and returns to the default condition.
12. Apply: -Before finally saying OK, you can check whether your tabs have been set properly by clicking at this. This will leave the Indent/Tabs dialog box on and you can set underneath it that the tabs have been set properly. If satised, press OK.

Header and Footers:-

Header is what you put on the top to each page of the box. Footer is what you put at the bottom of the page. In this book, you would notice that I have put header on the top. You can put it on the bottom to make them Footer instead of Header.

Page Numbering: -It follows a very de ned pattern. I would not call it a rule, but would like to call it a convention. Given below is the format of the page you are looking at. Now you know that comes where, but how to create it, is the problem. For this click at the master page location, to see the master pages on the screen. You will see a blank path format side by side seen above. With the help of the mouse click at any place in the page format and type the name of the chapter. Click this with the pointer tool and drag its corner to the left top of the right hand page format.

Click it with the text and format it according to the requirements. For a book whose text is of the size of 11 points, the folio text can be of 8/9-10 points. So you can choose it be in 10 points. Again using the pointer tool click at the text to form a block of text. Drag the right corners of the text block to make it half of the page size, as shown above.

Again click at any place inside the page block to get cursor for typing. Type Ctrl+Alt+P, to get a symbol PB on the page. This is the indicator of the Page number on master page. Make it 10 points Times. Now Roman as above but make it right aligned by Ctrl+Shift+R. Now drag it to the right corner of the right hand side of the master page, as shown below after making the block as half.

File System Interface
RM

Similarly for the left hand page, type Ctrl+Alt+P for the page number on the left hand corner and the book name for the right hand side of the left hand page. So now when you see the left hand page of the master page. You will see something like this. Do not worry about RM becoming LM on this page, it the indicator that the page 2-3 of the publication and see the effect these header. Oh God. What happened? The text of the header and text matter of the page 2 and 3 has been mixed up. This is so since we did not make provision for having the header on the top of the page. So we have to leave about one and a half pica space on the top of the each page to accommodate the header. So let's see how it is done.

On the master page put a guide at one and a half pica from the top. This is our indication that the text would start from this line down wards. Now what you will have to do is that you will have to drag the text on page number 2 and 3 down wards by one and a half pica to make the header look like the one shown one by one. It is not possible here to show both the pages together on this and next page.

So now what do we gather. We should always make provision for the Header and Footer, before designing the page layout. We should

2
Operating System

Page put a guide at one and a half pica from the top. This is our indication that the text would start from this line down wards. Now what you will have to do is that you will have to drag the text on page number 2 and 3 down wards by one and a half pica to make the header look like the one shown here. Due to constraints in page size, both pages are shown one by one. It is not possible here to

File System Interface
3

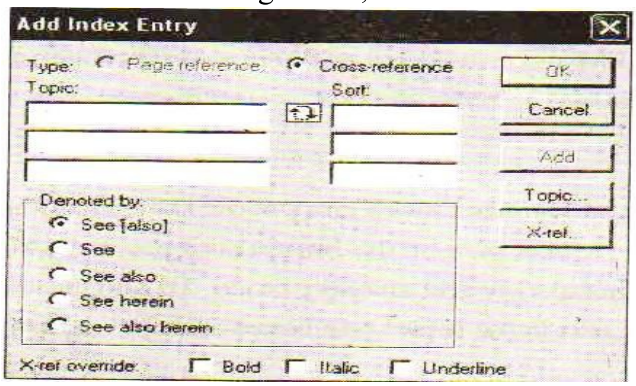
So now what do we gather. We should always make provision for the Header and Footer, before designing the page layout. We should Leave that much of the space either on the top or on bottom, depending whether we want to have Header or Footer. At this stage we would like to close out publication. But, for that we must save it give it a name.

Leave that much of the space either on the top or on bottom, depending whether we want to have Header or Footer. At this stage we would like to close out publication. But, for that we must save it give it a name.

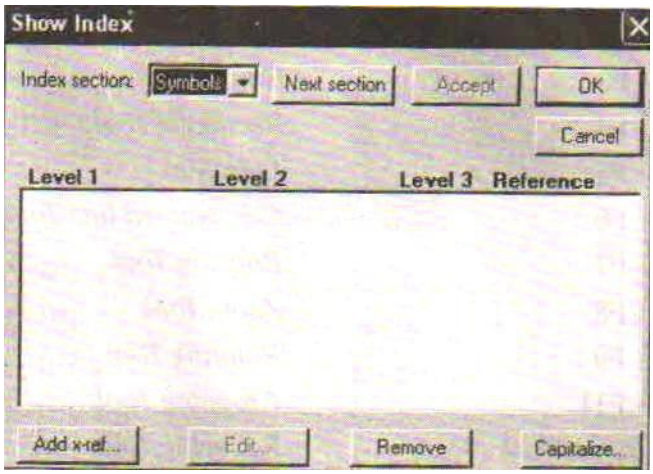
Index Entry:-

This command is used to create index in a publication file and to edit the index entries. When you click at Index entry the add index entry dialog box appears. The options of which are discussed below to options, page reference or Cross reference. When you click page reference it gives you the page number as the reference. Whereas if you select cross-reference then instead of page number you get the cross reference such as see.

1. Topic: You can have3 levels of indexing. For it, three boxes have been provided for. You should



   provide the text in each level of index by typing or even selecting it before opening the Add index entry, it will fill up the first box. Each level can accommodate up to 50 characters. You can rotate the topic text from one level to another by just clicking in the box.
2. Sort: -The sort boxes corresponding to the topic level are used to tell Page Maker how to sort each entry in the index. The entries are spelled in the index as they appear in the topics edit boxes but are sorted alphabetically according to the spelling in the sort edit boxes. For example, if the topics references is PM and you want it to be sorted in the index as Page Maker, then type Page Maker in the sort box against the topic box of PM.
3. Add: -Click to add another index entry at the same location after you add an entry. Page Maker puts off this button until you make a change, so that you do not mistakenly add an entry twice. To add another entry. Type over existing text in the topic edits boxes and click add or OK.
4. Topic: -Click this to view the topics already selected and for which the index has already been created. You can also use this option to add topics to the topics listed directly.



Show Index:-

This is used to see index before it is printed. Here you can edit entries but you cannot add an entry in this. To show the

complete index on Screen, Page Maker goes through the process of renumbering Pages, Updating book references and then at shows the complete index. But, this is so when the book list at active, if not it will show the index of the current publication only. In this book list also you can see the index of current publication only by pressing Ctrl key while Index command.

Some Important Shortcut keys

Tools

F9	Pointer
SHIFT+F2	Text Tool
SHIFT+F3	Ellipse Tool
SHIFT+F4	Rectangle Tool
SHIFT+F5	Line Tool
SHIFT+F6	Constrained Line Tool.
SHIFT+F7	Polygon Tool
SHIFT+F8	Zoom Tool
SHIFT+F9	Rotating Tool
SHIFTF11	Cropping Tool
CTRL+Zoom Tool	Reducing Tool
ALT+Drag Mouse	Grabbed Hand.

Text and Elements

Ctrl +A	Select All
Ctrl +Z	Undo
Ctrl+C	Copy the selected text
Ctrl+X	Cut the selected text
Ctrl+v	Paste
Ctrl+Shift+P	Power paste
Ctrl+G	Group
Ctrl+U	Ungroup
Shift+Element*Mask	Mask and Group
Shift+Element*UnMask	UnMask and UnGroup
Ctrl+J	Gudes on/off
Ctrl+R	Rulers on/off
Ctrl+Shift+5	Snap to guides
Ctrl+Shift+Y	Snap to rulers
Ctrl+B	Send to back
Ctrl+F	Bring to Front
Ctrl+8	Bring to Forward
Ctrl+9	Send Backward.
Ctrl+Shift+’	Insert Page

Type Style

Ctrl+Shift+B	Bold
Ctrl+Shift+I	Italic
Ctrl+Shift+U	Underline
Ctrl+Shift+S	Strike Thru
Ctrl+Shift+Spacebar	Normal

Ctrl+Shift+V	Reverse
Ctrl+T	Type specs dialog box
Text Editing in Story Editor	
Ctrl+E	Edit Story/ Edit layout (toggle).
Ctrl+W	Close story
Ctrl+L	Spelling
Ctrl+F	Find
Ctrl+G	Find next
Ctrl+H	Change
Ctrl+3	De ne Style
Ctrl+M	Paragraph Specs

Understanding Photoshop

Photoshop is software for image processing. With this you can manipulate your picture either scanned, to such an extent that you would sometimes forget which picture you started off with.

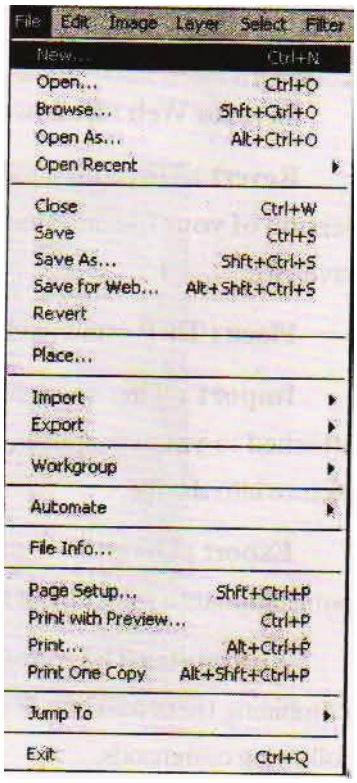
But, this is not the only purpose of the software, you can use it create better looking picture and art works with text and other graphics to beat any other similar software in the market, well first thing first, let us start the software.

How to start Photoshop: -Photoshop can be started by following methods: -

1. By Using the Start Menu: -
   i. Click on start button the start menu is appearing.
   ii. Click at Programs
   iii. Click on Adobe Photoshop.
2. By using Short Cut: -The icon of Photoshop software is created and put in the desktop.
   i. First, locate the Photoshop shortcut icon
   ii. Position the mouse over icon and double click on it to open the software.
   By using the above options the software can be started.

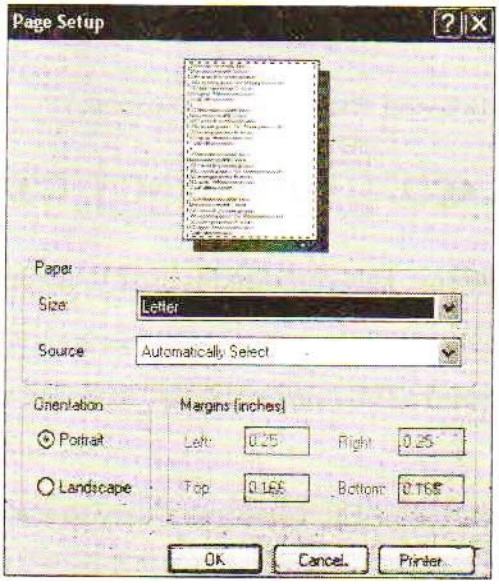
Menu Commands: -One look at these menu commands and you know what is where.

File Menu:-

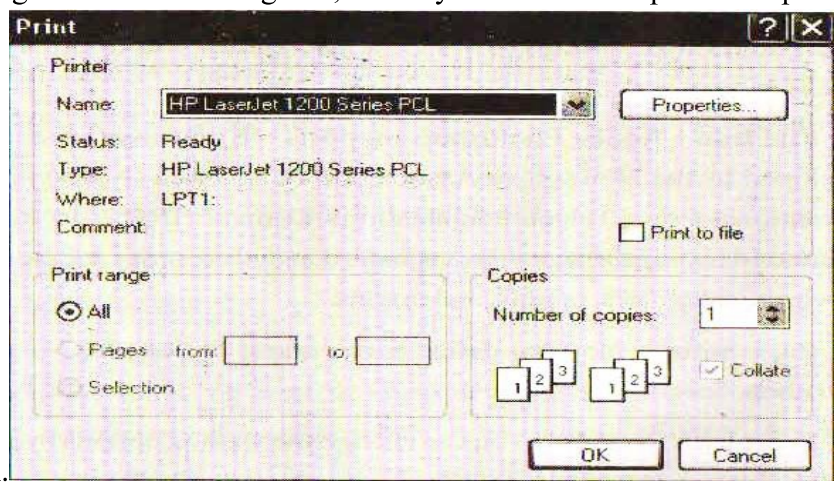


1. New: - It is used to create a new blank file.
2. Open: -It is used to open or ends a file.
3. Browse: - This command allows you to browse through files before opening them.
4. Open As: -It allows you to open a file in another format.
5. Open Recent: -It allows you to open a recently opened file.
6. Edit in Image Ready: -It allows you to edit the image in the image Ready mode.
7. Close: -It allows you to close the current Photoshop file.
8. Close All: -Closes all the open files.
9. Close & Go to Bridge: -Closes the current file and open the Bridge.
10. Save: - With this option we can save the active document or word with a file name or word document format.
11. Save As: - Save a file with another file name.
12. Save A Version: -It allows you to save the current file under as a new version. Adobe Version Cue integrates design management into you existing work flows within and across the Adobe Creative Suite applications, including Adobe Go Live CS. Adobe illustrator Cs, Adobe in Design CS, and Adobe Photoshop CS.

13. Save For Web: -It allows you to save the current file as a web page.
14. Revert: -This command is used to restore the most recently saved version of your file deleting all changes made since the last time you saved it.
15. Place: -This command is used to place the text into the file.
16. Import: -This command is active only if you have the scanner attached to your computer. This will help you in getting the scanned picture into the file.
17. Export: -Using this command you can export the selected text of the publication into a document file in the format selected by you.
18. Automate: -The Automate commands simplify complex tasks by combining them into one or more dialog boxes. Photoshop includes the following commands.
19. Script: -This commands has 4 different features of script which allow you to export layers to files, Layer Comps to files, Layer Comps to PDF and Layer Comps to WPG, it also you to browse for more files.



