COMPUTER CONCEPTS

For Learners of Digital Generation

7

by
Abhinav Bhatnagar
B.Tech

BRILLIANT BOOKS

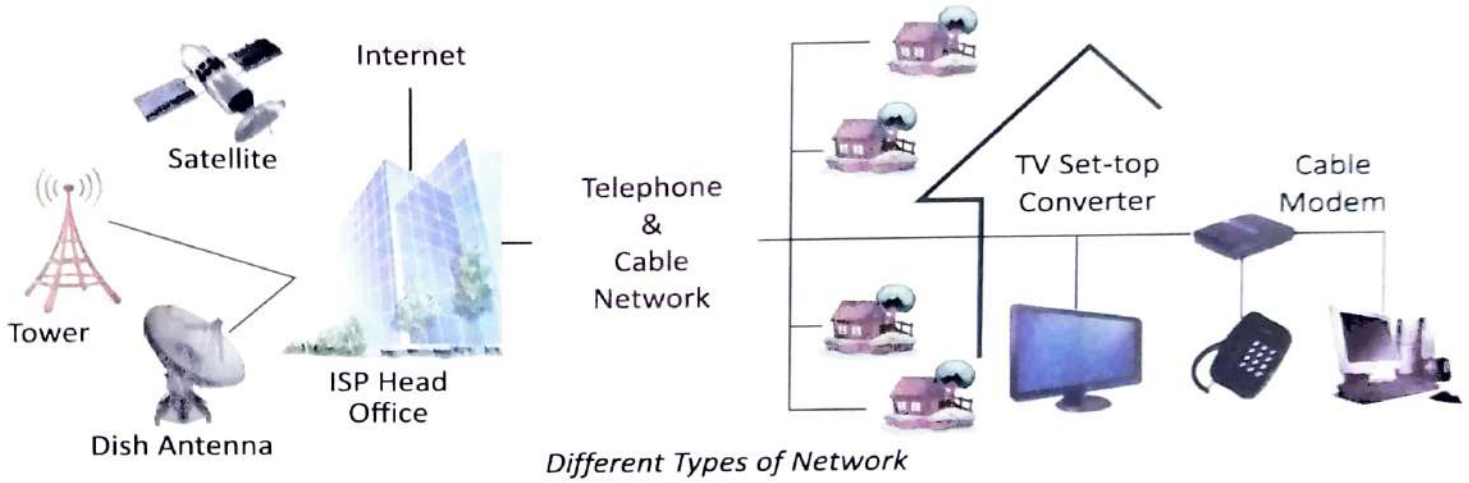
Contents

1 Networking Concepts

Lesson Extract

- Computer Network
- Basic Components of a Network
- Types of Network
- Network Architecture
- Network Topology

Networking refers to the inter-connection of various devices to share their resources. A network is a group of devices connected with one another. **Cable** networks, **television** networks and **telephone** networks are examples of networks.



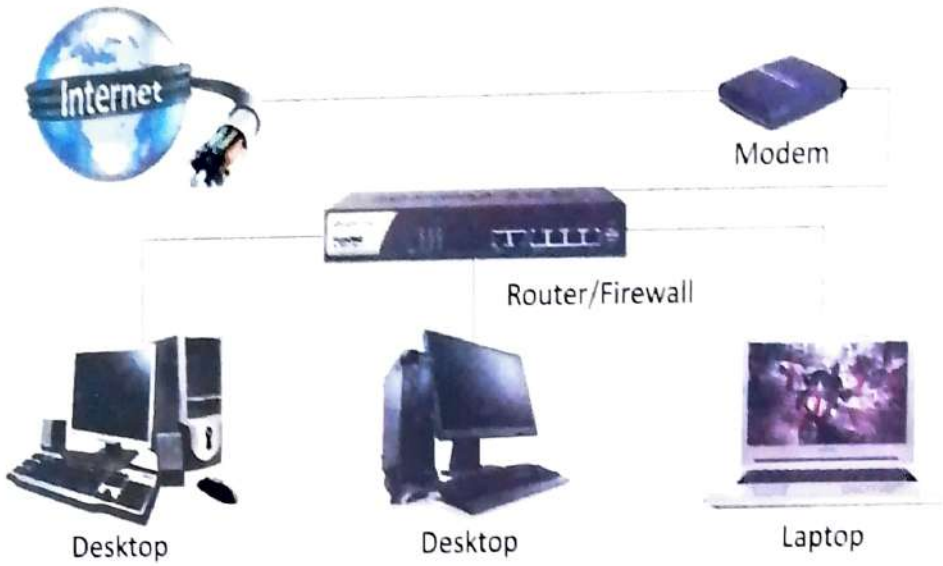
Different Types of Network

A **network** is an inter-connection of machines or people. In other words, a system of interconnected devices is called a network. A network ties things together. When we create a network of different devices, it is called **networking.** So, networking is the process of creating network(s).

Computer Network

COMPUTER NETWORK

A **computer network** is a collection of **computers** and **peripheral devices** such as printers (collectively known as network components) connected by **communication links.** In order to establish a computer network, we need at least two or more than two computers and some other devices. These devices are inter-connected using a communication medium such as wire.



The communication media or links allow the network components to work together. The network components may be located at **remote locations** or within the same building.

For Your Info

Extranet is another form of a network. It is private to an organisation with little external interference but for official purposes only. That is, it is any Intranet that uses a bit of Internet also.

Advantages of a Computer Network

Networking of computers is a basic need of today's world. Let us study some advantages of computer networking.

1. **Speed :** Sending and receiving files using a computer network is rapid. It saves time, and is more convenient as compared to files which are manually delivered.
2. **Cost efficient :** Individually licensed copies of many popular software programs can be costly. Storing the software on a file server and then making it available to the other computers connected to it saves money.
3. **Security :** Sensitive files and programs on a network are protected by passwords. They can be made available as read only. This helps in avoiding copying of programs.
4. **Centralised software management :** Software can be loaded on the main computer, that is, file server. Thus, it eliminates the need to spend time and energy installing, updating and tracking files on independent computers throughout the same building.
5. **Resource sharing :** Resources such as printers, fax machines, scanners and modems can be shared by connecting them in a network. This saves space of the work area and is financially viable.

Disadvantages of a Computer Network

The following are some of the disadvantages of a computer network :

1. If the server develops a fault then users may not be able to run the application programs and chances of data loss are more.
2. If the network stops operating then the computers connected to the network cannot be used, thus affecting the performance of the entire system.
3. As traffic increases on a network, the performance degrades unless it is designed properly.
4. It becomes difficult to manage, as the number of computers on a network increase.

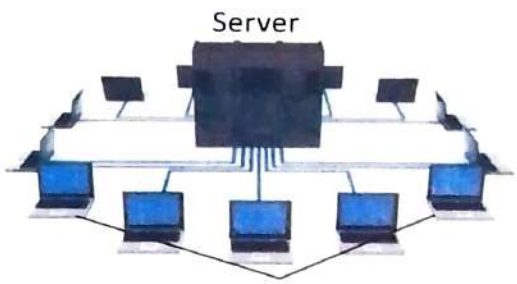
BASIC COMPONENTS OF A NETWORK

Computers are connected to a network using some hardware components. Following are the difficult components of a computer network.

Server

A server is a computer that manages the network resources, software and files. It is normally dedicated, that is, it performs no other task besides the allocated task.

For example, a **File server** is a computer that manages storage and retrieval of files. A **Print server** is a computer that manages one or more printers required in a network.



Workstations Connected to a Server

Workstation

Workstation

A workstation is a computer intended for individual use in a networking environment. It is like a personal computer except that it is connected to other computers as well as to the main computer, that is, the server.

Network Interface Card

Network Interface Card (NIC) is a piece of hardware placed inside the system unit. It is a part of the motherboard. It is designed to allow computers to communicate over a computer network. It provides physical access to a networking medium.

Network Interface Card

Hub and Switches

A hub is a device that connects multiple devices and makes them work as a single network segment. A hub has multiple ports. A specific cable connects the hub to the NIC. The NIC transfers the data in a computer to a hub which then transfers it to the other connected computers.

Hub

For Your *Info*

- Each computer on a network is connected to the hub/switch via an Ethernet cable.
- A switch is a smarter replacement of a hub. This is because, hub transfers the data received from a NIC to all the computers whereas, a switch transfers it to the specific computer.

Transmission Channels

Each computer in a network is interconnected through transmission channels. These channels can be wired or wireless. Data is exchanged between two computers in a network using these channels.

The wired channels can be cables like twisted pair, co-axial, fiber optics, etc. The wireless channels can be through satellites using microwaves, radio waves, etc.

To establish Wireless Networking, we require the following components:

- **Wireless Network Cards** are used instead of the normal Network Cards which are being used in the wired networks. Most of the laptop computers come with the inbuilt wireless network cards. Ethernet cable is not required as Radio signals are used for transferring data.
- **Access Points or Routers** instead of hubs/switches. These have a wireless antenna which increases the communication range of the radio signals. Access Points can also be used to join a wired network, thus making the network a combination of wired as well as wireless network.

For Your *Info*

Bluetooth is a wireless technology used to interconnect mobile phones, computers, printers using short range wireless connection. For more information visit www.bluetooth.com.

Bluetooth Logo

TYPES OF NETWORK

The network can be categorised on the basis of the geographical area as listed here:

Personal Area Network

It is a network for communication among personal devices of an individual. The devices can include cell phones, computers, cameras, laptops, tablets, etc. These devices are connected

through a wired or wireless PAN. PAN covers a short radius of only a few metres (up to approximately 10 meters). It is used to share or transfer files, songs, etc. USB cable is a source of wired PAN. Bluethooth and Wi-Fi are sources of wireless PAN. PAN can also be used for connecting to a higher level network and internet. It is referred as an uplink.

Local Area Network (LAN)

When computers are interconnected within a limited geographical area then it forms a Local Area Network. For example, network within a building, an office, school, etc. It covers a radius of a few kilometres (up to approximately 10 kilometers).

In addition to operating in a limited space, LANs are also typically owned, controlled and managed by a single person or organisation. Many LANs are based partly or wholly on wireless technologies. Smartphones, tablet computers and laptops typically have wireless networking support built-in.

For Your Info

- Wi-Fi stands for Wireless-Fidelity. It represents Wireless Local Area Network. It was developed for mobile computer devices like laptops but is now used in PCs, video game consoles, smartphones, tablets to exchange data wirelessly over a computer network.
- WAP Wireless Access Point is a device that connects wireless communication devices to form a wireless network.

Metropolitan Area Network (MAN)

When the computers are interconnected within the same city, that is, the branches located at different places in the same city, then it becomes a Metropolitan Area Network. For example, local libraries, branches of the same school in a city, branches of the same office in a city, etc. MAN spans over a larger physical area than a LAN but is smaller than a WAN, such as a city. It covers a radius of a range of 10 kilometers to 50 kilometers approximately. It is typically owned and operated by a single entity such as a bank, a government body or large corporation. MAN links between local area networks have been built with wireless links using either microwave, radio or infra-red laser transmission. Most companies rent or lease circuits from common carriers because laying long stretches of cable is expensive.

For Your Info

There is another type of network connecting multiple LANs confined within a campus. It is known as Campus Area Network (CAN). This network is smaller than MAN.
For example, different colleges connected in the same university campus, branches of the same office in a specific region.

Wide Area Network (WAN)

When network is spread across cities, countries or even continents, covering a large geographical area, then it becomes Wide Area Network. The Internet is the best example of WAN as it is the largest WAN covering the globe. In other words, we can say that there is no any upper limit on our earth planet for WAN. Wide area networks are often established with leased telecommunication circuits.

NETWORK ARCHITECTURE

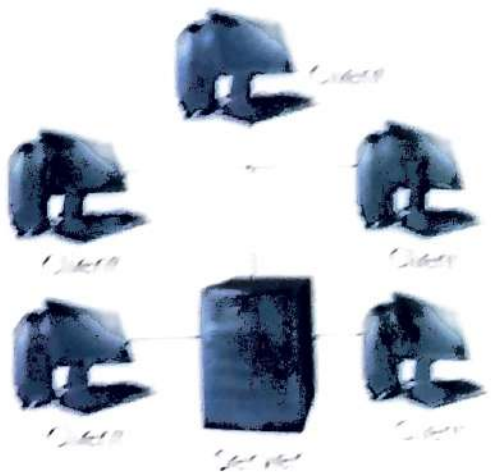
Network architecture is an overall design of a computer network that describes how a computer network is configured and what strategies are being used. Computer network architecture are of two main types :

1. Client/Server Architecture
2. Peer to Peer Architecture

Client/Server Architecture

Client/server architecture is defined as a specific type of a network which consists of a single powerful computer acting as a **server** usually connected to multiple computers called clients.

One server generally supports numerous clients. The server has powerful central processors, more memory, and larger disk drives than clients. A server device typically stores files and databases including more complex applications like websites. The client contains the programs/software as per the requirements of the user. Network clients make requests to a server by sending messages, and servers respond to their clients by acting on each request and returning results.



Client/Server Architecture

A client/server network can be utilized by desktop computers and laptops, as well as other mobile devices that are properly equipped.

An example of client/server is when you try to access your bank account from a computer. A client program in your computer forwards the request to a server program at the bank. The server accesses the data of that specific account and sends the request back with the account details on the client machine.

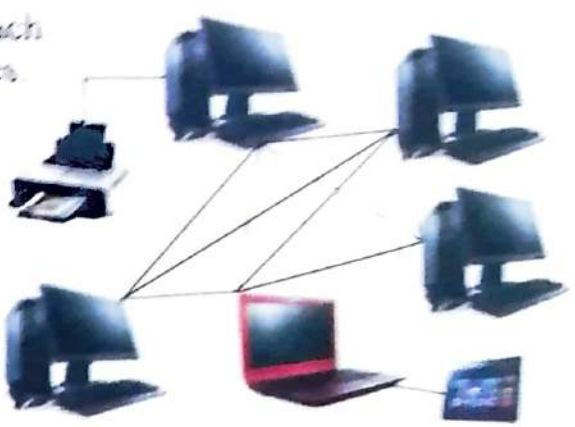
Advantage: The centralised handling of data provides an increased security. For example, password protection, ensuring that the data is only available to qualified individuals.

Disadvantage : It runs the risk of a system overload. If too many different clients attempt to reach the shared network at the same time, there may be a failure or slowing down of the connection.

Peer-to-peer Architecture

Peer to peer architecture is a type of network in which each workstation has equivalent capabilities and responsibilities. The workstations are connected to each other but do not have a server. Files can be shared between workstations, and a printer connected to one workstation can be accessed by other workstations as well.

Peer to peer networks can really only be set up among a few computers within an office or single room. It is much simpler to set up as compared to client/server networks.


Peer-to-peer Architecture

Advantage : It supports distributed processing, so the increased load will not affect the system overall.

Disadvantage : It does not support centrally managed security. It does not provide the backing up of files.

For Your Info

There is set of rules that governs data communication in a networking environment known as a protocol. A few of them are given below :

- Hyper Text Transfer Protocol (HTTP)
- Simple Mail Transfer Protocol (SMTP)
- File Transfer Protocol (FTP)
- Transmission Control Protocol/Internet Protocol (TCP/IP)

NETWORK TOPOLOGY

The physical arrangement of the cables, computers and other peripheral devices to form a network is known as a **topology.**

A few of the network topologies are described here.

Bus Topology

Bus topology is made up of a main single cable with the terminators at both ends. It is the shared communication medium that makes the backbone of the system. Computers and the other devices including the server are connected to this linear cable for communication.

Bus Topology

Advantages : The advantages of a network with bus topology are given below:

- It is easy to install.
- It does not require much cabling.

Disadvantages : The disadvantages of a network with bus topology are given below:

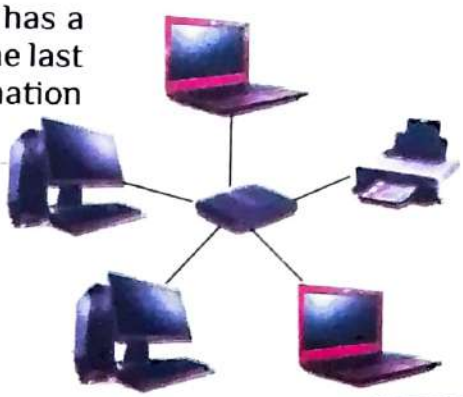
- If the backbone cable fails, the entire network effectively becomes unusable.
- It is difficult to identify the problem if the entire network shuts down.

For Your Info

The data to be delivered in a network is divided into small packets. Each packet is given a sequence number. The first packet has a destination address followed by the next packet number. The last packet has an End of file pointer that helps the destination computer know that the number of packets are complete.

Star Topology

Star topology is the most common topology used. Here all the workstations are connected to a central connection point called a hub. Any data that is sent to the other computer, first goes to the central hub and from there it is redirected to the destination computer.



Star Topology

Advantages : There are a few advantages of using a star topology. They are given below:

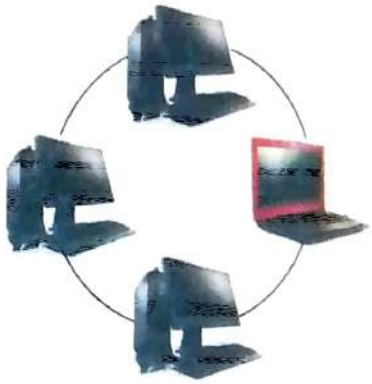
- It is easy to add and remove workstations by upgrading the hub.
- It is easy to install.

Disadvantages : A few disadvantages of a star topology are given below:

- It requires more cable length.
- Failures in the central hub will breakdown the entire network.

Ring Topology

In a ring topology, every workstation has exactly two neighbours for communication purposes. All messages travel through a ring in the same direction either clockwise or anticlockwise.



Ring Topology

Advantages : A few advantages of ring topology are given below :

- It is easier to detect faults in the network.
- Less number of cable wires are required.

Disadvantages : A few disadvantages of ring topology are given below :

- A failure in any cable or device breaks the loop leading to breakdown of the entire network.
- Adding or removing a device/workstation means rewiring and re-routing all the cables.