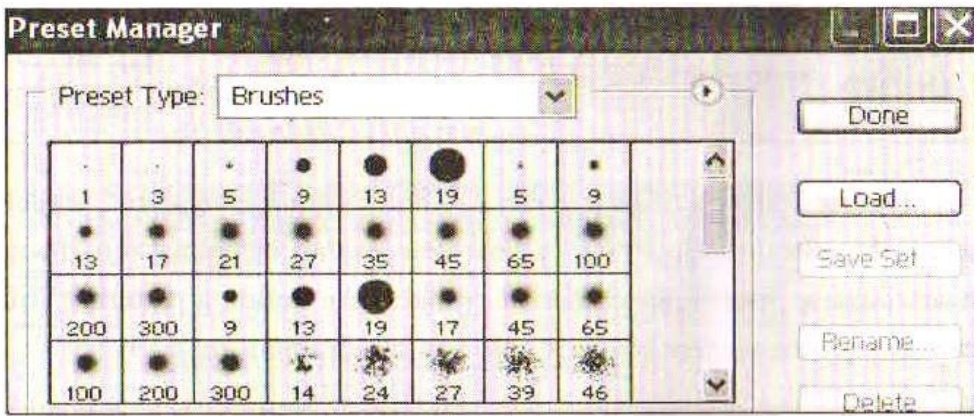
20. File Info: -Adobe: Photoshop supports the information standard developed by the Newspaper Association of America (NAA) and the international press Telecommunications Council (IPTC) to identify transmitted text and images. This standard includes entries for captions keywords, categories, credits, and origins.
21. Page Setup: -You can define here various options for your new Photoshop file.
22. Print with Preview: -You can change the various options by seeing the preview before printing.
23. Print: -This gives rise to a dialog box, where you can set the options for printing the publication.



24. Print one Copy: -You can print one copy of this image on the screen.
25. Print Online: -It allows you to print online.
26. Jump to: -This gives you the option to jump to another program your choice.
27. Exit: -Closes your session with Photoshop.

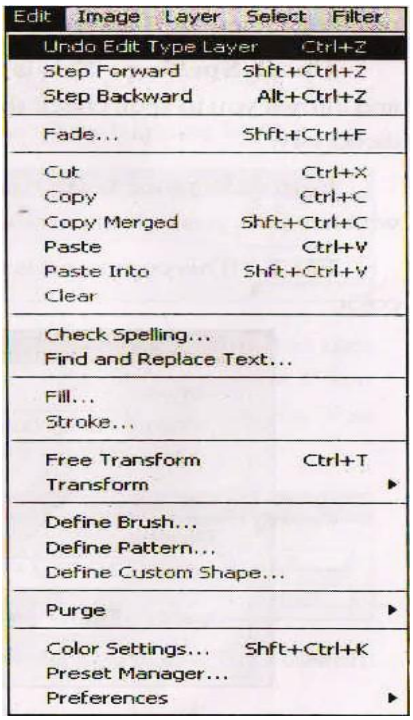
bounding box.

16. Define Brush Preset: -You can define a brush setting here.
17. Define Pattern: -The pattern you define here is repeated and tiles within the selection. Each new pattern replaces the current pattern. If you want to reuse patterns, save a file of swatches for defining patterns. You can also use the pattern stamp tool to paint with a pattern.
18. Define Custom Shape: -This command allows you to select a custom shape from the option bar.
19. Purge: -The Purge command permanently clears from memory the operation stored by the command or buffer, and cannot be undone. Use the Purge command when information held in memory is so large, Photoshop cannot perform the next operation.
20. Adobe PDF Presets: -Although the default PDF presets are based on best practices, you may discover that your work flow requires specialized PDF settings that aren't available using any of the built-in Photoshop or any product in the Adobe Creative Suite. In Photoshop you can save the preset using the Adobe Presets command or command or clicking the Save/Preset button in the Save Adobe PDF dialog box. Adobe PDF presets are saved as files with a job options extension.
21. Preset Manager: -This command allows you to preset a set of gradients to be used later and called.



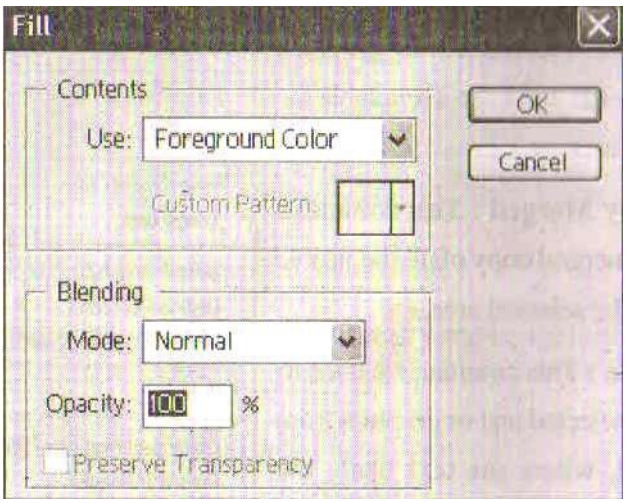
22. Color Setting: -The setting in these dialog boxes are used for the following: -
    1. To convert images between standard color modes (Such as from RGB to CMYK).
    2. When opening an RGB, Grayscale, or CMYK file, to compare the file's color space to the color spaces are not the same, you can convert the file.
    3. When viewing a file on-screen, to convert the file to the monitor's color space. This only affects the display, not the file- Photoshop assumes that the file's true color space is the

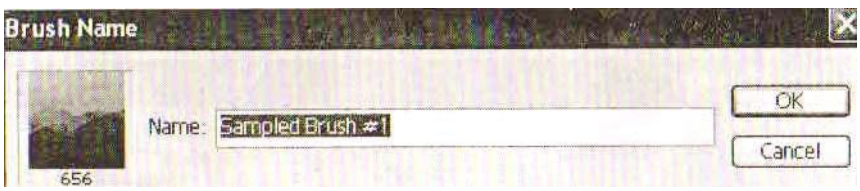
Edit Menu:-

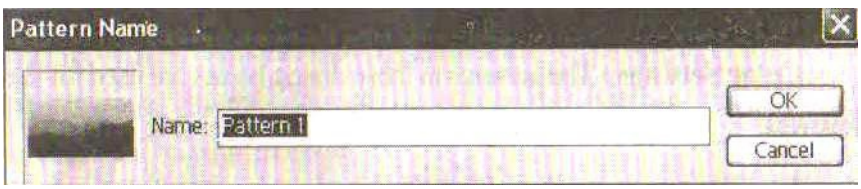


1. Undo/Redo: -This command is used to reverse the last action taken by you.
2. Step Forward: -This command is used to move a step forward in the motion.
3. Step Backward: -This command is used to trace back step in the motion.
4. Fade: -Allows the object to fade.
5. Cut: - Cut the selected text or object and put it in to board.
6. Copy: - We can copy the selected text or object put it clip board.
7. Copy Merged: -This command makes a merged copy all the visible layers in the selected area.
8. Paste: - We can paste the contents or objects of clipboard at the insertion point.
9. Clear: - With the options we can clear the selected or object without putting it in clipboard.
10. Check Spelling: -This is one of the new commands of Photoshop and allows you to spell check the text in you drawing using the in-built dictionary.
11. Find & Replace Text: -Another of the new commands of Photoshop which allows you to find particular text and replace it with another.
12. Fill: - This command is used to fill foreground and back ground color.
13. Stroke: -Photoshop provides a variety ways to fill a selection or a layer with color. Images or patterns.
14. Free Transform: -When an image is re sampled. Adobe Photoshop uses an interpolation method to assign color values to any new pixels based on the color values of existing pixels in the image.
15. Transform: -You can use rulers and guides to layout your work and you can copy and move selections within an image and between applications. You also transform objects using specific transformations or using the transform-

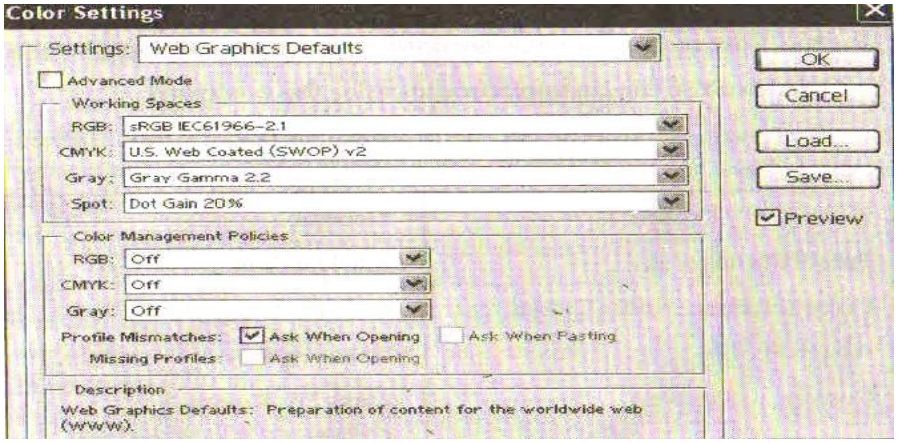
the clip in to of text of







one defined in the appropriate Setup dialog box.

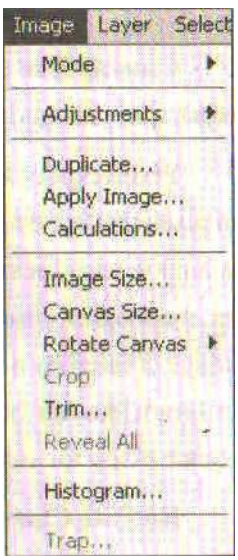


23. Assign Profile: -Lets you select a different profile. The application assigns the new profile to the document without converting colors to the profile space. This may dramatically change the appearance of the colors as displayed on your monitor.
24. Convert to Profile: -Allows the convert colors in a document to another profile.
25. Key Board Shortcuts: -This command allows you to see the various keyboard shortcut associated with various commands.
    To edit keyboard shortcuts: -
    1. Click on the New set button to create a copy of the selected set, or select a set to move.
    2. Click in the "Shortcut" column for a command and press the keyboard shortcut assign.
    3. Save the set when you are done editing to save all your changes.
26. Preferences: -You can choose to set preference of various options as shown here.

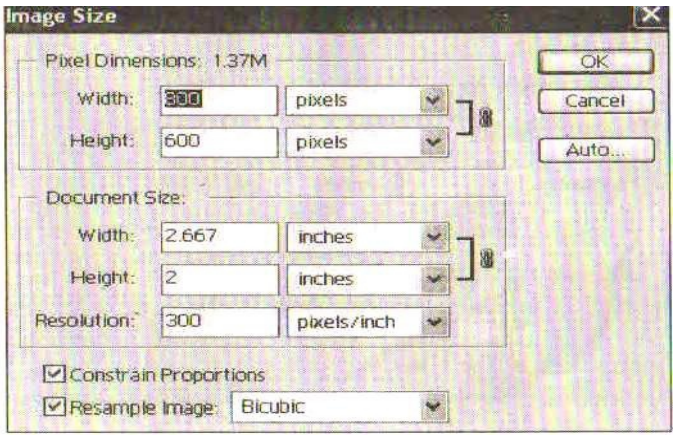
Adobe PDF Presets...	General… Ctrl
Preset Manager…	File Handing…
Color setting…Shift+Ctrl+K	Display & Cursors…
Assign Profile…	Transparency & Gamut…
Convert to Profile…	Unit * & Rulers Guides, Grid & Slices.
Keyboard Shortcut.	Plug-Ins & Scratch Disks.
Alt+Shift+Ctrl+K Menus… Alt+Shift+Ctrl+M	Memory & image Cache
Preferences	Type…….

Image Menu: -

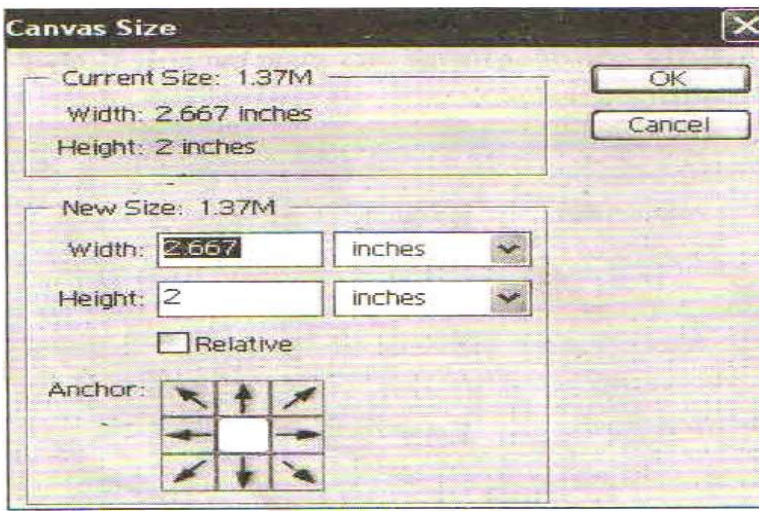
1. Mode: -The modes available under Photoshop this command are : -Bitmap; Grayscale; Dutone; Index Color; RGB color ; CMYK Color; Lab Color; Multichannel; 8 Bits/Channel; 16 Bits/ Channel; Color Table; Assign Profile and Convert to Profile.
2. Adjustments: -This command is used to adjust the various colors of your image. You will read more about them later. Various options available under this are shown here.
3. Duplicate: -You can copy an entire image (including all Layers masks, and channels)



4. Apply Image: - The apply image command lets you blend one image's layer and channel (the source) with a layer and channel of the active image (the destination).
5. Calculations: -The calculations command lets you blend two individual channels from one or more source images. You can then apply the result to new images or to a new channel or selection in the active image.



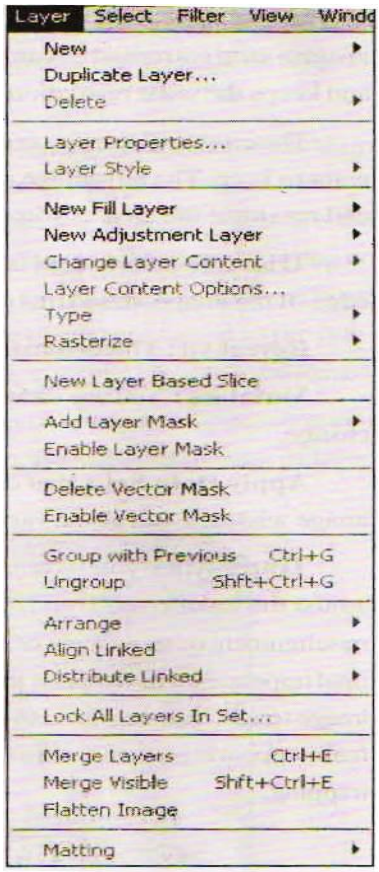
6. Image Size: -When preparing images for online distribution (on a Web site, for example). It useful to specify image size in terms of the pixel dimensions. Keep in mind that changing pixel dimensions affects not only the size of an image on screen but also its image quality and its printed characteristics.
7. Canvas Size: -The Canvas Size command lets you add or remove work space around an existing image.
8. Pixel Aspect Ratio: -An image on a computer monitor is made up of pixels that are essentially square. An image displayed on a video monitor is analog and does not involve pixel shape. Non-square pixels are the most commonly used by enclosing devices for video. When importing an image created by Square-Pixels are scatted to the non-square pixels for video encoding. This scaling results in a distorted image.
9. Rotate Canvas: -The rotate canvas commands let you rotate or flip the entire image. It does not work on individual layer or parts of layers, paths or selection border.