Time to Drill

⊙ Give full forms of the following :

1. WAN .....
2. MAN .....
3. CAN .....
4. HTTP .....
5. SMTP .....
6. FTP .....
7. NIC .....
8. TCP .....
9. LAN .....
10. Wi-Fi .....

Boost Your Brain

A. Tick (✓) the **right option.**

1. With a network it is possible to share
   (a) Printers ☐ (b) Modems ☐ (c) Softwares ☐ (d) All of these ☐
2. Advantage of networked computers is
   (a) People can hack into other computers ☐
   (b) It makes a computer easy to use ☐

(c) Viruses spread less easily on networked computers than on stand alone computers ☐

(d) You can send and receive information very fast and cheaply. ☐

3. A ..... covers a limited geographic distance, such as an office, a building or a group of buildings in close proximity to each other.

(a) Local Area Network (LAN) ☐ (b) Metropolitan Area Network (MAN) ☐

(c) Wide Area Network (WAN) ☐ (d) Variable Area Network (VAN) ☐

4. A Client/Server network

(a) is more secure than a peer-to-peer. ☐

(b) cannot be used in a LAN. ☐

(c) is less secure than a peer-to-peer network but cheaper. ☐

(d) can only handle two network computers at a time. ☐

5. On a ....., all of the computers and devices (nodes) on the network connect to a central device.

(a) bus network ☐ (b) ring network ☐

(c) star network ☐ (d) none of these ☐

B. Fill in the blanks with the correct word.

WAP Star Data Resources Bluetooth LAN MAN Wireless

1. A computer network enables two or more computers to share ..... and ..... .
2. A network without using wires is called ..... .
3. ..... technology is a form of wireless communication.
4. ..... and ..... are the different types of networking.
5. ..... is a device that connects wireless communication devices to form a wireless network.
6. In ..... topology, all the workstations are connected to the central hub.

C. Match the following.

1. Coaxial Cables	a. Manages the network
2. Workstation	b. Terminal for the end user
3. Server	c. Wireless transmission channels
4. Peer-to-peer	d. Wired transmission channels
5. Microwaves	e. Equivalent capabilities of computers.

D. State whether the following statements are true or false.

1. A computer network is a collection of computers and other devices. ☐
2. Network cards are used to physically attach a computer. ☐
3. In Client-Server network, there is no central server. ☐
4. Wi-Fi stands for Wireless Fidelity. ☐

5. In a ring topology, every workstation has exactly two neighbours for communication purposes.

E. Answer the following questions.

1. What is networking? Give some relevant examples.

.....

2. List some advantages of networking.

.....

3. What are the disadvantages of connecting computers in a network?

.....

4. What is a topology? Give example.

.....

5. Explain the different types of topologies used in computer networks.

.....

F. Give differences between.

1. Workstation and Server
2. LAN and WAN
3. Client/Server architecture and Peer-to-peer architecture.

- Visit a cybercafe and examine the network there. Prepare a chart of it.
- If there is a network at your school, draw a diagram of the network including attached systems and devices.

- Find out the topology of the network used in your school computer lab. Find out the main reason for implementing that specific topology in the lab. Create an article in MS Word 2007 on the definition, advantages and disadvantages of using that specific topology. Insert a few relevant pictures using the internet.

2 Number System

Lesson Extract

- Decimal Number System
- Binary Number System
- Conversion
- Octal Number System
- Hexadecimal Number System
- Computer Arithmetic /Binary Arithmetic

In early days when there were no means of counting, people used to count with the help of fingers, stones, pebbles, sticks, etc. These methods were not adequate and had many limitations. Many number systems were introduced with the passage of time, like:

- Decimal number system
- Binary number system
- Octal number system
- Hexadecimal number system

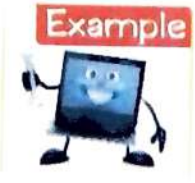
DECIMAL NUMBER SYSTEM

The need for counting has paved the path to introduce Decimal number system in which ten digits 0, 1, 2, 3, ... 9 are used to form any number. Most of our arithmetic operations are performed with decimal numbers.

It consists of ten digits, i.e. 0 to 9 with the base 10. Each number can be used individually or they can be grouped to form a numeric value. E.g., 82, 256, 52.87, etc. The value of each digit in a number depends upon the following:

- The face value of the digits
- The base of the number system
- The position of the digit in the number

For example, the number 547 can be understood in powers of its base:



$7 * 10^0$	**units**	=	**7**
$4 * 10^1$	**tens**	=	**40**
$5 * 10^2$	**hundreds**	=	**500**
			547

Observation

The positional value of each digit increases 10 folds as we move from right to left. In the above given example; 5, 4 and 7 are the face values of digits and their place values are hundreds, tens and ones respectively. The place value depends on the position of the digit in the number.

For Your Info

- Aryabhat was ancient India's greatest mathematician and an expert in astronomy. He introduced the concept of 0 (zero) without which modern computer technology would be non-existent.
- Base or Radix of a Number System The base of the number system is the number of digits used in it. E.g., Since the decimal number system uses 10 digits, its base is 10.

BINARY NUMBER SYSTEM

The Binary number system consists of only two digits— 0 and 1. Since this system uses two digits, it has the base 2. All digital computers use this number system and convert the data input from the decimal format into binary equivalent.

Why Binary Numbers are used in Digital Computers?

Since the computer is made up of electronic components, it can have only two states, either On (1) or Off (0). The data, which is given to the computer is converted into binary form because a computer understands only binary language. It further converts the binary results into their decimal equivalents for output.

CONVERSION

Decimal to Binary Number System

The equivalence between binary and decimal numbers can be understood with the given examples. Follow the rules:

- Divide the given decimal number with the base 2.
- Write down the remainder and divide the quotient again by 2.
- Repeat the step 2 till the quotient is zero.

Let us understand the conversion of Decimal number into Binary number with the given examples:

Example 1:

2	25	**Remainder**	
2	12	- 1	→ **Least Significant Digit**
2	6	- 0	
2	3	- 0	
2	1	- 1	
	0	- 1	→ **Most Significant Digit**

Thus $(25)_{10} = (11001)_2$

Example 2:

2	321	**Remainder**	
2	160	- 1	→ **Least Significant Digit**
2	80	- 0	
2	40	- 0	
2	20	- 0	
2	10	- 0	
2	5	- 0	
2	2	- 1	
2	1	- 0	
	0	- 1	→ **Most Significant Digit**

Thus $(321)_{10} = (101000001)_2$

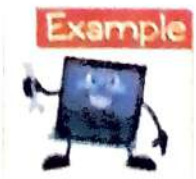
Sticky Note

Remainders, which are obtained in each step are written in reverse order, to form the binary equivalent of a decimal number.

Binary to Decimal Number System

To convert a binary number 1010 into decimal number, follow the given steps:

- Multiply each binary number with 2 having the power 0 for unitary position, starting from the extreme right digit.
- Increase the power one by one, keeping the base fixed as 2.
- Sum up all products to get the decimal number.



Example 1:

TH H T U

$(1010)_2$

0×2^0 – Units – 0

1×2^1 – Tens – 2

0×2^2 – Hundreds – 0

1×2^3 – Thousands – 8

Thus $(1010)_2 = (10)_{10}$

Example 2:

$(1001)_2$

$1 \times 2^0 = 1$

$0 \times 2^1 = 0$

$0 \times 2^2 = 0$

$1 \times 2^3 = 8$

Thus $(1001)_2 = (9)_{10}$

Example 3:

$(110001001)_2$ $= 1 \times 2^0 + 0 \times 2^1 + 0 \times 2^2 + 0 \times 2^3 + 1 \times 2^4 + 0 \times 2^5 + 0 \times 2^6 + 1 \times 2^7 + 1 \times 2^8$

$1 + 0 + 0 + 8 + 0 + 0 + 0 + 128 + 256$

393

Thus $(110001001)_2 = (393)_{10}$

Convert the following Decimal numbers into Binary numbers:

1. 68

2. 987

OCTAL NUMBER SYSTEM

The Octal number system consists of 8 digits, i.e. 0 to 7 with the base 8. The procedure of octal to decimal conversion is similar to "binary to decimal" conversion. The only difference is the change of base.

HEXADECIMAL NUMBER SYSTEM

This number system contains 16 symbols and, therefore, has the base 16. It uses the digits (0-9) and (A-F).

COMPUTER ARITHMETIC/BINARY ARITHMETIC

As computer understands only binary language, the data given by the user is converted into binary language for processing. This processing may involve various kinds of arithmetic operations such as addition, subtraction, multiplication, division, etc. on binary numbers.

Binary Addition

The technique used to add binary numbers inside the computer is very easy and simple. This is performed in the same way as you perform addition with decimal numbers. The following table illustrates the addition of two binary digits:

a	b	a + b = c
0	0	0 + 0 = 0
0	1	0 + 1 = 1
1	0	1 + 0 = 1
1	1	1 + 1 = 10

Sticky Note

Carry over 1 is shifted to the next place as it happens in decimal number addition.