10. Crop: -Photoshop provides two ways to crop an image. The image> crop command discard the area outside of rectangular selection and keeps the same resolution as the original.
    The crop tool lets you crop an image by dragging over the area you want to keep. The advantage of using the crop tool is that you can rotate and resample the area as you crop.
11. Trim: -This command is used to discard a border area around the edge of the image, based on transparency or edge color.

12. Reveal All: -This command is used to reveal all images on the screen.
13. Variable: -You use variables to define which elements is a template change.
14. Apply Data Set: -You can apply a date set's contents to the base image while leaving all the variables and data sets intact.
15. Trap: -After you have converted the image to CMYK. You can adjust the color trap is the over tip needed to ensure that a slight misalignment or movement of the plates while printing does not affect the final appearance of the print job. If any distinctly different colors in your image touch. You may need to overprint them slightly to prevent tiny gaps from appearing when the image is printed. This technique is known as trapping.

Layer Menu: -



1. New: -This command creates a new layer which can be via copy of cut menu.
2. Duplicate Layer: -This command duplicates the selected layer.
3. Delete: -This command deletes the selected picture, layer etc.
4. Layer Properties:-When applying layer style, you can specify a number of command options for each effect. Various options of the layer style are on next few pages.
5. Layer Style: -When applying layer styles, you can specify a number of common options of the layer styles are on next few pages.
6. New Fill Layers: -A new layer is added with the option fill selected by you.
7. New Adjustment Layer: -A new layer is added with the option selected by you. Various available options are: Levels, Curves, color Balance, Brightness/Contrast, Hue/Saturation, Selective Color, Channel Mixer, Gradient Map, Photo Filter, Invert, Threshold and Pasteurize.
8. Change Layer Content: -This command allows you to change the contents of a layer.
9. Layer Content Options: -This command allows you to change the various options of a layer.
10. Layer Mask: -When you finish creating a layer mask, you can either apply the mask and make the changes permanent or delete the mask without applying changes. Because layer masks are stored as Alpha channels, Applying and deleting layer masks can help reduce file size.
11. Vector Mask: -A vector mask creates a sharp-edge shape on a layer and is useful any time you want to add a design element with clean, defined edges, Once you create a layer with a vector mask, you can apply one or more layer styles to it, edit them if needed and instantly have a usable button, panel, or other Web design element.
12. Create Clipping Mask: -You can use the content of a layer to mask the layers above it. The transparent pixel of the bottom or base layer mask out the content of layer above it that are

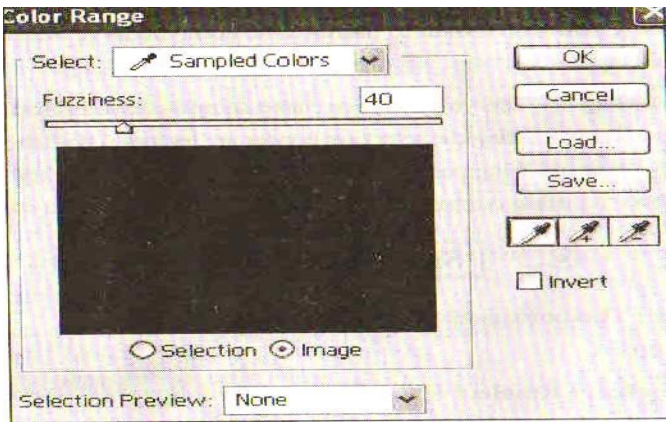
part of a clipping mask, the texture and the text appear only through the shape on the base layer, and take on the opacity of the base layer.

13. Smart Object: -A smart object is a container in which you can embed raster or vector image data, for instance, from another Photoshop or Adobe illustrator file. The embedded data retains all its original characteristics and remains fully editable. You can create a Smart Object in Photoshop by converting one or more layers. In addition, you can paste or place the data in Photoshop from Illustrator. Smart object give you the flexibility to Scale, rotate, and warp layers nondestructively in Photoshop.
14. Type: -This command is used to create type in a layer.
15. Rasterize: -This command is used to rasterize the image in the layer.
16. New Layer Based Slice: -When you create a slice from a layer, the slice area encompasses all the pixel data in the layer. If you edit the layer's content, the slice area automatically adjust to encompass the new pixels.
17. Group Layers: -Layers are grouped together using this.
18. Ungroup Layers: -Once grouped by the above command, you can ungroup them.
19. Hide Layer: -You can hide a layer using this command.
20. Arrange: -This command is used for the following: -
    1. Being to front to make the layer the topmost layer.
    2. Being forward to move the layer one level up in the stacking order.
    3. Send Backward to move the layer one level down in the stacking order.
    4. Send to Back to make the layer the bottom most layer in the image (except for the background),
21. Align: -This command is used to align the matter Left, Right, Center, and justify.
22. Distribute: -This command allows you to position the contents of linked layers at evenly spaced intervals.
23. Lock Layer: -This command locks all the layers in the particular set.
24. Link Layers: -You can link two or more layers or groups. Unlike multiple layers selected at the same time, linked layers retain their relationship until you unlink tem. You can move, apply transformations, and create clipping masks from linked layers.
25. Select Linked Layers: -Linked layers can be selected using the command.
26. Merge Layers: -This command allows you to merge two or more layers.
27. Flatten image: -In a fiattened image, all visible layers are merged into the background, greatly reducing file size. Flattening an image discards all hidden layers and fills the remaining transparent areas with white, in most cases. You won't to flatten a file until you have finished editing individual layers.
28. Matting: -When you move or paste an anti-aliased selection, some of the pixels surrounding the selection border are included with the selection. These three Matting commands let you edit these unwanted edge pixels.

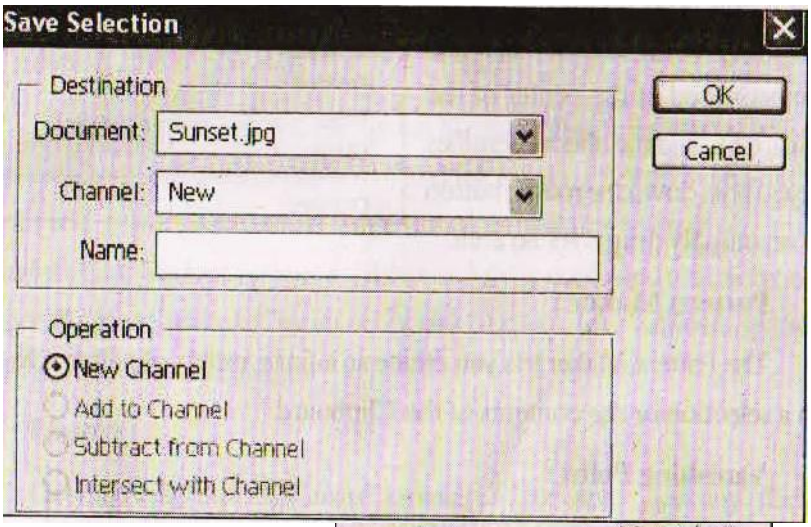
Select Menu: -

1. All: -This command selects all the items on the screen.
2. Deselect/Reselect: -You can reselect the items deselectedabove.

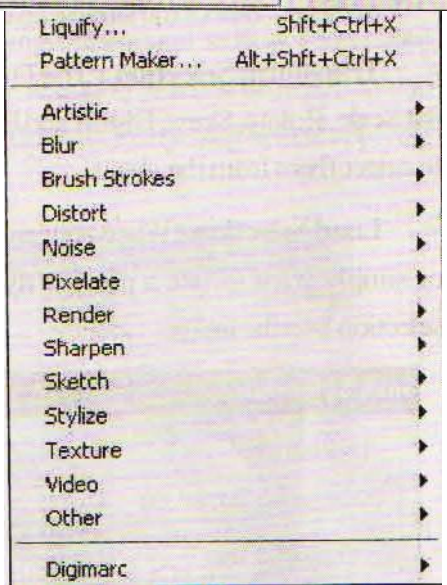
3. Inverse: -The inverted command inverts the colors in an image. You might use this command to make a positive black –and- white image negative or to make a positive from a scanned black –and- white negative.
4. All Layers: -The command allows you to select all layers.
5. Deselect Layers: -The command deselects all the layers.
6. Similar Layers: -The similar layers are selected.
7. Color Range: -The Color Range command selects a specified color or color subset within a selection or an entire image. If you want to replace a selection, be sure to deselect everything before applying this command.



8. Feather: -You can define feathering for the marquee, lasso, polygon lasso, or magnetic lasso tool as you use the tool, or you can add feathering to an existing selection. Feathering effect become apparent when you move, cut, or copy the selection.
9. Modify: -You can use the following select commands to increase or decrease the pixels in an existing selection.
10. Grow: -Grow and similar commands are used to expand a selection to include areas similar in color.
11. Similar: -Select the similar layers.
12. Transform selection: - The free Transform command lets you use the Scale, rotate, Skew, Distort and Perspectivecommands without having to select them from the menu.



13. Loaded Selection: - When you have finished modifying an alpha channel or simply want to use a previously saved selection, you can load the selection into the image.
14. Save Selection: -You create a new alpha channel as a mask. For example, you can create a gradient fill in a blank channel, and then use it as a mask. Or you can save a selection to either a new or existing channel.



Filter Menu: -

1. Las Filter: -this command allows you to call the last filter used.
2. Extract: -The Extract command provides a sophisticated way to isolate a foreground object and erase its background on a layer. Even object with wispy, intricate or indefinable edge may be clipped from their background with a minimum of manual work.
3. Liquefy: -Several tools in the Liquefied dialog box distort the brush area when you hold down the mouse button or drag. The distortion is concentrated at the center of the brush area, and the effect intensifies as you hold down the mouse button or repeatedly drag over an area.
4. Pattern Maker: -The Pattern Maker lets you create an infinite variety of patterns based on a selection or the contents of the clipboard.
5. Vanishing Point: -The vanishing point feature lets preserve correct perspective in edit of images that contain perspective planes. For instance, the sides of a building or any rectangular object.
6. Artistic: -Apply a painterly or special effect for a fine-arts or commercial project for example, use the cutout filter for collages or type treatment. These filters replicate natural or traditional media effect. Various options available under this command are: -Colored Pencil, Cutout, Dry Brush, Film Grain, Fresco, Neon Glow, Paint Daubs, Palette, Knife, Plastic Wrap, Poster Edge, Rough Pastels, Smudge Stick, Sponge, Under Painting and Watercolor.
7. Blur: -Soften a selection or an image. Blur filters are useful or retouching. They smooth transitions by averaging the pixels next to the hard edges of defined lines and shaded areas in an image. Various options available under this command are: -Blur, Blur More, Gaussian Blur, Motion Blur, Radial Blur, and Smart Blur.
8. Brush Strokes: -Like the Artistic filter, the Bruch Strokes filter s give a painterly or fine-arts look using different brush and ink stroke effects. Some of thefilters add grain, paint, noise, edge detail, or texture to an image for a point list effect. Various options available under this command are: Accented Edge, Angled Strokes, crosshatch, Dark Strokes, Ink Outlines, Spatter, Sprayed Stroke and Sumi-e
9. Distort: -Geometrically distort an image, creating 3-D or other reshaping effects. Note that these filters can be very memory intensive. This command has the following options: Diffuse Glow, Displace, Glass, Ocean Ripple, Pinch, Polar Coordinated, Ripple, Shear, Spherize, Twirl, Wave and Zigzag.
10. Noise: -Add or remove noise, or pixels with randomly distributed color levels. This helps to blend a selection into the surrounding pixels. Noise filters can create unusual textures or remove problem areas, such as dust and scratches, from an image. The add Noise filter can be used to reduce banding in feathered selections or graduated fills or give a more realistic look to heavily retouched areas. This command has the following options: Add Noise, Despeckle, Dust & Scratches and median.
11. Pixelate: -Sharp define a selection by climbing pixels of similar color values in calls. This command has the following options: -
    Color, Halftone, Crystallize, Facet, Fragment, Mezzotint, Mosaic and Pointillize.
    This command has the following options: -
    3-D Transform, Clouds, Differences Clouds, Lens Flare, Lighting Effect and Texture Fill.

12. Render: -Create 3-D shapes, cloud patterns, refractions patterns and simulated light reflections in an image. You can also manipulate object in 3-D shape, create 3-D object (cube, spheres, and cylinders). And create texture fills from grayscale files to produce 3-D like effects for lighting. This command has the following options: 3-D like effects for lighting. This command has the following options: -3-D Transform, Clouds, Difference Clouds, Lens, Flare, Lighting Effects and Texture fill.
13. Sharpen: -Focus blurry images by increasing the contrast of adjacent pixels.The include the Sharpen Edges and Un-sharp Mask filters, which find and sharpen areas where significant color changer occur (such as at the edges). The Un-sharp Mask filter is commonly used for high-end color correction. This command has the following options: Sharpen, Sharpen Edges, Sharpen More and Unsharp Mask.
14. Sketch: -Add texture to images, often for a 3-D effect. The filters also are useful for creating a fine-arts or hand-draw look. Many of the Sketch filters use the foreground and background color as they redraw the image. Various options under this command are: Bas Relief, Chalk and Charcoal, Charcoal, Chrome, Conte Crayon, Graphic Pen, Halftone Pattern, Note Paper, Photocopy. Plaster, Reticulation Stamp, Torn Edges And Water Paper.
15. Stylize: -Produce a painted or impressionistic effect on a selection by displacing pixels and by finding and heightening contrast in an image. After using filter like Final Edges and Trace Contour that highlight edges. You can apply the invert command to outline the edges of a color image with colored lines or to outline the edges of a gray scale image with white lines. Various options under this command are: -Diffuse Emboss, Extrude Find Edges, Glowing Edges, Solarize, Tiles, Trace Contour and Wind.
16. Texture: - Give images the appearance of depth or substance. Or to add and organic look. Various options under this command are: -Craquelure, Granin, Mosaic Tiles, Patchwork, Stained Glass and Texturizer.
17. Video: -Include the NTSC (National Television Standards Committee) Colors filter, Which restricts the gamut of colors to those acceptable or television reproduction, and the Deinterface filter, which smooth moving images captured on video?
    This command has the following options: - De-Interface and NTSC colors.
18. Other: -Let you create your own filters, use filters to modify masks, offset a selection within an image, and make quick color adjustments. This command has the following options: - Custom, Dither Box, High Pass Maximum, Minimum and offset.

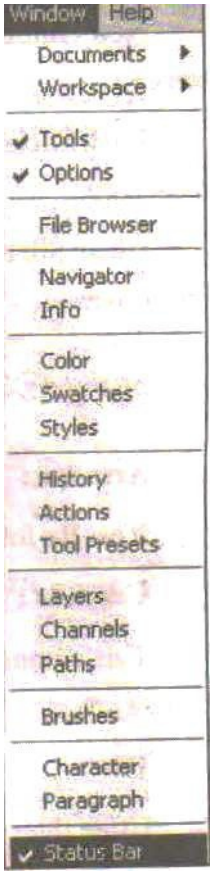
19. Digimarc: -Embed a digital watermark into an image to store copyright information. This command has the following options:
    Embed watermark and read Watermark.

View Menu: -

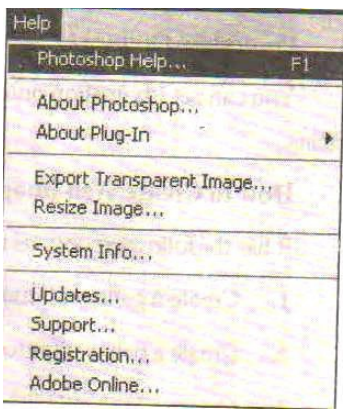
1. Select Setup: -Select this command to choose the output display that you want to simulate:
2. Custom: -To Soft proof colors as displayed on a specific output device.

21. Lock Guides: -This command locks all the column and ruler guides so that you cannot move them accidentally.
22. Clear Guides: -This command clears all guides from the screen.
23. New Guide: -This command allows you to have a new guide on the screen.
24. Lock Slices: -Using this command you can lock the varies slices on the screen.
25. Clear Slices: -The above locked slices can be unblocked using this command.

Window Menu: -



1. Arrange: -It has the following commands under it.
2. Cascade: -This command opens another window of the current image.
3. Tile: -Using this command you can see on the screen more than one image.
4. Arrange Icons: -This command arranges icons on the screen.
5. Close All: -This command closes all the open window.
6. New Window: -This command opens a new window of the screen image.
7. Workspace: -This command allows you to save the current workspace.
8. Actions: -Hides/Shows the Actions dialog box on the screen.
9. Brushes: -Hides/Shows the brushes dialog box on the screen.
10. Channels: -Hides/Shows the channels dialog box on the screen.
11. Character: -Hides/Shows the character dialog box on the screen.
12. Color: -Hides/Shows the color dialog box on the screen.
13. Histogram: -Hides/Shows the histogram dialog box on the screen.
14. History: -Hides/Shows the history dialog box on the screen.
15. Info: -Hides/Shows the info dialog box on the screen.
16. Layer Comps: -Hides/Shows the layer comps box on the screen.
17. Navigator: -Hides/Shows the navigator dialog box on the screen.
18. Options: -Hides/Shows the various options on the screen.
19. Paragraph: -Hides/Shows the paragraph dialog box on the screen.
20. Paths: -Hides/Shows the paths dialog box on the screen.
21. Styles: -Hides/Shows the style dialog box on the screen.
22. Swatches: -Hides/Shows the swatches dialog box on the screen.
23. Tools Presets: -Hides/Shows the tools presets dialog box on the screen.
24. Tools: -Hides/Shows the tools dialog box on the screen.
25. List of open: -Shows the open files.



Help Menu: -

1. Photoshop Help: -Shows the Photoshop help on the screen.
2. Welcome Screen: -Shows the Welcome Screen.
3. About Photoshop: -Shows the Copyright of Photoshop.

4. About Plug-in: -Shows the status of Plug-Ins
5. Export Transparent Image: -You can use image clipping paths to define transparent areas in images you place in page-layout applications. In addition, Mac OS users can embed Photoshop image in many word-processor files.
6. Resize Image: -Using this command you can change the size of the image.
7. System Info: -It gives the information about the system you are working on.
8. Registration: -You can register your software copy.
9. Activate: -It allows you to activate your software.
10. Transfer Activation: -You can transfer the activation.
11. Updates: -You can see the various updates of the software.
12. Photoshop online: -You can get Photoshop online for any problems which you may be facing.
13. How to create Web Image:-It has the following options under it.
    1. Crete a gallery of images for the Web
    2. Crete a rollover button
    3. Create a Web animation
    4. Optimize an image for the Web in image Ready.
    5. Resize and optimize an image for the Web in Photoshop
    6. Save a file to e-mail.
14. How to Customize Automate: -It has the following options under it.
    1. Automate a task
    2. Add contrast to a photo
    3. Choose a scanning resolution
    4. Crop, straighten, or rotate a photo
    5. Fix red eyes
    6. Lighten or darken a photo
    7. Lighten or darken an area in a photo (dodge or bum)
    8. Make a photo frame
    9. Remove a color cast
    10. Remove an object from a photo
    11. Sharpen a photo
    12. Touch up spots, scratches, and wrinkles
15. How to paint and Draw: -It has following options under it.
    1. Create a custom brush
    2. Draw a circle or square
    3. Draw a custom shape
    4. Draw a doughnut or wheel shape
    5. Draw a path
    6. Edit a brush
    7. Get the brush cursor back
    8. Set brush pressure sensitivity for digitizing tablet
    9. Set option for the shape tools
    10. Stroke a path
    11. Use a clipping path to create transparency.

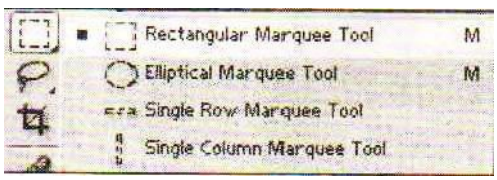
16. How to Prepare Art for Other Application: -
    It has the following options under it.
    1. Export to Macromedia(R)Flash TM(SWF)
    2. Prepare images to place in page layout program
    3. Put Adobe Illustrator artwork into programs
    4. Put Photoshop artwork into Adobe Illustrator.
17. How to Print Photos: -
    It has the following option under it.
    1. Print multiple photos on a page.
    2. Resize an image an image for printing.
18. How to Work with Color: -
    It has the following options under it.
    1. Convert a color photo to black and white
    2. Replace a color in an image
19. How to Work with Layers and Selections
    It has the following options under
    1. Align object on different layers
    2. Blend two images
    3. Hide and show a combination of layers
    4. Mask part of an image
    5. Move single and multiple objects
    6. Organize layers into layer sets
    7. Rotate a layer
    8. Soften the edge of a selection
    9. Unlock the background layer
20. How to Work with Type
    It has the following options under it.
    1. Add a drop shadow
    2. Bend type
    3. Change the color of individual letters
    4. Change the font on multiple layers
    5. Fill type with an image
    6. Put type on a path

Tools of Photoshop: -

Photoshop has a lot of tools. These tools are available in the form of a Tool Bar on the left side of the screen. Let see one by one how these tools work.

Rectangular Marquees: -

This is the first tool on the toolbar. If pressed it gives rise to the various



tools available under it.

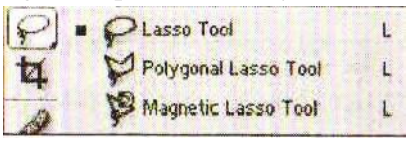
Click the Marquee tool in the toolbox. Move the tool over the blank canvas of your file and see the result. You can create a rectangular marquee with it as shown on the next page.

Various types of style which can be used are Normal. Constrained Aspect Ratio and Fixed Size. If you press and hold Shift key after you have made your first selection before you click again, you can make additional selections.

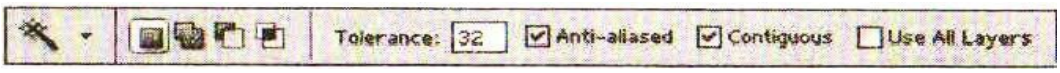
1. Move Tool: -This took is used to move the object from one place to another. Click the Move tool in the toolbox.

The move tool lets you drag a selection or layer to a new location in the image. With the info palette open, you can track the exact distance of the move.

2. Lasso Tool: -These tool are used when you have to select irregular shapes. Using the Lasso tool to select an object requires a steady hand and good hand- eye coordination.

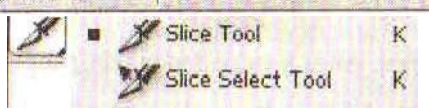


3. Magic Wand Tool: -This tool is the different from the other selection tools. The Magic Wand selects pixels somewhat differently. It selects them based on color values. This enables you to cut foreground objects, out of the background.



You cannot use the magic wand tool on an image in Bitmap mode.

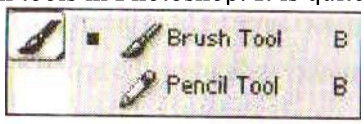
4. To use the magic wand tool: -
    1. Select the magic wand tool.
    2. In the options bar, specify a selection option. You can create a new selection, add to, subtract from, or restrict the selection. The magic wand cursor changes indicating which option is selected.
    3. For Tolerance, enter a valued in pixels, ranging from 0 to 255. Enter a low value to select colors very similar to the pixel you click or a higher value to select a broader range of colors.
    4. To define a smooth edge, select Anti-aliased.
    5. To select all are using the same colors, select Contiguous. Otherwise only the adjacent pixels will be selected.
    6. To select colors using data from all the visible layers, select Use all layers. Otherwise, the magic wand to selects colors from the active layer only.
    7. In the image, click the color you want to select. All adjacent pixels within the tolerance range are selected.
5. Cropping Tool: -This tool helps you in getting ridof unwanted parts of the picture. It forms part of the marquee tools submenu. You can also crop by making a selection with the rectangular marquee and then using the menu command image. Crop to crop the image.
6. Slice Tool: -You can create user-slices with the slice tool, from a layer, from a selection, or



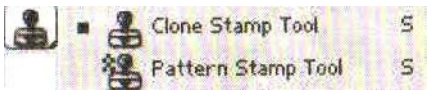
from guides, when you create a slice from a layer; the slice area encompasses all the pixel data in the layer. If you edit the layer's contents, the slice area automatically adjusts to encompass the new pixels.

1. Select the slice tool. Any existing slices automatically display in the document window.
2. Choose a style setting in the option bar.
   Normal to determine slice proportions by dragging. Constrained Aspect Ratio to set a height-to-width ratio. Enter whole numbers or decimals for the aspect ratio. For example, to create a slice twice as wide as it is high, enter 2 for the width and 1 for the height. Fixed Size to specify the slice's height and width. Enter pixel values in whole numbers.
3. Drag over the area where you want to create a slice. Hold down shift as you drag to constrain the slice to a square. Hold down Alt to drag from the center.

7. The Airbrush Tool: -The airbrush tool applies gradual tones(including sprays of color) to image, simulating traditional airbrush techniques. The edges of the stroke are more diffused than those created with the paintbrush tool. The pressure setting for the airbrush tool control how quickly the spray of paint is applied. If you hold down the mouse button without dragging. You can build up color.
8. Brush Tool: -This tool is the most important of all brush tools in Photoshop. It is quite similar to the Airbrush but here the paint is applied quite evenly.
   The paintbrush tool creates soft strokes of color.
   When selected it gives rise to the following options.

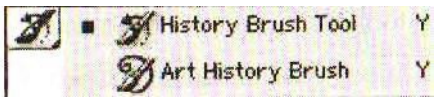


9. To use a paintbrush tool: -
   1. Specify a foreground color.
   2. Select the brush tool.
   3. Choose a size for the brush from the brush menu in the options bar. If a brush is too large to fit in the menu, if appears as a smaller brush with a number indicating the actual diameter in pixels.
   4. Drag in the image to paint.
      To draw a straight line with one of the painting tools, click a striating point in the image. Then hold down Shift, and click an ending point.
10. Clone Stamp Tool: -The clone stamp tool takes a sample of an image, which you can then apply over another image or part of the same image. Each stroke of the tool paints on more of the sample. Cross here mark the original sampling point.



11. To use the clone stamp tool: -
    1. Select the clone stamp tool.
    2. Choose a size for the brush from the brushes menu in the options bar. If brush is too large to fit in the menu. It appears as smaller brush with a number indicating the actual diameter in pixels.
    3. Position the pointer on the part of any open image you want to sample, and Alt-Click. This sample point is the location from which the image is duplicate as you paint.
    4. Drag to paint with the tool.
12. If you are sampling from one image and applying to another, both images must be in the same color mode.

13. History Brush Tool: -The history brush tool lets you paint a copy of one state or snapshot of an image into the current image window. This tool makes a copy, or sample, of the image



and then paints with it. For example, you might make a snapshot of a change you made with painting tool or filter. After undoing the change to the image, you could use the history brush tool to apply the change selectively to areas of the image. Unless you select a merged snapshot, the history brush tool paints from a layer in the selected state to the same layer in another state.

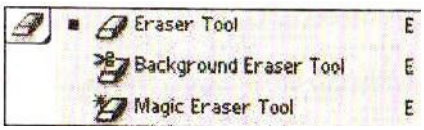
The history brush tool works similarly to the clone stamp tool, but on any state or snapshot of the image, not just the current one.

When selected it gives rise to the following options: -

14. To paint with a state or snapshot of an image: -
    1. Select the history brush tool.
    2. Specify the opacity and blending mode.
    3. Choose a brush size.
    4. If desired, select impressionist to paint with an “impressionistic” copy of the source state or snap shop. This option drags and smears the pixels as you paint.
    5. In the history palette, click the left column of the state or snapshot to use as the source for the history brush tool.
    6. Drag to paint with the history brush tool.
15. Eraser Tools: -

    You can also use the eraser to return the affected areas to a state selected in the History palette.