Example

Example 1:

Compute $(1000)_2 + (111)_2$

$$\begin{array}{r} 1\,0\,0\,0 \\ +\ 0\,1\,1\,1 \\ \hline 1\,1\,1\,1 \end{array}$$

Example 2:

Compute $(11111)_2 + (1011)_2$

$$\begin{array}{r} \textbf{1\,1\,1\,1 Carry} \\ 1\,1\,1\,1\,1 \\ +\ 0\,1\,0\,1\,1 \\ \hline 1\,0\,1\,0\,1\,0 \end{array}$$

Binary Subtraction

The rules given in the table must be followed to perform binary subtraction:

a	b	a – b = c
0	0	0 – 0 = 0
1	0	1 – 0 = 1
1	1	1 – 1 = 0
0	1	0 – 1 = 1 [with a borrow taken from next place]

Sticky Note

Borrow is taken only when 1 is subtracted from 0. (10 – 1 = 1)

Example 1:

Compute $(1111)_2 - (1010)_2$

$$\begin{array}{r} 1\ 1\ 1\ 1 \\ -\ 1\ 0\ 1\ 0 \\ \hline 0\ 1\ 0\ 1 \end{array}$$

Example 2:

Compute $(1100)_2 - (11)_2$

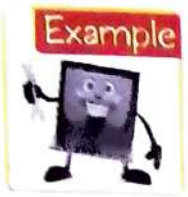
$$\begin{array}{rcccc} & & (10-1=1) & & \\ & & (0)\curvearrowleft & (10)\curvearrowleft & (10) \\ & 1 & 1 & 0 & 0 \\ - & 0 & 0 & 1 & 1 \\ \hline & 1 & 0 & 0 & 1 \end{array}$$

Borrow in step 2
Borrow in step 1

Binary Multiplication

The rules for performing multiplication using binary numbers is same as that of decimal numbers. The given table illustrates the multiplication of two binary digits :

a	b	a * b = c
0	0	0 * 0 = 0
0	1	0 * 1 = 0
1	0	1 * 0 = 0
1	1	1 * 1 = 1



Example 1:

Compute $(101)_2 \times (11)_2$

$$\begin{array}{r} 101 \\ \times\ \ 11 \\ \hline 101 \\ 101\times \\ \hline 1111 \\ \hline \end{array}$$

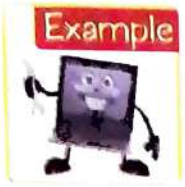
Example 2:

Compute $(1111)_2 \times (101)_2$

$$\begin{array}{r} 1111 \\ \times 101 \\ \hline 1111 \\ 0000\times \\ 1111\times\times \\ \hline 1001011 \\ \hline \end{array}$$

Binary Division

The method to perform division of two binary numbers is same as that of decimal numbers. See the example given below:



Example 1:

Compute $(110)_2 \div (10)_2$

$$\begin{array}{r|l} & 11 \quad \leftarrow \textbf{Quotient} \\ 10 & 110 \quad \leftarrow \textbf{Dividend} \\ & 10 \\ \hline & 010 \\ & 10 \\ \hline & 00 \quad \leftarrow \textbf{Remainder} \\ \hline \end{array}$$

Example 2:

Compute $(10000111)_2 \div (1001)_2$

$$\begin{array}{r|l} & 01111 \quad \leftarrow \textbf{Quotient} \\ 1001 & 10000111 \leftarrow \textbf{Divident} \\ & 1001 \\ \hline & 001111 \\ & 1001 \\ \hline & 01101 \\ & 1001 \\ \hline & 01001 \\ & 1001 \\ \hline & 0000 \quad \leftarrow \textbf{Remainder} \\ \hline \end{array}$$

Add the following Binary numbers:

$$\begin{array}{r} 11100 \\ +\ 10010 \\ \hline \end{array} \qquad \begin{array}{r} 101101 \\ +\ 100100 \\ \hline \end{array}$$

Boost Your Brain

A. Tick (✓) the right option.

1. Which number system do we use?
   (a) Binary ☐ (b) Octal ☐
   (c) Decimal ☐ (d) Hexadecimal ☐
2. Who introduced the concept of 0 (zero)?
   (a) Charles Babbage ☐ (b) Aryabhat ☐
   (c) Bill Gates ☐ (d) Ada Lovelace ☐
3. Which number system has '8' as its base?
   (a) Octal ☐ (b) Binary ☐
   (c) Decimal ☐ (d) Hexadecimal ☐
4. In Binary Subtraction 1—1 equals
   (a) 10 ☐ (b) 0 ☐ (c) 8 ☐ (d) 1 ☐
5. To perform division on Binary numbers, divide the number by
   (a) 2 ☐ (b) 4 ☐ (c) 8 ☐ (d) None of these ☐

B. Fill in the blanks with the correct words.

Binary composed of two 2 10 Decimal 8

1. The Binary number system has base ..... .
2. The ..... number system has base 10.
3. Binary means ..... .
4. Octal Number system consists of ..... digits.
5. In Binary addition 1 + 1 equals to ..... .
6. ..... number system is understood by the computer system.

C. State whether the following statements are true or false.

1. Binary number system uses digits from 0 to 9. ☐
2. Decimal number system has base 10. ☐
3. The numbers used in Octal number system are 1 to 7. ☐
4. The method to perform division of two Binary numbers is not same as that of Decimal numbers. ☐
5. 1 multiplied by 0 equals to 1. ☐

D. Answer the following questions.

1. Explain Number System and its commonly used types.

   .....

2. How will you find whether a number is represented in Decimal/Binary/Octal or Hexadecimal system?

   .....

3. Why do we use Binary number system in computers?

.....

4. What are the rules to convert a Decimal number into Binary number?

.....

5. Write the rules to multiply two Binary numbers.

.....

* **Convert the following Binary numbers into Decimal numbers.**

1. 1011
2. 100110

* **Perform Binary addition on the following.**

1. 1101 + 10001
2. 1001101 + 1000101101
3. 10101 + 00111

* **Subtract the following Binary numbers.**

1. 10111 − 10001
2. 11010 − 01000
3. 10010 − 01000

* **Multiply the following Binary numbers.**

1. 101 × 011
2. 1011 × 101
3. 101010 × 1011

* **Divide these Binary numbers.**

1. 1111 ÷ 11
2. 111001 ÷ 101
3. 10100110111 ÷ 111

* Make a presentation on Number System. Set a beautiful background and apply formatting and animation effects on it.

3 Graphics in QBasic

Lesson Extract

- Constants and Variables
- Starting QBASIC
- QBASIC Statements
- Using Graphics
- Screen Statements
- Color Statement
- Line Statement
- Drawing Boxes
- Circle Statement
- Creating sound in QBASIC

QBasic is a programming language developed by Microsoft in 1985. It is the successor of earlier forms of BASIC (Beginners All-Purpose Symbolic Instructions Code). QBasic is an ideal programming language for beginners because of its simple commands, improved programming structures, better graphics and flexibility. It is an integrated development environment (IDE) to write, edit, debug and execute basic programs.

CONSTANTS AND VARIABLES

Constants

Constants are the values that do not change during the execution of a program. Constants are of two types:

Numeric Constants : They are further divided into two types : **integer** and **real** constants. Integer constants are positive or negative numbers, without any fractional part. E.g., 12, 234, –786, etc. Real constants are the numbers with a fractional part. E.g., 75.5, 46.25, etc.

Character Constants : They are also of two types: **Single Character Constant** and **String (Multi-character) Constant.** A 'single character constant' contains only a single character enclosed in double quotes. E.g., "D", "F" etc. A 'string constant' is a sequence of characters enclosed within double quotes. E.g., "Ajay", "Welcome to Basic Programming" etc.

Variable

A **variable** is a meaningful name of data storage location in computer memory. It holds the value and continues until another value is assigned to it. A variable has a type, which is defined by the kind of value it holds.

Numeric Variable : It can hold only numbers that can be of integer, floating decimal, or long integer type. It is represented by an alphabet. A numeric variable should not contain any space or symbols like ^,? \, /, @, :, ; etc.

Example: **A = 5** means the value 5 is assigned to the variable **A.**

String Variable : A string variable contains values, symbols or text within double quotes (" "). It is represented by an alphabet followed by the dollar sign. E.g. A$ = "AJAY".

Example

Another way to think of a variable is to imagine a small bucket with a name on it. Put "Name$" on it. This is the bucket's (variable's) name. Now take a piece of paper and write your name on it and drop it into the imaginary bucket. Now the variable 'Name$' has your name in it. Same way, computer variables can only hold one piece of information (one value) at a time.

STARTING QBASIC

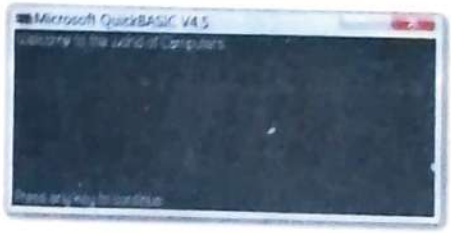
Look for the QBasic icon on your desktop and double-click on it to start it.

QBasic window appears with a welcome dialog box on the screen, when you open its 4.5 version. The welcome dialog box does not appear in QBasic 7.1. Press Esc key to clear the welcome message box.