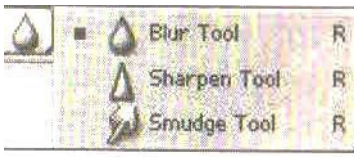
    When select it gives the following options: -



16. To use eraser tool: -
    1. Select the eraser tool (icon).
    2. Choose a size for the brush menu in the options bar. If a brush is too large to fit in the menu, it appears as a smaller brush with a number indicating the actual diameter in pixels.
    3. Choose the tool type you want to use as an eraser- paintbrush, airbrush, pencil, or block.
    4. Specify opacity to define the strength of the erasure. An opacity of 100% eraser pixels to complete transparency. A lower opacity eraser pixel to partial transparency.
    5. If you are using the paintbrush eraser, select Wet Edges to paint with a watercolor effect. When this is selected, the erased effect builds up along the edges of the brush stroke.
    6. To erase to a saved state or snapshot of the image, select Erase to History. To use the eraser tool in Erase to History mode, hold down all as you drag in the image.
    7. Specify how a brush strikes fades dynamically.
    8. Drag through the area you want to erase.
17. To use the paint bucket tool: -
    1. Specify a foreground color.

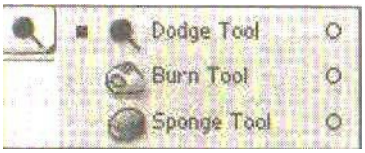
2. Select the paint bucket tool.
3. Specify whether to fill the selection with the foreground color or with a pattern.
4. Click the part of the image you want to fill. All adjacent pixels within the specified tolerance are filled with the foreground color or pattern.
   If you are working on a layer and don't want to fill transparent areas, make sure that the layer's transparency is locked in the layers palette.

18. Blur and Sharpen Tool: -
    The focus tools consist of the blur tool and the sharpen tool. The blur tool softens hard edges or areas in an image to reduce detail. The sharpen tool focuses soft edges to increase clarity or focus.



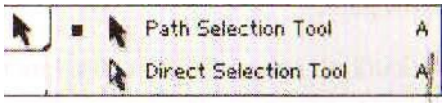
    When Blur tool is selected you get the following options: -

19. To use the blur or sharpen tool: -
    1. Select the blur tool or sharpen tool.
    2. Choose a size for the brush from the brushes menu in the options bar. If a brush is too large to fit in the menu, it appears as a smaller brush with a number indicating the actual diameter in pixels.
    3. Specify a blending mode and pressure.
    4. Select Use All Layers to blur or sharpen using data from all visible layers. IF this is deselected, the tool uses data from only the active layer.
    5. If you are using a pressure sensitive drawing tablet, specify the effects of stylus pressure.
    6. Drag over the part of the image you want to blur or sharpen.
20. Dodge Tool: -The toning consists of the dodge tool and the burn too. Used to lighten or darken areas of the image, the dodge and burn tools are based on a traditional photographer's technique for regulating exposure on specify areas of a print. Photographers hold back light to lighten an area on the print (dodging) or increase the exposure to darken areas on a print (burning).



    When selected it give use to the following options: -

21. To use the dodge or burn tool: -
    1. Selected the dodge tool or burn tool.
    2. Choose a size for the brush from the brushes menu in the options bar.
    3. Select what to change in the image.
       Midtones to change the middle range of grays.Shadows to change the dark areas.
       Highlight to change the light areas.
    4. Drag over the part of the image you want to modify.
22. Path component selection tool: -Since there are two different types of data in image, rasterized and vector, you need to use separate sets of tools to make each type of selection. You can select pixels or make non-pixel selections. When you select pixels, you are selection



resolution dependent information in the image. Additionally, you can also select resolution and independent paths and vector objects (or layer masks) in an image using the vector selection tools.

You can select path and vector objects by clicking with the path component selection tool or the direct selection tool.

Selecting a path or segment display all of the anchor point on the selected portion. Including any direction lines and direction points of the selected segment is curved. Direction points appear as filled circles. Selected anchor points as filled squares and unselected anchor points as hollow squares.

When selected this gives rise to the following options: -

23. To select a path or vector object: -
    1. Select the path name in the paths palette, or select the layers containing the vector object in the Layers palette.
    2. Do one of the following: -

       To select the entire path or subpath, select the path component selection tool, and click anywhere inside the path, if the path consists of several subpaths, only the subpath under the pointer is selected.

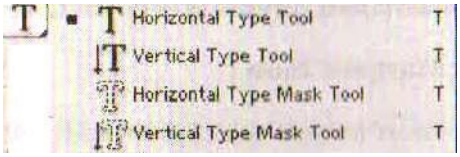
       To display the bounding box along with the selected path, select Show Bounding Box in the options bar.

       To select a segment of the path, select the direct selection tool, and click one of the segment's anchor points or drag a marquee over part of the segment.

       Marquee drags to select segment. When the direct selection tool is selected, you can select the entire path or subpath by holding down all and clicking inside the path.
    3. To add selections, select the path component selection tool or the direct selection tool, and then hold down Shift while selecting additional paths or segments. To active the direct selection tool when any other tool is selected, position the pointer over an anchor point, and press Ctrl.

       To add, subtract, restrict, or invert the filled areas in selections: -
       1. Using the path component selection tool, chose one of the following options in the options bar, the drag a marquee to select existing path areas.

          Add to Path Area adds the area in the new selection. Subtract from path area removes the overlapping area in new selection from the existing path selection. Restrict path area, restricts the area to the overlapped range of the selections and the existing path selection. Invert path area, invert the overlap area of the new path selection within the new selection.
24. Type Tool: -You can insert new text, change existing text, and delete text in type layers.



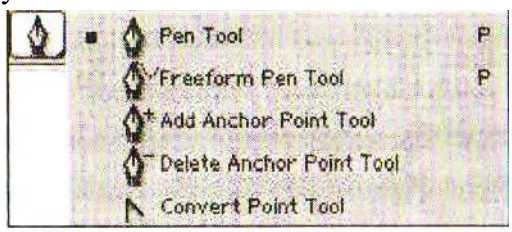
When selected this tool gives rise to the following options: -

25. To edit text in a type layer: -
    1. Select the type tool.
    2. Select the type layer palette or click in the text to automatically select a type layer.
    3. Position the cursor in the and do one of the following: -

Click to set the insertion point. Select one or more characters you want to edit.

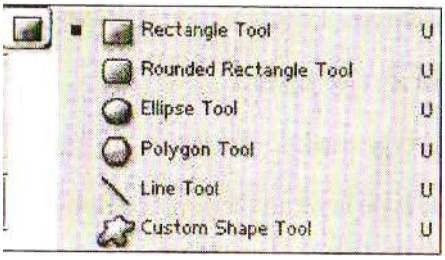
4. Enter text as desired.
5. Commit the changes to the type layer.

26. Pen Tool: -The info palette displays information about the color values beneath the pointer and, depending on the tool in use, other useful measurements.
    Various shown by the tool when selected are: -



    It is used to draw various cervical lines on the screen.

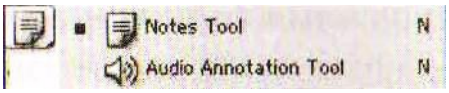
27. Rectangular Marquee Tools: -The marquee tools let you select rectangles, ellipses, rounded rectangles, and 1-pixel row and columns. By default, the selection border is dragged from its corner.



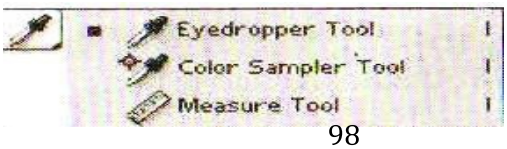
    When selected it gives rise to the following options

28. To use marquee tools: -
    1. For the rectangle, rounded rectangle, or elliptical marquee, choose a style in the options bar.
       Normal to determine marquee proportions by dragging. Constrained Aspect Ratio to set a height-to-width- ratio. Enter the values (including decimal valued) for the aspect.
    2. Do one of the following to make a selection:
       With the rectangle, rounded rectangle, or elliptical marquee, drag over the area you want to select. Hold down Shift as you drag to constrain the marquee to a square or circle. To drag a marquee from its center, hold down Alt after you begin dragging. With the single row or single row or single column marquee, click here, these are you want to select. And then drag the marquee to the exact location. If no marquee is visible, increase the magni cation of you image view.

29. Notes Tool: -This tool is used to write notes on the image. This note is only visible and would not be printed while printing.



30. Eye dropper Tool: -You can view the color of a single area using the eyedropper tool or you can up to four color samplers to display color information for one or more location in the image. These samplers are saved in the image, so you can refer to them repeatedly as you work, even if you close and reopen the image.
    (To use the in for palette and the eye dropper or color sampler tool to see color values: -

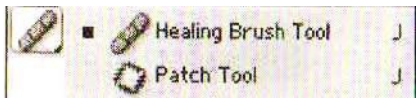


1. Choose window>show info to open the info palette.
2. Select the eye dropper tool or color sampler tool, and choose what to sample from the prop-up menu in the eye dropper or color sampler tool options: -
   Point Sample to read the value of a single pixel. 3 –by 3 Average to read to average value of a 3 –by 3 pixel area. A5by 5 Average to read to average value of a 5 by 5 pixel area.
3. If you selected the color sample tool, place up to four-color samplers on the image. Click where you want to place a sampler.
4. Open a color adjustment dialog box.
5. Make your adjustment in the dialog box, and before applying them, view the before and after color values in the info palette.
   To view color valued using the eye dropper tool, move the pointer over the area of the image you want to examine. Opening a color adjustment dialog box activates the eye dropper tool outside the dialog box. You still have access to the scroll controls and to the hand and zoom tools when using keyboard modifiers. To view the color values under the color samplers, look at the bottom half of the info palette.

31. To use the eye dropper tool and color palette to see color values: -
    1. Choose window>show color to open the color palette.
    2. Open a color adjustment dialog box. This activates the eye dropper tool outside the dialog box.
    3. Click the pixel you want to check in the image.
    4. Make the adjustment in the dialog box and before applying them view the adjustment color values in the Color palette.
32. Hand Tool: -This tool is used if the entire image is not visible in the document window, you can navigate to bring another area of the image into view. In Photoshop, you can also use the

    Navigator palette to quickly change the view of an image.
33. Zoom tool: -You can magnify or reduce your view using various methods. The window' title bar displays the zoom percentage (unless the window is too small for the display to fit), as does the status bar at the bottom of the window.

34. Healing Brush Tool: -Photoshop 7 onwards there is a new tool called Healing Brush Tool. This tool lets you correct imperfections, causing them to disappear into the surrounding image. Like the cloning tools, you use the healing brush tool to paint with sampled pixels from an image of pattern. However, the healing brush tool also matches the texture, lighting and shading of the sampled pixels to the sources pixels. As a result, the required pixels blend seamlessly into the rest of the image.



    For the healing brush tool in sampling mode, set the sampling point by positioning the pointer in any open image and Alt-clicking.
35. Drag in the image: -The sampled pixels are melded with the existing pixels each time you release the mouse button. Look in the status bar to view the status of the melding process. If there is a strong contrast at the edges of the area you want to heal, make a selection before

you use the healing brush tool. The selection should be bigger than the area you want to heal but precisely follow the boundary of contrasting pixels. When you paint with the leading brush tool, the selection will prevent colors from bleeding in, from the outside.

Some Important Shortcut keys:-

Command	Shortcut
File	
New…	Ctrl+N
Open…	Ctrl+O
Browser…	Alt+Ctlr+Oshift+Ctrl+O
Open As…	Alt+Shift+Ctrl+O
Edit In Image Ready…	Shift+Ctrl+M
Close…	Ctrl+W
Close All…	Alt+Ctrl+W
Close and Go to Bridge…	Shift+Ctrl+W
Save …	Strl+S
Save As…	Alt+Ctrl+S
	Alt+ctrl+S
Save a Version…	
Save for web…	Alt+Shift+Ctrl+S
Revert…	F12
File Info…	Alt+Shift+Ctrl+I
Page Setup…	Shift+Ctrl+P
Print with Preview…	Alt+Ctrl+P
Print…	Ctrl+P
Print One Copy…	Alt+Shift+Ctrl+P
Print Online…	
Exit	Ctrl+Q
Edit	
Undo/Redo	Ctrl+Z

Step Forward	Shift+Ctrl+Z
Step Backward	Alt+Ctrl+Z
Fade….	Shift+Ctrl+F
Cut	Ctrl+XF2
Copy	Ctrl+CF3
Copy merged	Shift+Ctrl+C
Paste	Ctrl+VF4
Paste Into	Shift+Ctrl+V
Fill….	Shift+F5
Free Transform	Ctrl+T
Transform>	
Again	Shift+Ctrl+T
Color Setting	Shift+Ctrl+K
Keyboard Shortcut	Alt+Shift+Ctrl+K
Menu	Alt+Shift+Ctrl+M
Preferences>	
General	Ctrl+K

Image	
Adjustment>	
Levels…	Ctrl+L
Auto Levels	Shift+Ctrl+L
Auto Contrast	Alt+Shift+Ctrl+B
Auto color	Shift+Ctrl+B
Curces…	Ctlr+M
Color Balance…	Ctrl+B
Hue/Saturation…	Ctrl+U
Desaturate	Shift+Ctrl+U
Image Size…	Alt+Ctrl+I

Canvas Size…	Alt+Ctrl+C
Layer	
New	
Layer…	Shift+Ctrl+N
Layer via Copy	Ctrl+J
Layer via cut	Shift+Ctrl+J
Create/Release Clipping Mask	Alt+Ctrl+G
Group Layers	Ctrl+G
Ungroup Layer	Shift+Ctrl+G
Bring to Front	Shift+Ctrl+]
Bring To Forward	Ctrl+]
Bring to Backward	Ctrl+[
Sent to Back	Chift+Cltlr+[
Merge Layers	Ctrl+E
Merge Visible	Shift+Ctrl+E
Select	
All	Ctrl+A
Deselect	Ctrl+D
Reselect	Shift+Ctrl+D
Inverse	Shift+Ctrl+IShift+F7
All Layers	Alt+Ctrl+A
Feather	Alt+Ctrl+Dshift+F6
Filter	
Last Filter	Ctrl+F
Extract	Alt+Ctrl+X
Liquify	Shift+Ctrl+X
Pattern Maker	Alt+Shift+Ctrl+X

Vanishing Point	Alt+Ctrl+V

View

Proff Setup>	
Proff Colors	Ctrl+Y
Gamut Warning	Shift+Ctrl+Y
Zoon In	Ctrl++Ctrl+=
Zoom Out	Ctrl+-
Fit on Screen	Ctrl+0
Actual Pixels	Alt+Ctrl+0
Extras	Ctrl+H
Show>	
Target Path	Shift+Ctrl+H
Grid	Ctrl+’
Guides	Ctrl+;
Rulers	Ctrl+R
Snap	Shift+Ctrl+;
Lock Guides	Alt+Ctrl+;
Actions	Alt+F9 F9
Brushes	F5
Color	F6
Info	F8
Layers	F7
Help	
Photoshop Help	F1
Palette Menus	
Animation	
New Frame	Alt+Shift+Ctrl+F

History	
Step Forward	Shift+Ctrl+Z
Step Backward	Alt+Ctrl+Z
Layers	
New Layer…	Shift+Ctrl+N
Create/Release Clipping Mask	Alt+Ctrl+G
Merge Layers	Ctrl+E
Merge Visible	Shift+Ctrl+E
Tools	
Rectangular Marquee tool	M
Elliptical Marquee Tool	M
Move Tool	V
Lasso Tool	L
Polygonal Lasso Tool	L
Magnetic Lasso Tool	L
Magic Wand Tool	W
Crop Tool	C
Slice Tool	K
Slice Select Tool	K
Spot Healing Brush Tool	J
Healing Brush Tool	J
Patch Tool	J
Red Eye Tool	J
Brush Tool	B
Pencil Tool	B
Color Replacement Tool	B
Clone Stamp Tool	S
Pattern Stamp Tool	S
History Brush Tool	Y

Art History Brush	Y
Eraser Tool	E
Background Eraser tool	E
Magic Eraser Tool	E
Gradient Tool	G
Paint Bucket Tool	G
Blur Tool	R
Sharpen Tool	R
Smudge Tool	R
Dodge Tool	O
Burn Tool	O
Sponge Tool	O
Path Selection Tool	A
Direct Selection Tool	A
Horizontal Type Tool	T
Vertical Type tool	T
Horizontal Type Mask Tool	T
Vertical type Mask Tool	T
Pen Tool	P
Freeform Pen Tool	P
Rectangle Tool	U
Rounded Rectangle Tool	U
Ellipse Tool	U
Polygon Tool	U
Line Tool	U
Custom Shape Tool	U
Notes Tool	N
Audio Annotation Tool	N
Eye dropper Tool	I

Color Sampler Tool	I
Measure Tool	I
Hand Tool	H
Zoom Tool	Z
Default Foreground/Background Colors	D
Switch Foreground/Background Color	X
Toggle Standard/Quick Mask Modes	Q
Toggle Screen Modes	F
Toggle Preserve Transparency	/
Decrease Brush Size	[
Increase Brush Size	]
Decrease Brush Hardness	{
Increase Brush Hardness	}
Previous Brush	,
Next Brush	.
First Brush	<
Last Brush	>

The Basics of C Programming

Chapter 1

Basics of C programming

The C programming language is a popular and widely used programming language for creating **computer programs**. Programmers embrace C because it gives maximum control and efficiency to the programmer.

If you are a programmer, or if you are interested in becoming a programmer, there are a couple of benefits you gain from learning C:

- You will be able to read and write code for a large number of platforms – everything from microcontrollers to the most advanced scientific systems can be written in C.
- Because of the performance and portability of C, almost all popular cross-platform programming languages and scripting languages, such as C++, Java, Python, Objective-C, Perl, Ruby, PHP, Lua, and Bash, are implemented in C and borrowed syntaxes and functions heavily from C. They share the similar operators, expressions, repetition statements, control structures, arrays, input and output, and functions. Furthermore, almost all languages can interface with C and C++ to take advantage of a large volume of existing C/C++ libraries.

In this article, we will walk through the entire language and show you how to become a C programmer, starting at the beginning.

What is C?

C is a computer *programming language*.That means that you can use C to create lists of instructions for a computer to follow. C is one of thousands of programming languages currently in use. C has been around for several decades and has won widespread acceptance because it gives programmers maximum control and efficiency. C is an easy language to learn. It is a bit more cryptic in its style than some other languages, but you get beyond that fairly quickly.

C is what is called a *compiled language*. This means that once you write your C program, you must run it through a *C compiler* to turn your program into an *executable* that the computer can run (execute).The C program is the human-readable form, while the executable that comes out of the compiler is the machine-readable and executable form. What this means is that to write and run a C program, you must have access to a C compiler.

We will start at the beginning with an extremely simple C program and build up from there. I will assume that you are using the Linux command line and gcc as your environment for these examples; if you are not, all of the code will still work fine – you will simply need to understand and use whatever compiler you have available.

The simplest C program,I

Let's start with the simplest possible C program and use it both to understand the basics of C and the C compilation process. Type the following program into a standard text editor. Then save the program to a file named **samp.c**. If you leave off**. c**, you will probably get some sort of error when you compile it, so make sure you remember the**. c**. Also, make sure that your editor does not automatically append some extra characters (such as .txt) to the name of the file. Here's the first program:

```
#include <stdio.h>

int main(void)
{
```

```
  printf("This is output from my first program!\n");
  return 0;
}
```

Spacing and indentation

When you enter this program, position **#include** so that the pound sign is in column 1 (the far left side). Otherwise, the spacing and indentation can be any way you like it. On some Linux systems, you will find a program called **indent**, which will format code for you. The spacing and indentation shown above is a good example to follow.

Compilation and run

When executed, this program instructs the computer to print out the line "This is output from my first program!" – then the program quits. You can't get much simpler than that!

To compile this code on a Linux machine, type

```
gcc samp.c- o samp
```

This line invokes the C compiler called gcc, asks it to compile samp.c and asks it to place the executable file it creates under the name **samp**. To run the program, type

```
./samp
```

You should see the output "This is output from my first program!" when you run the program.

If you mistype the program, it either will not compile or it will not run. If the program does not compile or does not run correctly, edit it again and see where you went wrong in your typing. Fix the error and try again.

The simplest C program, II

Let's walk through this program and start to see what the different lines are doing:

```
#include <stdio.h>

int main(void)
{
  printf("This is output from my first program!\n");
  return 0;
}
```

- This C program starts with **#include <stdio.h>**. This line *includes* the "**st**an**d**ard **i**nput/**o**tput library" into your program. The standard I/O library lets you read input from the keyboard (called "standard in"), write output to the screen (called "standard out"), process text files stored on the disk, and so on. It is an extremely useful library. C has a large number of standard libraries like stdio, including string, time and math libraries. A *library*is simply a package of code that someone else has written to make your life easier (we'll discuss libraries a bit later).

- The line **int main(void)** declares the main function. Every C program must have a function named **main** somewhere in the code. We will learn more about functions shortly. At run time, program execution starts at the first line of the main function.

- In C, the **{** and **}** symbols mark the beginning and end of a block of code. In this case, the block of code making up the main function contains two lines.

- The **printf** statement in C allows you to send output to standard out (for us, the screen). The portion in quotes is called the *format string* and describes how the data is to be formatted when printed. The format string can contain string literals such as "This is output from my first program!," symbols for carriage returns (\n), and operators as placeholders for variables (see below).

- The **return 0;** line causes the function to return an error code of 0 (no error) to the shell that started execution. More on this capabilitya bit later.

Variables

As a programmer, you will frequently want your program to "remember" a value. For example, if your program requests a value from the user, or if it calculates a value, you will want to remember it somewhere so you can use it later. The way your program remembers things is by using *variables*. For example:

```
int b;
```

This line says, "I want to create a space called b that is able to hold one integer value." A variable has a *name* (in this case, **b**) and a *type* (in this case, **int**, an integer). You can store a value in **b** by saying something like:

```
b = 5;
```

You can use the value in **b** by saying something like:

```
printf("%d", b);
```

In C, there are several standard types for variables:

- **int** - integer (whole number) values
- **float** - floating point values
- **char** - single character values (such as "m" or "Z")

We will see examples of these other types as we go along.

Chapter 2

Input and output

printf

The *printf statement allows you to send output to standard out.* For us, standard out is generally the screen (although you can redirect standard out into a text file or another command).

Here is another program that will help you learn more about printf:

```
#include <stdio.h>

int main(void)
{
    int a, b, c;
    a = 5;
    b = 7;
    c = a + b;
    printf("%d + %d = %d\n", a, b, c);
    return 0;
}
```

Type this program into a file and save it as **add.c**. Compile it with the line **gcc add.c -o add** and then run it by typing **./add**. You will see the line "5 + 7 = 12" as output.

Here is an explanation of the different lines in this program:

- The line **int a, b, c;** declares three integer variables named **a**, **b** and **c**. Integer variables hold whole numbers.
- The next line initializes the variable named **a** to the value 5.
- The next line sets **b** to 7.
- The next line adds **a** and **b** and "assigns" the result to **c**.

  The computer adds the value in **a** (5) to the value in **b** (7) to form the result 12, and then places that new value (12) into the variable **c**. The variable **c** is assigned the value 12. For this reason, the = in this line is called "the assignment operator."
- The **printf** statement then prints the line "5 + 7 = 12." The **%d** place holders in the printf statement act as place holders for values. There are three %d placeholders, and at the end of the printf line there are the three variable names: **a**, **b** and **c**. C matches up the first %d with a and substitutes 5 there. It matches the second %d with b and substitutes 7. It matches the third %d with c and substitutes 12. Then it prints the completed line to the screen: 5 + 7 = 12. The **+**, the **=** and the spacing are a part of the format line and get embedded automatically between the %d operators as specified by the programmer.

Let's look at some variations to understand printf completely. Here is the simplest printf statement:

```
printf("Hello");
```

This call to printf has a format string that tells printf to send the word "Hello" to standard out. Contrast it with this:

```
printf("Hello\n");
```

The difference between the two is that the second version sends the word "Hello" followed by a carriage return to standard out.

The following line shows how to **output the value of a variable using printf**.

```
printf("%d", b);
```

The **%d** is a placeholder that will be replaced by the value of the variable **b** when the printf statement is executed. Often, you will want to embed the value within some other words. One way to accomplish that is like this:

```
printf("The temperature is ");
printf("%d", b);
printf(" degrees\n");
```

An easier way is to say this:

```
printf("The temperature is %d degrees\n", b);
```

You can also use multiple %d placeholders in one printf statement:

```
printf("%d + %d = %d\n", a, b, c);
```

In the printf statement, it is extremely important that the number of *operators* in the format string corresponds exactly with the number and type of the variables following it. For example, if the format string contains three %d operators, then it must be followed by exactly three parameters and they must have the same types in the same order as those specified by the operators.

You can print all of the normal C types with printf by using different placeholders:

- **int** (integer values) uses **%d**

- **float** (floating point values) uses **%f**
- **char** (single character values) uses **%c**
- **character strings** (arrays of characters, discussed later) use **%s**

You can learn more about the nuances of printf on a Linux machine by typing **man 3 printf**.

scanf

The previous program is good, but it would be better if it read in the values 5 and 7 from the user instead of using constants. Try this program instead:

```
#include <stdio.h>

int main(void)
{
    int a, b, c;
    printf("Enter the first value:");
    scanf("%d", &a);
    printf("Enter the second value:");
    scanf("%d", &b);
    c = a + b;
    printf("%d + %d = %d\n", a, b, c);
    return 0;
}
```

Make the changes, then compile and run the program to make sure it works. Note that scanf uses the same sort of format string as printf (type **man scanf** for more info). Also note the & in front of a and b. This is the *address operator* in C: It returns the address of the variable (this will not make sense until we discuss pointers). You must use the & operator in scanf on any variable of type char, int, or float, as well as structure types (which we will get to shortly). If you leave out the & operator, you will get an error when you run the program.Try it so that you can see what that sort of run-time error looks like.

The scanf function allows you to accept input from standard in, which for us is generally the keyboard. The scanf function can do a lot of different things, but it is generally unreliable unless used in the simplest ways. It is unreliable because it does not handle human errors very well. But for simple programs it is good enough and easy-to-use.

The simplest application of **scanf** looks like this:

```
scanf("%d", &b);
```

The program will read in an integer value that the user enters on the keyboard (%d is for integers, as is printf, so b must be declared as an int) and place that value into b.

The scanf function uses the same placeholders as printf:

- **int** uses **%d**
- **float** uses **%f**
- **char** uses **%c**
- **character strings** (discussed later) use **%s**

You must put **&** in front of the variable used in scanf. The reason why will become clear once you learn about **pointers**. It is easy to forget the & sign, and when you forget it your program will almost always crash when you run it.

In general, it is best to use scanf as shown here – to read a single value from the keyboard. Use multiple calls to scanf to read multiple values. In any real program, you will use the **gets** or **fgets** functions instead to read text a line at a time. Then you will "parse" the line to read its values. The reason that you do that is so you can detect errors in the input and handle them as you see fit.

The printf and scanf functions will take a bit of practice to be completely understood, but once mastered they are extremely useful.

Programming exercise

1. Modify the following program so that it accepts three values instead of two and adds all three together:

```
#include <stdio.h>

int main(void) {
    int a, b, c;
    printf("Enter the first value:");
    scanf("%d", &a);
    printf("Enter the second value:");
    scanf("%d", &b);
    c = a + b;
    printf("%d + %d = %d\n", a, b, c);
    return 0;
}
```

2. Try deleting or adding random characters or words in one ofthe previous programs and watch how the compiler reacts to these errors.

   For example, delete the b variable in the first line of the above program and see what the compiler does when you forget to declare a variable. Delete a semicolon and see what happens. Leave out one of the braces. Remove one of the parentheses next to the main function. Make each error by itself and then run the program through the compiler to see what happens. By simulating errors like these, you can learn about different compiler errors, and that will make your typos easier to find when you make them for real.