To execute the commands in QBasic, press F5 to run the program. Type the following program :

Example

```
CLS
PRINT "Welcome to the world of Computers"
END
```



QBASIC STATEMENTS

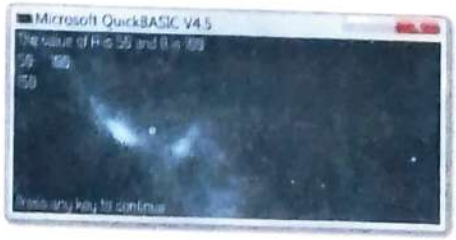
CLS stands for "Clear Screen" and is used to clear the screen.

PRINT statement is used to display any message or the output of a program. The message has to be enclosed within quotes but the constants, variables and expressions can be expressed as such. E.g.:

Syntax : | Line No | PRINT <Constant> or <Variable> or <Expression> or <"Message"> or <list separated by commas or semi-colons>

Example

```
CLS
A   50
B   100
PRINT "The value of A is"; A; "and B is"; B
                          (It will print the values
                          just after the statement.)
PRINT A, B                (It will print the values
                          after leaving some spaces.)
PRINT A + B               (It will print the sum of the values.)
END
```



For Your *Info*

The data, variable or expression should be of the same type on either side of the statement. If variable is numeric, the data assigned to it should also be numeric and so is the case with string variables. E.g. : A = 42, A$ = "Union is Strength"

INPUT command is used to enter the values (text or numbers) while the program is being executed. This command waits for the user to enter the information and then assigns the values accordingly.

Syntax: [LINE NO] INPUT [Numeric or String Variable Name]

We can also have a list of variables in an INPUT statement but they should be separated by commas.

Syntax : [LINE NO] INPUT Variable 1, Variable 2, Variable 3

Example Type the following program and press F5 to execute it.

```
PRINT "What is your name?"
INPUT name$
PRINT "Hi, "; name$; ", nice to see you!"
PRINT "How old are you?"
INPUT age
PRINT "So you are"; age; "years old!"
END
```

For Your Info

John G. Kemeny (R) and Thomas E. Kurtz (L) designed Basic language in 1964.

The **END** command tells QBasic that the program ends here.

We can also use INPUT command to ask the user to enter the information. E.g. **INPUT "What is your name"; name$**. It will also give the same result.

GOTO

Sometimes you want the program to jump to a particular line. GOTO statement is used to transfer the control from one statement to another.

Syntax : [Line No.] GOTO [Line No.]

IF ...... THEN STATEMENT

It is used for making decisions based on the result of comparisons. The IF command has to be followed by THEN command and lastly END IF command. END IF is the optional clause.

Syntax : IF <CONDITION> THEN <STATEMENT> [END IF]

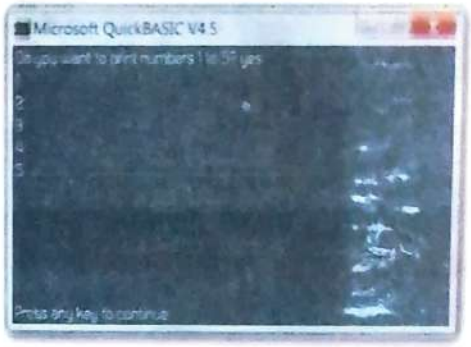
If the condition is TRUE, then the instruction(s) specified after "THEN" is executed. If the condition is FALSE, the control shifts to the END IF, ignoring everything after the THEN statement on that line.

Example

```
INPUT NAME$
IF NAME$ = "Vicky" THEN
PRINT "Hello, Vicky!"
END IF
```

Example

```
INPUT "Do you want to print numbers 1 to 5": YS
IF YS = "yes" THEN
PRINT "1"
PRINT "2"
PRINT "3"
PRINT "4"
PRINT "5"
END IF
```



Here, the program asks you a question. If you enter yes, then it prints 1 to 5 on the screen.

IF...THEN...ELSE

It is a conditional decision making statement. If the condition given after IF is true, statement(s) specified after THEN is executed. But if the condition is False, the statement(s) specified after ELSE will be executed.

Syntax: IF <condition> THEN <statement1> ELSE <statement2> [END IF]

Example

To print series with a gap of 4 between 1 and 40

```
10 N = 1
20 IF N<41 THEN GOTO 30 ELSE GOTO 60
30 PRINT N
40 N = N + 4
50 GOTO 20
60 END
```

USING GRAPHICS

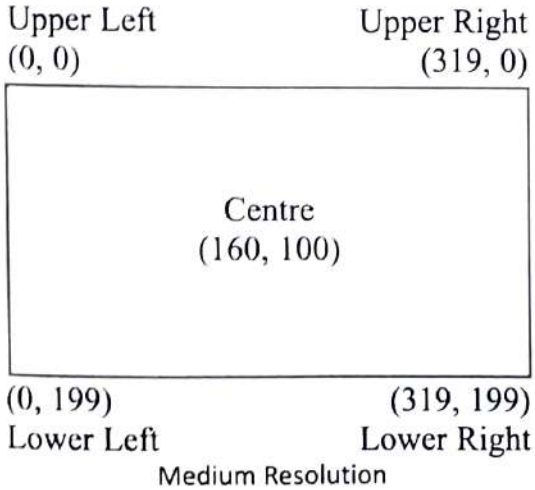
In QBasic, it's very easy and interesting to create and display graphics on the screen. We use pixels (picture elements) to draw lines, figures and patterns of different shapes. Before we proceed with making beautiful graphics, let us first understand the display characteristics of our monitor. We can have two common modes of display:

Medium Resolution

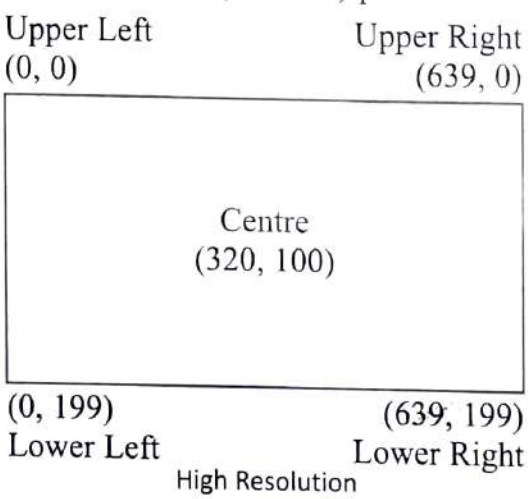
The computer screen is divided into 320 (horizontal) by 200 (vertical) pixels.

High Resolution

The computer screen is divided into 640 (horizontal) by 200 (vertical) pixels.



Medium Resolution



High Resolution

For Your Info

- The amount of pixels per unit area on the screen is called its resolution.
- Locate statement moves the cursor to the specified position on the screen.
- Locate [row], [column] Locate 5, 5

SCREEN STATEMENTS

This statement is used to set the screen resolution. Its syntax is as follows:

SCREEN mode parameter

There are many screen modes that can be used in QBasic. Every mode has a different resolution and supports different number of colors. The following table displays the various screen modes with their resolution and the number of colors they support.

Screen Mode	Resolution	No. of Colors Supported
Screen 1	320 × 200	4
Screen 2	640 × 200	2
Screen 7	320 × 200	16
Screen 8	640 × 200	16
Screen 9	640 × 350	16
Screen 10	640 × 350	2
Screen 11	640 × 480	2
Screen 12	640 × 480	16
Screen 13	320 × 200	256

Sticky Note

Screen 0 : This mode can be used only for text. No graphics can be created in this mode, all the other modes can be used to create graphics. The default mode of the screen is mode 0.

For Your Info

- To set a point from where a particular drawing should start on the screen, PSET statement is used PSET (X, Y), C.
- X refers to column and Y refers to row co-ordinate and C refers to color code.
- We can use $, ! and # signs in a variable name.

COLOR STATEMENT

This statement is used to set attractive screen colors for displaying the text and the graphics. Its syntax is as follows:

COLOR parameter f

COLOR parameter f, parameter b

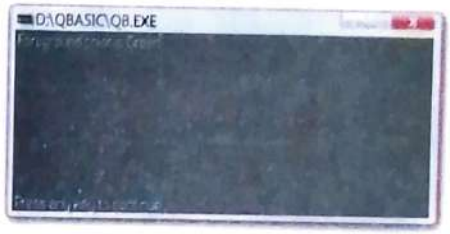
Where parameter **f** specifies the **foreground** color and parameter **b** specifies the **background** color. There are 16 color options for background and foreground colors, specified by the values 0 to 15.

Background Color Chart

0. Black	4. Red	8. Dark Gray	12. Light Red
1. Blue	5. Magenta	9. Light Blue	13. Light Magenta
2. Green	6. Brown	10. Light Green	14. Light Yellow
3. Cyan	7. Gray	11. Light Cyan	15. White

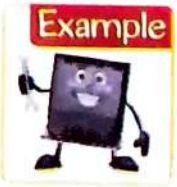
Let's create a programs to demonstrate the use of Color statement


```
CLS
COLOR 2
PRINT "Foreground color is 'Green'"
```




```
CLS
COLOR 14, 2
PRINT "Foreground color is 'Yellow' and
Background color is 'Green'"
```

To change the background color of the whole screen, write the CLS statement after Color statement.




```
COLOR 14, 2
CLS
PRINT "Foreground color is 'Yellow' and
Background colour is 'Green'"
```

LINE STATEMENT

The LINE statement is used to draw a straight line between two points on the screen.