Chapter 3

Branching and looping

if statement

Here is a simple C program demonstrating an if statement:

```
#include <stdio.h>

int main(void)
{
    int b;
    printf("Enter a value:");
    scanf("%d", &b);
    if (b < 0)
    {
        printf("The value is negative\n");
    }
    return 0;
}
```

This program accepts a number from the user. It then tests the number using an if statement to see if it is less than 0. If it is, the program prints a message. Otherwise, the program is silent.The **(b < 0)** portion of the program is the Boolean expression. C evaluates this expression to decide whether or not to printthe message. If the

Boolean expression evaluates to **True**, then C executes the single line immediately following the if statement (or a block of lines within braces immediately following the if statement). If the Boolean expression is **False**, then C skips the line or block of lines immediately following the if statement.

Here's slightly more complex example:

```
#include <stdio.h>

int main(void)
{
    int b;
    printf("Enter a value:");
    scanf("%d", &b);
    if (b < 0)
    {
        printf("The value is negative\n");
    }
    else if (b == 0)
    {
        printf("The value is zero\n");
    }
    else
    {
        printf("The value is positive\n");
    }
    return 0;
}
```

In this example, the **else if** and **else** sections evaluate for zero and positive values as well.

Boolean expressions

Here is a more complicated Boolean expression:

```
if ((x == y) && (j > k))
{
    z = 1;
}
else
{
    q = 10;
}
```

This statement says, “If the value in variable x equals the value in variable y, and if the value in variable j is greater than the value in variable k, then set the variable z to 1, otherwise set the variable q to 10.” You will use if statements like this throughout your C programs to make decisions. In general, most of the decisions you make will be simple ones like the first example; but on occasion, things get more complicated.

Notice that C uses **==** to **test for equality**, while it uses **=** to **assign a value** to **a** variable. The **& &** in C represents a Boolean AND operation.

Here are all of the Boolean operators in C:

```
equality        ==
less than       <
Greater than    >
=<              =<
=>              =>
inequality      !=
and             &&
or              ||
not             !
```

= vs == in boolean expressions

The **==** sign is a problem in C because every now and then you may forget and type just **=** in a Boolean expression. This is an easy mistake to make, but to the compiler there is a very important difference. C will accept either **=** and **==** in a

Boolean expression – the behavior of the program changes remarkably between the two, however.

Boolean expressions evaluate to integers in C, and integers can be used inside of Boolean expressions. The integer value 0 in C is False, while any other integer value is True. The following is legal in C:

```
#include <stdio.h>

int main(void)
{
    int a;

    printf("Enter a number:");
    scanf("%d", &a);
    if (a)
    {
        printf("The value is True\n");
    }
    return 0;
}
```

If **a** is anything other than 0, the printf statement gets executed.

In C, a statement like **if (a = b)** means,"Assign **b** to **a**, and then test **a** for its Boolean value." So if **a** becomes 0, the if statement is False; otherwise, it is True. The value of **a** changes in the process. This is not the intended behavior if you meant to type **==** (although this feature is useful when used correctly), so be careful with your **=** and **==** usage.

while loop

You'll find that **while** statements are just as easy to use as if statements. For example:

```
while (a < b)
{
    printf("%d\n", a);
    a = a + 1;
}
```

This causes the two lines within the braces to be executed repeatedly until **a** is greater than or equal to **b**. The while statement in general works as illustrated to the right.

do-while loop

C also provides a **do-while** structure.

```
do
{
    printf("%d\n", a);
    a = a + 1;
}
while (a < b);
```

for loop

The **for loop** in C is simply a shorthand way of expressing a while statement. For example, suppose you have the following code in C:

```
x = 1;
while (x < 10)
{
    blah blah blah
    x++; /* x++ is the same as saying x = x+1 */
```

```
}
```

You can convert this into a for loop as follows:

```
for(x = 1; x < 10; x++)
{
    blah blah blah
}
```

Note that the while loop contains an initialization step (**x=1**), a test step (**x<10**,) and an increment step (**x++**). The for loop lets you put all three parts onto one line, but you can put anything into those three parts. For example, suppose you have the following loop:

```
a = 1;
b = 6;
while (a < b)
{
    a++;
    printf("%d\n",a);
}
```

You can place this into a for statement as well:

```
for (a = 1, b = 6; a < b; a++)
{
    printf("%d\n",a);
}
```

It is slightly confusing, but it is possible.The **comma operator** lets you separate several different statements in the initialization and increment sections of the for loop (but not in the test section). Many C programmers like to pack a lot of information into a single line of C code; but a lot of people think it makes the code harder to understand, so they break it up.

Looping: an example

Let's say that you would like to create a program that prints a Fahrenheit-to-Celsius conversion table. This is easily accomplished with a for loop or a while loop:

```
#include <stdio.h>

int main(void)
{
    int a = 0;
    while (a <= 100)
    {
        printf("%4d degrees F = %4d degrees C\n",
            a, (a   32) * 5 / 9);
        a = a + 10;
    }
    return 0;
}
```

If you run this program, it will produce a table of values starting at 0 degrees F and ending at 100 degrees F. The output will look like this:

```
   0 degrees F =   17 degrees C
  10 degrees F =   12 degrees C
  20 degrees F =    6 degrees C
  30 degrees F =    1 degrees C
  40 degrees F =    4 degrees C
  50 degrees F =   10 degrees C
  60 degrees F =   15 degrees C
  70 degrees F =   21 degrees C
  80 degrees F =   26 degrees C
  90 degrees F =   32 degrees C
 100 degrees F =   37 degrees C
```

The table's values are in increments of 10 degrees. You can see that you can easily change the starting, ending or increment values of the table that the program produces.

If you wanted your values to be more accurate, you could use **floating point** values instead:

```
#include <stdio.h>

int main(void)
{
    float a = 0;
    while (a <= 100)
    {
        printf("%6.2f degrees F = %6.2f degrees C\n",
            a, (a   32.0) * 5.0 / 9.0);
        a = a + 10;
    }
    return 0;
}
```

You can see that the declaration for **a** has been changed to a float, and the **%f** symbol replaces the **% d** symbol in the printf statement. In addition, the %f symbol has some formatting applied to it: The value will be printed with six digits preceding the decimal point and two digits following the decimal point.

Now let's say that we wanted to modify the program so that the temperature 98.6 is inserted in the table at the proper position. That is, we want the table to increment every 10 degrees, but we also want the table to include an extra line for 98.6 degrees F because that is the normal body temperature for a human being. The following program accomplishes the goal:

```
#include <stdio.h>

int main(void)
{
  float a = 0;
  while (a <= 100)
  {
    if (a > 98.6)
```

```
    {
        printf("%6.2f degrees F = %6.2f degrees C\n",
            98.6, (98.6   32.0) * 5.0 / 9.0);
    }
    printf("%6.2f degrees F = %6.2f degrees C\n",
        a, (a   32.0) * 5.0 / 9.0);
    a = a + 10;
  }
  return 0;
}
```

This program works if the ending value is 100, but if you change the ending value to 200 you will find that the program has a **bug**. It prints the line for 98.6 degrees too many times. We can fix that problem in several different ways. Here is one way:

```
#include <stdio.h>

int main(void)
{
  float a, b;
  a = 0;
  b =  1;
  while (a <= 100)
  {
    if ((a > 98.6) && (b < 98.6))
    {
      printf("%6.2f degrees F = %6.2f degrees C\n",
          98.6, (98.6   32.0) * 5.0 / 9.0);
    }
    printf("%6.2f degrees F = %6.2f degrees C\n",
        a, (a   32.0) * 5.0 / 9.0);
    b = a;
    a = a + 10;
  }
  return 0;
```

```
}
```

Programming exercise

1. Try changing the Fahrenheit-to-Celsius program so that it uses scanf to accept the starting, ending and increment value for the table from the user.
2. Add a heading line to the table that is produced.
3. Try to find a different solution to the bug fixed by the previous example.
4. Create a table that converts pounds to kilograms or miles to kilometers.

Chapter 4

Arrays

In this section, we will create a small C program that generates 10 random numbers and sorts them. To do that, we will use a new variable arrangement called an *array*.

An array lets you declare and work with a collection of values of the same type. For example, you might want to create a collection of five integers. One way to do it would be to declare five integers directly:

```
int a, b, c, d, e;
```

This is okay, but what if you needed a thousand integers? An easier way is to declare an array of five integers:

```
int a[5];
```

The five separate integers inside this array are accessed by an **index**. All arrays start at index zero and go to n-1 in C. Thus, **int a[5];** contains five elements. For example:

```
int a[5];

a[0] = 12;
a[1] = 9;
a[2] = 14;
a[3] = 5;
a[4] = 1;
```

One of the nice things about array indexing is that you can usea loop to manipulate the index. For example, the following code initializes all of the values in the array to 0:

```
int a[5];
int i;
for (i = 0; i < 5; i++)
{
    a[i] = 0;
}
```

You declare arrays by inserting an array size after a normal declaration, as shown below:

```
int a[10];          /* array of integers */
char s[100];        /* array of characters */
float f[20];        /* array of reals */
struct rec r[50]; /* array of records */
```

Programming exercise

- In the first piece of code, try changing the for loop that fills the array to a single line of code. Make sure that the result is the same as the original code.

- Take the bubble sort code out and put it into its own function.The function header will be **void bubble_sort()**. Then move the variables used by the bubble sort to the function as well, and make them local there. Because the array is global, you do not need to pass parameters.
- Initialize the random number seed to different values.

The following code initializes the values in the array sequentially and then prints them out:

```
#include <stdio.h>

int main(void)
{
    int a[5];
    int i;

    for (i = 0; i < 5; i++)
    {
        a[i] = i;
    }
    for (i = 0; i < 5; i++)
    {
        printf("a[%d] = %d\n", i, a[i]);
    }
}
```

Arrays are used all the time in C. To understand a common usage, start an editor and enter the following code:

```
#include <stdio.h>

#define MAX 10

int a[MAX];
int rand_seed=10;
```

```
/*
 * from K&R  produces an integer random number
 * between 0 and 32767.
 */

int rand(void)
{
    rand_seed = rand_seed * 1103515245 + 12345;
    return (unsigned int)(rand_seed / 65536) % 32768;
}

int main(void)
{
    int i, t, x, y;

    /* fill array */
    for (i = 0; i < MAX; i++)
    {
        a[i] = rand();
        printf("%d\n",a[i]);
    }

    /* more stuff will go here in a minute */

    return 0;
}
```

This code contains several new concepts. The **#define** line declares a constant named **MAX** and sets it to 10. Constant names are traditionally written in all caps to make them obvious in the code. The line **int a [MAX];** shows you how to declare an array of integers in C. Note that because of the position of the array's declaration, it is global to the entire program.

The line **int rand_seed=10** also declares a global variable, this time named **rand_seed**, that is initialized to 10 each time the program begins. This value is the starting seed for the random number code that follows. In a real random

number generator, the seed should initialize as a random value, such as the system time. Here,the **rand** function will produce the same values each time you run the program.

The line **int rand(void)** is a function declaration. The rand function accepts no parameters and returns an integer value. We will learn more about functions later. The four lines that follow implement the rand function. We will ignore them for now.

The main function is normal. Four local integers are declared, and the array is filled with 10 random values using a for loop. Note that the array **a** contains 10 individual integers. You point to a specific integer in the array using square brackets. So **a[0]** refers to the first integer in the array, **a[1]** refers to the second, and so on. The line starting with **/*** and ending with ***/** is called a **comment**. The compiler completely ignores the line. You can place notes to yourself or other programmers in comments.

Now add the following code in place of the **more stuff ...** comment:

```
/*
 * bubble sort the array
 */
for (x = 0; x < MAX 1; x++)
{
    for (y = 0; y < MAX x  1; y++)
    {
        if (a[y] > a[y+1])
        {
            t = a[y];
            a[y] = a[y+1];
            a[y+1] = t;
        }
    }
}
/*
 * print sorted array
 */
printf("----------------------------------\n");
for (i = 0; i < MAX; i++)
```

```
{
    printf("%d\n",a[i]);
}
```

This code **sorts** the random values and prints them in sorted order. Each time you run it, you will get the same values. If you would like to change the values that are sorted, change the value of rand_seed each time you run the program.

The only easy way to truly understand what this code is doing is to execute it "by hand." That is,assume **MAX** is 4 to make it a little more manageable, take out a sheet of paper and pretend you are the computer. Draw the array on your paper and put four random, unsorted values into the array. Execute each line of the sorting section of the code and draw out exactly what happens. You will find that, each time through the inner loop, the larger values in the array are pushed toward the bottom of the array and the smaller values bubble up toward the top.

Chapter 5

Variable Types

There are three standard variable types in C:

- **Integer: int**
- **Floating point: float**
- **Character: char**

An int is a 4-byte integer value. A float is a 4-byte floating point value. A char is a 1-byte single character (like “a” or “3”). A string is declared as an array of characters.

There are a number of derivative types:

- **double** (8-byte floating point value)
- **short** (2-byte integer)
- **unsigned short** or **unsigned int** (positive integers, no sign bit)

Typecasting

C allows you to perform type conversions on the fly. You do this especially often when using pointers. Typecasting also occurs during the assignment operation for

certain types. For example, in the code above, the integer value was automatically converted to a float.

You do typecasting in C by placing the type name in parentheses and putting it in front of the value you want to change. Thus, in the above code, replacing the line **a = 10/3;** with **a = (float) 10/3;** produces 3.33333 as the result because 10 is converted to a floating point value before the division.

Typedef

You declare named, user-defined types in C with the *typedef* statement. The following example shows a type that appears often in C code:

```
#define TRUE  1
#define FALSE 0
typedef int boolean;

int main(void)
{
    boolean b;

    b = FALSE;
    blah blah blah
}
```

This code allows you to declare Boolean types in C programs.

If you do not like the word “float” for real numbers, you can say:

```
typedef float real;
```

and then later say:

```
real r1,r2,r3;
```

You can place typedef statements anywhere in a C program as long as they come prior to their first use in the code.

Chapter 6

Operators

The operators in C are similar to the operators in most languages:

```
+ _ addition
— _ subtraction
/ _ division
* _ multiplication
\% _ mod
```

The / operator performs integer division if both operands are integers, and performs floating point division otherwise. For example:

```
int main(void)
{
    float a;
    a = 10/3;
    prinrntf("%f\n",a);
    return 0;
}
```

This code prints out a floating point value since **a** is declared as type **float**, but **a** will be 3.0 because the code performed an integer division.