For better output and proper colors, we should choose the screen mode that supports all the 16 colors given in the chart.

Syntax: LINE (X1, Y1) – (X2, Y2), COLOR

Where (X1, Y1) and (X2, Y2) represent the start and end coordinates of a line drawn in the specified color.

For Your Info

To draw vertical line, x-axis co-ordinates will remain the same for both starting and ending points of the line.

Similarly, for drawing a horizontal line, only the x-axis co-ordinates will change and y-axis co-ordinates will remain the same. To draw diagonal line on the screen, both 'x' and 'y' co-ordinates will change.

Example LINE (16, 20) – (44, 20), 1

The program will draw a blue line from the points 16, 20 all the way to the points 44, 20

Let's draw an isosceles triangle with horizontal base.

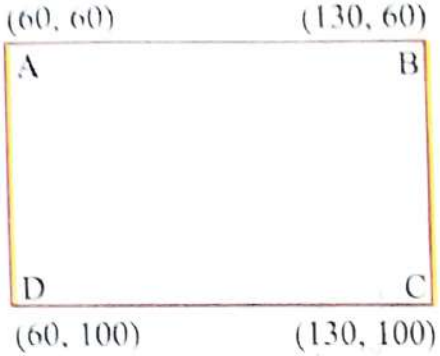
```
SCREEN 7
COLOR 4, 14
CLS
PRINT "This is a Triangle"
LINE (160, 30) – (250, 180), 4
LINE (250, 180) – (70, 180), 2
LINE (70, 180) – (160, 30), 1
END
```

DRAWING BOXES

Example **With Line statement, we can also draw boxes.**

```
SCREEN 7
COLOR 5, 15
CLS
LINE (60, 60) – (130, 100), 6, B
```

The letter B indicates the box option. In this statement, the coordinates (60, 60) and (130, 100) are the opposite corners of the rectangle.



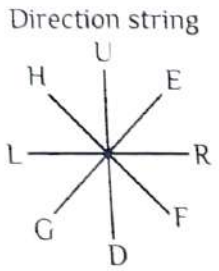
Example To fill the box with the desired color shade, add BF (box fill) option.

```
SCREEN 7
COLOR 5, 15
CLS
PRINT "This is a Rectangle"
LINE (60, 60) – (130, 100), 6, BF
```

For Your *Info*

With DRAW command, you can start a drawing from a fixed point which is set with PSET command and move around on the screen and draw straight lines in eight directions without specifying any pixel co-ordinates.

Syntax: DRAW "Direction string"




```
CLS
PSET (80, 80)
DRAW "R120 H60 G60"
```

R 120 will draw a 120 pixels straight line in the right direction. H60 and G60 will draw lines of length 60 pixels in the left upward and the left downward directions respectively.

CIRCLE STATEMENT

The Circle statement is used to draw a circle, ellipse or an arc of a circle.

Syntax: CIRCLE (x, y), r, p

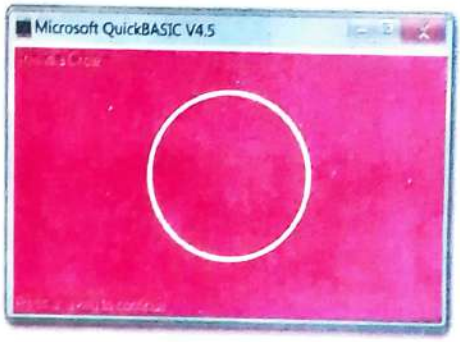
The coordinates x and y specify the centre location of a circle on the screen, 'r' gives the value of the radius and 'p' specifies the color code.

Sticky Note

PAINT statement fills an object with a color.
Syntax : PAINT (x, y), color, bordercolor

Example

```
SCREEN 7
COLOR 14, 5
CLS
PRINT "This is a Circle"
CIRCLE (160, 100), 70, 15
END
```



CREATING SOUND IN QBASIC

Beep Statement

If you want to add the beep sound, use BEEP statement. The syntax of using the BEEP statement is given below:

Example

```
CLS
INPUT "Press Enter to hear a beep", A$
BEEP
```

Play

It is used to generate musical notes. The codes used to produce different musical notes are as follows:

Example

```
PLAY "e8 d8 c8 d8 e8 e8 e4"
PLAY "c8 d8 e8 f8 g8 a8 b8 c4"
END
```

Boost Your Brain

A. Tick (✓) the right option.

1. Values stored in the program that do not change during program execution are called
   (a) Variables ☐ (b) Constants ☐ (c) Operators ☐ (d) Names ☐
2. ..... statement is used to set the screen resolution.
   (a) Drawing Boxes ☐ (b) Color ☐ (c) Screen ☐ (d) Print ☐
3. No graphics be created in ..... mode.
   (a) Screen 2 ☐ (b) Screen 5 ☐ (c) Screen 0 ☐ (d) Screen 1 ☐

4. The ..... statement displays message or output of a program.

(a) CLS (b) PRINT (c) GOTO (d) ENTER

5. To draw a fill box, the letter ..... is used with line co-ordinates.

(a) D (b) B (c) A (d) C

B. **Fill in the blanks with the correct words.**

IF...Then Line John G. Kemeny Thomas E.Kurtz Dollar String

1. A ..... variable contains value, symbols or text within double quotes and is represented by an alphabet followed by ..... sign.
2. Basic was designed by professor ..... and ..... in 1964.
3. ..... command allows us to enter information when the program is being executed.
4. The ..... statement is used to draw a straight line.

C. **State whether the following statement are true or false.**

1. BASIC stands for Beginners All Purpose Symbolic Instruction Code.
2. Integer constants are only positive numbers.
3. The background color code for Gray color is 7.
4. The Circle statement is used to draw a circle.
5. In high resolution mode, the computer screen is divided into 320 × 200 pixels.

D. **Answer the following questions.**

1. What is the difference between IF....THEN and IF....THEN....ELSE statements? Explain.
2. How can we draw a rectangle? Explain with an example.
3. What is the use of PSET statement?
4. What do you understand by the term screen modes?
5. What is the difference between B and BF options used with LINE statement?
6. What is the use of INPUT statement?

Activity Monitor

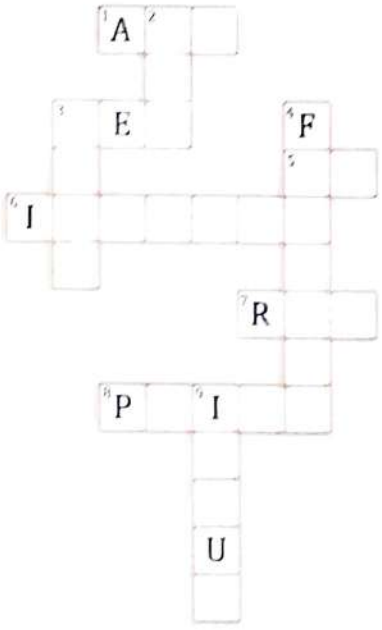
- **Write QBASIC programs to draw the following geometrical shapes:**
  1. Squre
  2. Rectangle
  3. Circle
  4. Line
- **Solve the following crossword with the help of the hints given below:**

ACROSS

1. Checks for two condition (3)
3. Used to give values to a variable (3)
5. Checks for two condition (2)
6. A numeric data type (7)
7. Used as comment (3)
8. Displays the output (5)

DOWN

2. Negates the result of a condition (3)
3. A numeric data type (4)
4. A counter loop (3, 4)
9. Takes data from the user (5)



Lab Visit

Write programs for the following:

- To find the sum of squares of odd numbers up to 10 terms.
- To draw an equilateral triangle.
- To draw three concentric circles with equal distance between them.

4 Looping Statements

Lesson Extract

- The FOR...NEXT Loop
- FOR NEXT with STEP
- NESTED FOR...NEXT
- WHILE...WEND Statement
- DO UNTIL...LOOP Statement
- Exit

Looping means repeated execution of a statement or a set of statements.

Example

Let's understand with the help of an example : Suppose your instructor orders you to take 10 rounds of a ground to warm up yourself. The very first thing which you will do, will be, to fix a starting point and then start running. On reaching the starting point again, you complete a round. Then you take second round, and so on. This way you keep track of number of rounds until the process is completed. The process which goes in your mind is that you set a value (control variable) in your mind and keep on incrementing it until the process is completed.

For example: Let's say the control variable is C, which starts fresh from the starting number. This number is usually 0 or 1. When you complete the first round, value of C becomes 1, after second round its value becomes C = C + 1, i.e. 1 + 1 = 2, and so on. This value has to be incremented every time the required process is repeated. After incrementing, the control variable (counter) has to be checked against the maximum limit of the number of the repetitions required.

The advantage of using looping technique in programming is that it reduces the number of instructions and also the memory space. Consider the following examples:

Example

```
10  LET A$ = "GOD BLESS YOU"
20  PRINT A$
30  LET B$ = "GOD IS GREAT"
40  PRINT B$
50  GOTO 20
60  END
```

The output will be printed infinite times.