Operator precedence, I

Operator precedence in C is also similar to that in most other languages. Division and multiplication occur first, then addition and subtraction. The result of the calculation 5+3*4 is 17, not 32, because the * operator has higher precedence than + in C. You can use parentheses to change the normal precedence ordering: (5+3)*4 is 32. The 5+3 is evaluated first because it is in parentheses. We'll get into precedence later – it becomes somewhat complicated in C once pointers are introduced.

Incrementing

```
Long Way        Short Way
i = i + 1;          i++;
i = i   1;          i  ;
i = i + 3;          i += 3;
i = i * j;          i *= j;
```

Programming exercise

- Try out different pieces of code to investigate typecasting and precedence. Try out int, char, float, and so on.
- Create an array of records and write some code to sort that array on one integer field.

Chapter 7

Functions

Most languages allow you to create functions of some sort. Functions let you chop up a long program into named sections so that the sections can be reused throughout the program. Functions accept **parameters** and **return** a result. C functions can accept an unlimited number of parameters. In general, C does not care in what order you put your functions in the program, so long as a the function name is known to the compiler before it is called.

We have already talked a little about functions. The **rand** function seen previously is about as simple as a function can get. It accepts no parameters and returns an integer result:

```
int rand(void)
/*
 * from K&R   produces an integer random number
 * between 0 and 32767.
 */
{
    rand_seed = rand_seed * 1103515245 + 12345;
    return (unsigned int)(rand_seed / 65536) % 32768;
}
```

The **int rand()** line declares the function rand to the rest of the program and specifies that rand will accept no parameters and return an integer result. This function

has no local variables, but if it needed locals, they would go right below the opening {(C allows you to declare variables after any {– they exist until the program reaches the matching} and then they disappear. A function's local variables therefore vanish as soon as the matching} is reached in the function. While they exist, local variables live on the system stack.) Note that there is no ; after the () in the first line. If you accidentally put one in, you will get a huge cascade of error messages from the compiler that make no sense. Also note that even though there are no parameters, you must use the (). They tell the compiler that you are declaring a function rather than simply declaring an int.

The **return** statement is important to any function that returns a result. It specifies the value that the function will return and causes the function to exit immediately. This means that you can place multiple return statements in the function to give it multiple exit points. If you do not place a return statement in a function, the function returns when it reaches } and returns a random value (many compilers will warn you if you fail to return a specific value). In C, a function can return values of any type: int, float, char, struct, etc.

There are several correct ways to call the **rand** function. For example: **x=rand();**. The variable **x** is assigned the value returned by rand in this statement. Note that you *must* use () in the function call, even though no parameter is passed. Otherwise, **x** is given the memory address of the rand function, which is generally not what you intended.

You might also call rand this way:

```
if (rand() > 100)
```

Or this way:

```
rand();
```

In the latter case, the function is called but the value returned by rand is discarded. You may never want to do this with rand, but many functions return some kind of error code through the function name, and if you are not concerned with the error code (for example, because you know that an error is impossible) you can discard it in this way.

Functions can use a void return type if you intend to return nothing. For example:

```
void print_header()
{
    printf("Program Number 1\n");
    printf("by Marshall Brain\n");
    printf("Version 1.0, released 12/26/91\n");
}
```

This function returns no value. You can call it with the following statement:

```
  print_header();
```

You must include()in the call. If you do not, the function is not called, even though it will compile correctly on many systems.

C functions can accept parameters of any type. For example:

```
int fact(int i)
{
    int j, k;

    j = 1;
    for (k = 2; k <= i; k++)
    {
        j = j*k;
    }
    return j;
}
```

returns the factorial of **i**, which is passed in as an integer parameter. Separate multiple parameters with commas:

```
int add (int i, int j)
{
    return i + j;
}
```

C has evolved over the years. You will sometimes see functions such as **add** written in the "old style," as shown below:

```
int add(i, j)
    int i;
    int j;
{
    return i + j;
}
```

It is important to be able to read code written in the older style. There is no difference in the way it executes; it is just a different notation. You should use the "new style," (known as **ANSI C**) with the type declared as part of the parameter list, unless you know you will be shipping the code to someone who has access only to an "old style" (non-ANSI) compiler.

Programming exercise

- Go back to the bubble sort example presented earlier and create a function for the bubble sort.
- Go back to earlier programs and create a function to get input from the user rather than taking the input in the main function.

Function prototypes

It is considered good form to use *function prototypes* for all functions in your program. A prototype declares the function name, its parameters, and its return type

to the rest of the program prior to the function's actual declaration. To understand why function prototypes are useful, enter the following code and run it:

```
#include <stdio.h>

int main(void)
{
    printf("%d\n",add(3));
    return 0;
}

int add(int i, int j)
{
    return i+j;
}
```

This code compiles on many compilers without giving you a warning, even though **add** expects two parameters but receives only one. It works because many C compilers do not check for parameter matching either in type or count. You can waste an enormous amount of time debugging code in which you are simply passing one too many or too few parameters by mistake. The above code compiles properly, but it produces the wrong answer.

To solve this problem, C lets you place function prototypes at the beginning of (actually, anywhere in) a program. If you do so, C checks the types and counts of all parameter lists. Try compiling the following:

```
#include <stdio.h>

int add (int, int); /* function prototype for add */

int main(void)
{
    printf("%d\n",add(3));
    return 0;
}
```

```
int add(int i, int j)
{
    return i + j;
}
```

The prototype causes the compiler to flag an error on the **printf** statement.

Place one prototype for each function at the beginning of your program. They can save you a great deal of debugging time, and they also solve the problem you get when you compile with functions that you use before they are declared. For example, the following code will not compile:

```
#include <stdio.h>

int main(void)
{
    printf("%d\n",add(3));
    return 0;
}

float add(int i, int j)
{
    return i+j;
}
```

Why, you might ask, will it compile when add returns an int but not when it returns a float? Because older C compilers default to an int return value. Using a prototype will solve this problem. "Old style" (non-ANSI) compilers allow prototypes, but the parameter list for the prototype must be empty. Old style compilers do no error checking on parameter lists.

Chapter 8

Structures

Structures in C allow you to group variable into a package. Here's an example:

```
struct rec
{
    int a, b, c;
    float d, e, f;
};

struct rec r;
```

As shown here, whenever you want to declare structures of the type **rec**, you have to say **struct rec**. This line is very easy to forget, and you get many compiler errors because you absent-mindedly leave out the **struct**. You can compress the code into the form:

```
struct rec
{
    int a, b, c;
    float d, e, f;
} r;
```

where the type declaration for **rec** and the variable **r** are declared in the same statement. Or you can create a typedef statement for the structure name. For example, if you do not like saying **structrec r** every time you want to declare a record, you can say:

```
typedef struct rec rec_type;
```

and then declare records of type **rec_type** by saying:

```
rec_type r;
```

You access fields of structure using a period, for example, **r.a = 5;**.

Chapter 9

Pointer Basics

To understand pointers, it helps to compare them to normal variables.

A "normal variable" is a location in memory that can hold a value. For example, when you declare a variable **i** as an integer, four bytes of memory are set a side for it. In your program, you refer to that location in memory by the name **i**. At the machine level that location has a memory address. The four bytes at that address are known to you, the programmer, as **i**, and the four bytes can hold one integer value.

A pointer is different. A pointer is a variable that **points** to another variable. This means that a pointer holds the memory address of another variable. Put another way, the pointer does not hold a value in the traditional sense; instead, it holds the address of another variable. A pointer "points to" that other variable by holding a copy of its address.

Because a pointer holds an address rather than a value, it has two parts. The pointer itself holds the address. That address points to a value. There is the pointer and the value pointed to. This fact can be a little confusing until you get comfortable with it, but once you get comfortable it becomes extremely powerful.

The following example code shows a typical pointer:

```
#include <stdio.h>

int main(void)
{
    int i, j;
    int *p;    /* a pointer to an integer */
    p = &i;
    *p = 5;
    j = i;
    printf("%d %d %d\n", i, j, *p);
    return 0;
}
```

The first declaration in this program declares two normal integer variables named **i** and **j**.The line **int*p** declares a pointer named **p**.This line asks the compiler to

declare a variable **p** that is a **pointer** to an integer. The * indicates that a pointer is being declared rather than a normal variable. You can create a pointer to anything: a float, a structure, a char, and so on. Just use a * to indicate that you want a pointer rather than a normal variable.

The line **p = & i;** will definitely be new to you. In C, **&** is called the **address operator**. The expression **& i** means, "The memory address of the variable **i**". Thus, the expression **p = & i;** means, "Assign to **p** the address of **i**." Once you execute this statement, **p** "points to" **i**. Before you do so, **p** contains a random, unknown address, and its use will likely cause a segmentation fault or similar program crash.

In the program above the three variables **i**, **j**, and **p** have been declared, but none of the three has been initialized. Once **p** points to **i**, the memory location **i** has two names. It is still known as **i**, but now it is known as ***p** as well. This is how C talks about the two parts of a pointer variable: **p** is the location holding the address, while ***p** is the location pointed to by that address. Therefore ***p=5** means that the location pointed to by **p** should be set to 5. Because the location ***p** is also **i**, **i** also takes on the value 5. Consequently, **j = i;** sets **j** to 5, and the **printf** statement produces **5 5 5**.

The main feature of a pointer is its two-part nature. The pointer itself holds an address. The pointer also points to a value of a specific type - the value at the address the point holds. The pointer itself, in this case, is **p**. The value pointed to is ***p**.

Chapter 10

Strings

Strings in C are intertwined with pointers to a large extent. You must become familiar with the pointer concepts covered in the previous articles to use C strings effectively. Once you get used to them, however, you can often perform string manipulations very efficiently.

A string in C is simply an array of characters. The following line declares an array that can hold a string of up to 99 characters.

```
char str[100];
```

It holds characters as you would expect: **str[0]** is the first character of the string, **str[1]** is the second character, and so on. But why is a 100-element array unable to hold up to 100 characters? Because C uses*null-terminated strings*, which means that the end of any string is marked by the ASCII value 0 (the null character), which is also represented in C as **'\0'**.

Null termination is very different from the way many other languages handle strings. For example, in Pascal, each string consists of an array of characters, with a length byte that keeps count of the number of characters stored in the array. This structure gives Pascal a definite advantage when you ask for the length of a string. Pascal can simply return the length byte, whereas C has to count the characters until it finds **'\0'**. This fact makes C much slower than Pascal in certain cases, but in others it makes it faster, as we will see in the examples below.

Because C provides no explicit support for strings in the language itself, all of the string-handling functions are implemented in libraries. The string I/0 operations

(gets, puts, and so on) are implemented in <stdio.h>, and a set of fairly simple string manipulation functions are implemented in <string.h> (on some systems, <strings.h>).

The fact that strings are not native to C forces you to create some fairly round about code. For example, suppose you want to assign one string to another string; that is, you want to copy the contents of one string to another. In C you cannot simply assign one array to another. You have to copy it element by element. The string library (<string.h> or <strings.h>) contains a function called **strcpy** for this task. Here is an extremely common piece of code to find in a normal C program:

```
char s[100];
strcpy(s, "hello");
```

The following code shows how to use **strcpy** in C:

```
#include <string.h>
int main(void)
{
    char s1[100],s2[100];
    strcpy(s1,"hello"); /* copy "hello" into s1 */
    strcpy(s2,s1);      /* copy s1 into s2 */
    return 0;
}
```

strcpy is used whenever a string is initialized in C. You use the **strcmp** function in the string library to compare two strings. It returns an integer that indicates the result of the comparison. Zero means the two strings are equal, a negative value means that **s 1** is less than **s 2**, and a positive value means **s 1** is greater than **s 2**.

```
#include <stdio.h>
#include <string.h>
int main(void)
{
    char s1[100],s2[100];
    gets(s1);
    gets(s2);
    if (strcmp(s1,s2) == 0) {
        printf("equal\n");
    } else if (strcmp(s1,s2) < 0) {
        printf("s1 less than s2\n");
```

```
    } else {
        printf("s1 greater than s2\n");
    }
    return 0;
}
```

Other common functions in the string library include **strlen**, which returns the length of a string, and **strcat** which concatenates two strings. The string library contains a number of other functions, which you can peruse by reading the man page.

To get you started building string functions, and to help you understand other programmers' code (everyone seems to have his or her own set of string functions for special purposes in a program), we will look at two examples, **strlen** and **strcpy**. Following is a strictly Pascal-like version of **strlen**:

```
int strlen(char s[])
{
    int x;
    x=0;
    while (s[x] != '\0')
        x=x+1;
    return(x);
}
```

Most C programmers shun this approach because it seems inefficient. Instead, they often use a pointer-based approach:

```
int strlen(char *s)
{
    int x=0;
    while (*s != '\0')
    {
        x++;
        s++;
    }
    return(x);
}
```

Chapter 11

Operator Precedence, II

C contains many operators, and because of the way in which operator precedence works, the interactions between multiple operators can become confusing.

```
x = 5 + 3 * 6;
```

x receives the value 23, not 48, because in C multiplication and division have higher precedence than addition and subtraction.

```
char *a[]10[];
```

Is **a** a single pointer to an array of 10 characters, or is it an arrayof 10 pointers to character? Unless you know the precedence conventions in C, there is no way to find out. Similarly, because of precedence statements such as ***p.i = 10;** do not work. Instead, the form **(*p). i = 10;** must be used to force correct precedence.

The following table from *C Programming Language* by Kernighan and Ritchie, shows the precedence hierarchy in C. The top line has the highest precedence.

Operators	Associativity
[(.	Left to right
! ~ ++ ~~ { ~~ + * & (type cast) sizeof	Right to left
(in the above line, +, ~~ and * are the unary forms)	

* % /	Left to right
+ -	Left to right
<< >>	Left to right
=> > =< <	Left to right
=! ==	Left to right
&	Left to right
^	Left to right
|	Left to right
&&	Left to right
||	Left to right
:?	Left to right
= += -= *= /= %= &= ^= |= <<= >>=	Right to left
,	Left to right

Using this table, you can see that **char *a[10];** is an array of 10 pointers to character. You can also see why the parentheses are required if **(*p).i** is to be handled correctly. After some practice, you will memorize most of this table, but every now and again something will not work because you have been caught by a subtle precedence problem.