Now, look at the following example, which prints 'THANK YOU' 10 times by using counter.

```
10  A=1                          (Initializing the counter)
20  LET X$ = "THANK YOU"
30  PRINT X$
40  A=A + 1                      (Incrementing the counter)
50  IF A < = 10 THEN GOTO 30     (Checking for the maximum limit)
60  END
```

A loop is, thus, used to repeat a block of statements a specific number of times. The following loops are available in QBASIC:

- The FOR...NEXT Loop
- WHILE...WEND
- Do UNTIL... Loop

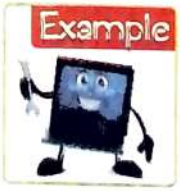
Sticky Note

The FOR statements are best used to perform a loop a specific number of times. However, the Do.... and WHILE....WEND statements are best used to perform a loop an undetermined number of times.

THE FOR ....NEXT LOOP

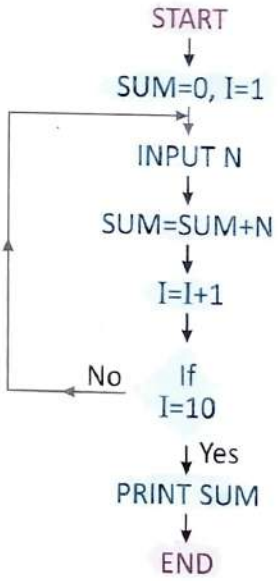
The process of using multiple counters in large programs is very tedious. The process of repeating a program segment in a loop can be simplified and controlled by using FOR....NEXT statement. This also reduces the length of a program.

Syntax: FOR <control variable> = <initial value> To <final value>
{Statement}
NEXT <control variable>



Program to find sum of 10 numbers.

```
REM CALCULATE SUM OF 10 NUMBERS
CLS
SUM = 0
FOR I = 1 TO 10
INPUT N
SUM = SUM + N
NEXT I
PRINT SUM
END
```



For Your Info

An Accumulator is a variable that stores the sum of the numbers entered during the execution of a loop. E.g., Sum = Sum + N.

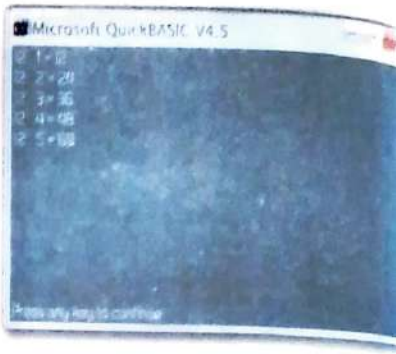
The following steps are involved in executing the FOR...NEXT statement:

- The control variable is assigned an initial value and a final value. The difference between the final and the initial value specifies the number of times the loop will be executed.
- The set of statements between the FOR...NEXT statement is executed.
- The NEXT statement increments the value of the control variable by one and shifts the program control back to the FOR statement.

- The new value of the control variable is compared against the final value specified in FOR statement. If it is still less, then the whole process is repeated.
- If the value of control variable exceeds the final value, the statement after the NE statement is executed.

Example **Program to print table of 12 (up to 5 times only).**

```
CLS
FOR A = 1 TO 5
PRINT "12 * "; A; "="; 12*A
NEXT A
END
```

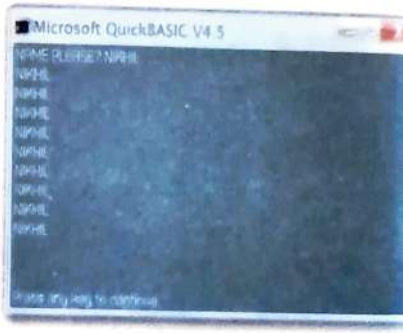


For Your Info

A Counter is a variable that keeps track of the 'number of times' a particular instructio or a set of instructions has been executed in a loop. It is also called Control Variable.

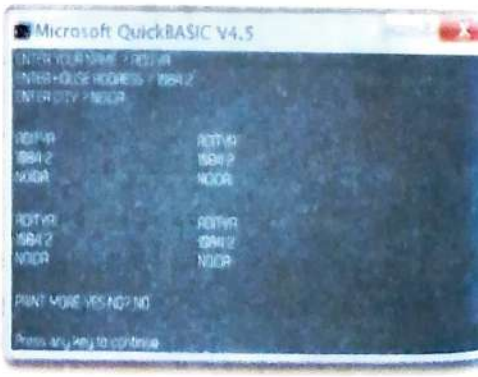
Example **Program to display your name nine times on the screen.**

```
CLS
REM PRINT YOUR NAME
INPUT "NAME PLEASE"; N$
FOR X=1 TO 9
PRINT N$
NEXT X
END
```



Example **Program to create multiple address labels.**

```
10    REM PROGRAM TO PRINT MULTIPLE ADDRESS LABELS
20    INPUT "ENTER YOUR NAME"; A$
30    INPUT "ENTER HOUSE ADDRESS"; B$
40    INPUT "ENTER CITY"; C$
50    PRINT
60    FOR N = 1 TO 2
70    PRINT A$; TAB(40); A$
80    PRINT B$; TAB(40); B$
90    PRINT C$; TAB(40); C$
100   PRINT
110   NEXT N
120   INPUT "PRINT MORE -YES/NO"; Y$
130   IF Y$ = "YES" THEN 20
140   END
```



FOR...NEXT WITH STEP

By default, the NEXT statement increments the value of the control variable by 1, but we can increase or decrease the value as per our choice using STEP statement. STEP value is optional and can either be positive or negative.

Syntax:

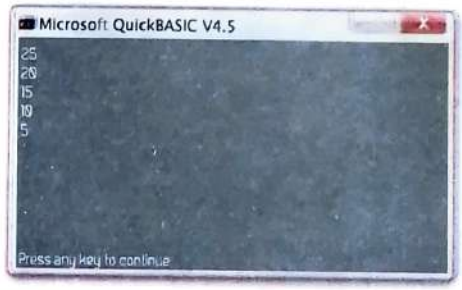
FOR <CONTROL VARIABLE> = <INITIAL VALUE> TO <FINAL VALUE> STEP <n>

Program to print first five odd numbers.

```
CLS
FOR L = 1 TO 10 STEP 2
PRINT L
NEXT L
END
```

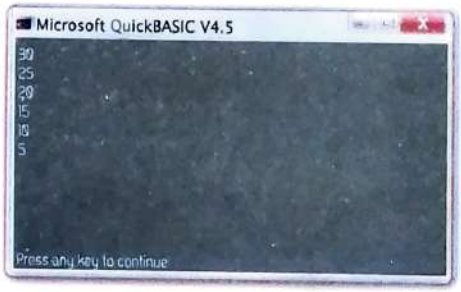
Program to print numbers between 25 and 5 with a decreasing step of 5.

```
CLS
FOR N = 25 TO 5 STEP –5
PRINT N
NEXT N
END
```



Program to print numbers starting from 30 and then with a decreasing value of 5

```
10    CLS
20    B = –5
30    FOR X = 30 TO 1 STEP B
40    PRINT X
50    NEXT X
60    END
```



In this case, B is assigned the value –5, hence the values are decreased in step of 5.

Sticky Note

While using a negative number with the STEP statement, the initial value in FOR statement should be more than the final value as shown in the examples.

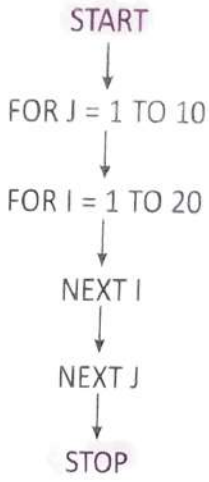
NESTED FOR...NEXT

The use of a FOR...NEXT statement within another FOR...NEXT statement is known as nested FOR...NEXT statement. The FOR...NEXT which lies outside or encloses the second FOR...NEXT statement is called **Outer Loop**. The one, which lies inside is called Inner Loop.

- You can have maximum of 9 loops within a loop and every loop should be defined completely within the outer loop.
- The same control variable cannot be used in different loops.
- Firstly, the innermost loop will be executed and then the outer loop.

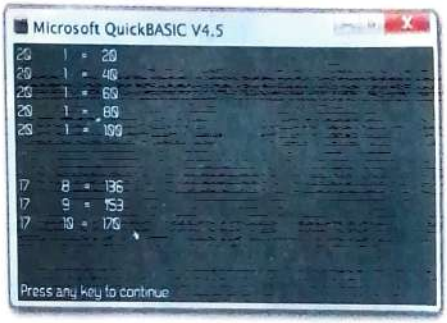
Syntax:

```
10      FOR J = 1 TO 10
20
30
40      FOR I = 1 TO 20
50
60
70      NEXT I
80
90      NEXT J
```



Program to print the tables from 20 to 17.

```
10    FOR I = 20 TO 17 STEP –1
20    FOR J = 1 TO 10
30    PRINT I,"*", J, "=", I*J
40    NEXT J
50    PRINT
60    NEXT I
70    END
```



WHILE...WEND STATEMENT

Sometimes, a loop has to be executed repeatedly while a given condition remains true. In such cases, WHILE...WEND statement is used.

Syntax: WHILE condition

```
{
Statement(s)
}
WEND
```


```
10 CLS
20 X = 20
30 WHILE X < 25
40 PRINT X
50 X = X + 1
60 WEND
70 END
```

1. To begin with, the value of X is 20. The condition (X < 25) will be checked.
2. Since the condition is true, the current value of X will be displayed.
3. The value of X becomes 21, as it has been incremented by one.
4. WEND statement shifts the control back to the WHILE statement.

5. The condition (X = 25) will be checked again. If the condition is true, the control repeats the statements No. 40 & 50 but if the condition is false, the control shifts to the next statement after WEND.

DO UNTIL...LOOP STATEMENT

Sometimes, a loop has to be executed repeatedly while a given condition remains false, or becomes true. In such cases, DO UNTIL...LOOP statement is used.

Syntax: DO UNTIL condition

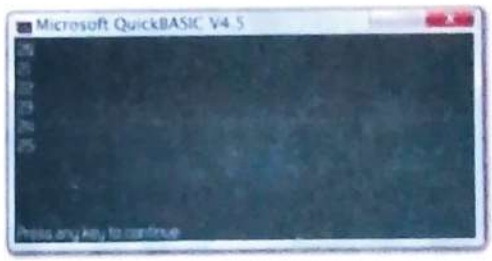
{

Statement(s)

}

LOOP


```
10 CLS
20 X = 20
30 DO UNTIL X > 25
40 PRINT X
50 X = X + 1
60 LOOP
70 END
```



1. To begin with, the value of X is 20. The condition (X > 25) will be checked.
2. Since the condition is false, the current value of X will be displayed.
3. The value of X becomes 21, as it has been incremented by one.
4. LOOP statement shifts the control back to the DO UNTIL statement.
5. The condition (X > 25) will be checked again. If the condition is false, the control repeats the statements no. 40 & 50 but if the condition is true, the control repeats the statements no. 40 & 50 for last time and then shifts to the next statement after LOOP.

Sometimes, we wish to execute a set of statements once and then repeat these statements only if the given condition is true, **DO...LOOP WHILE** statement is used in this scenario.

Syntax:

DO

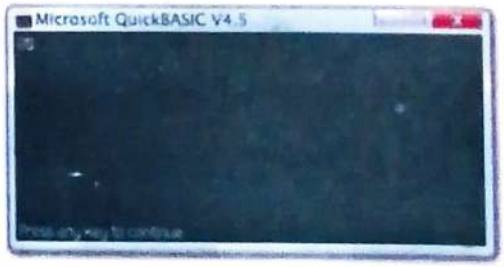
{

Statement(s)

}

LOOP WHILE condition


```
10 CLS
20 X = 20
30 DO
40 PRINT X
50 X = X + 1
60 LOOP WHILE X > 25
70 END
```



- This program will print the value of X **once,** then check for the condition. If the condition is true, it will repeat the statement within DO Loop. If the condition is false, it will not repeat the statements.
- The point to be understood here is that, although the condition was false, it executed the statement once.
- Change the condition to X < 25. Run the program and notice the result.

EXIT

Exit command is used to come out of a loop before the expected number of executions. Exit command is used followed by either FOR or DO.

- Print the square of numbers from 1 to 10 using FOR...NEXT Loop.
- Print the odd numbers from 20 to 1 using FOR...NEXT loop.

Boost Your Brain

A. Tick (✓) the right option.

1. A ..... loop is generally used as a counter loop when you know exactly how many times you need to execute the loop.
   (a) FOR...NEXT ☐ (b) DO...LOOP WHILE ☐
   (c) DO UNTIL...LOOP ☐ (d) WHILE...WEND ☐
2. A ..... variable keeps track of the 'number of times' a particular instruction has been executed in a loop.
   (a) CONTROL ☐ (b) NEXT ☐ (c) FOR ☐ (d) WHILE ☐
3. A ..... statement combines the initialization and checking steps of counters in a single statement.
   (a) DO ☐ (b) WHILE ☐ (c) FOR ☐ (d) NEXT ☐
4. A ..... statement shifts the control back to the WHILE statement.
   (a) WHILE ☐ (b) WEND ☐ (c) DO ☐ (d) NEXT ☐

B. Fill in the blanks with the correct words.

FOR.....NEXT Initial NEXT STEP Final Control

1. The ..... variable keeps track off the number of times a process is executed.
2. FOR statement is always used along with the ..... statement.
3. The control variable is assigned an ..... and ..... value in FOR...NEXT statement.
4. The ..... statement increments/decrements the value of the control variable.

5. All the statements, which are to be executed in a loop, come in between ..... statements.

C. State whether the following statements are true or false.

1. Looping technique reduces the number of instructions. ☐
2. The same control variable can be used in different loops. ☐
3. In Nested loop, the innermost loop will be executed first then the outer loop. ☐
4. There can be maximum 9 loops within a loop. ☐
5. WEND clause is used with FOR statement. ☐
6. STEP value can never be negative. ☐

D. Answer the following questions.

1. What is looping? Describe the types of looping with examples.

.....

2. What is the use of STEP in FOR...NEXT loop?

.....

3. What is nested loop?

.....

4. What is the difference between FOR...NEXT and nested FOR...NEXT loop?

.....

5. What is the difference between WHILE...WEND and DO UNTIL...LOOP?

.....

6. Why do we use Exit Command? Give example.

.....

- Sarah wants to generate an even number series from 10 to 20. Which loop should she use? Write the code for this program.
- Reema has been given a task of writing the multiple of 7 from 70 to 140. What statements should she write to display these on the QBASIC screen?

Give the output of the following programs:

1.
```
CLS
FOR Y = 1 to 50 step 5
PRINT Y
NEXT Y
```

2.
```
M = 1
Do UNTIL M > 10
PRINT M
M = M + 1
LOOP
```

5 Introduction to MS-Access

Lesson Extract

- Database and DBMS
- Advantages of a Database
- Levels of a Database
- Starting MS-Access 2007
- Parts of MS-Access Database Interface Window
- Components of MS-Access Database
- Exiting MS-Access

Data and information are important components of a computer system. Data itself has no meaning. Data simply refers to raw facts and figures. These may be in the form of numbers, alphabet, images, sounds or a combination of these. We provide data as an input for a computer which is processed by the CPU and we get the information as an output. *Data* refers to the raw facts while *information* is the processed data. Data is organised in a database and managed by the DBMS. Let's discuss about database and DBMS.

DATABASE AND DBMS

A database is a system for collecting and organising data. It can store information about people, items, activities, etc. Many databases begin in the form of a list in a word-processing program or spreadsheet. As the list grows bigger, duplications and mismatching begin to appear in the data. This gives rise to difficulty in understanding the data. Therefore, data is organised and stored in a systematic way in a database. Hence, a database is defined as an organised system to store and maintain data. For example, a list of names of students and the marks obtained by them is organised in the form of a table is a database.

A database cannot be organised and maintained in a word processor. A spreadsheet provides limited features for databases. So, we need a different application software to manage databases. The application software that creates and maintains a collection of databases is called *Database Management System (DBMS)*. A DBMS manages all the functions of a database. MS-Access, one of the software of MS-Office is an example of DBMS.

For Your Info

MS-Access is, in fact, a RDBMS (Relational Database Management System). Oracle is another popular RDBMS used exclusively for the development of business information systems.

ADVANTAGES OF A DATABASE

There are several advantages of using a database. Without a database, you cannot store and access huge amount of data required for business and other applications. Many database solutions are available for various business needs, ranging from storing customer information in hosting a website. A database provides us with the following benefits:

1. **Saves Time :** Instead of searching through the endless piles of paperwork, a database locates information with the help of a simple query. A user can enter specific keywords in order to find information. For example, when you enter a keyword in Google search engine, the required information is searched from a collection of databases.
2. **Saves Money :** Small business groups always look for cost cutting methods without compromising on quality. A database requires higher initial investment, however, over the long run, it saves money by improving the efficiency of all employees, providing better services to customers and saving on paper costs.
3. **Reduces Data Redundancy :** Duplication of data is reduced in a database as you can arrange the data in a particular order. For example, in a library the name of a book may occur under the author's name and its ISBN number. However, with the help of DBMS the redundant data can be removed.
4. **Facilitates Sharing of Data :** Large companies can benefit from databases when information needs to be provided to various users through a network. For example, a bank having several branches shares information through data communication and allows you to withdraw money through an ATM (Automated Teller Machine).
5. **Ensures Data Security :** File cabinets are not safe as they can be stolen, accidentally destroyed, or lost. Databases secure the valuable information through passwords and other mechanisms.
6. **Maintains Integrity :** DBMS maintains integrity by keeping some constraints when the data is entered. These constraints are the rules that are designed to keep data consistent and correct. They act like a check on the incoming data.

LEVELS OF A DATABASE

A database consists of tables or files. A table consists of records and a record consists of fields. Data organised in columns of a table is called *Fields* (Name of Student, Marks Obtained, etc.) and data organised in rows is called *Records* (Vivan, Nakul, etc.) as illustrated below:

A Database File or Table Showing the Result of Various Students

Name of Student	Marks Obtained	Maximum Marks	Percentage	Result
Vivan	140	200	70.00	Pass
Nakul	150	200	75.00	Pass
Manu	170	200	85.00	Pass
Kavya	62	200	31.00	Fail

MS-Access

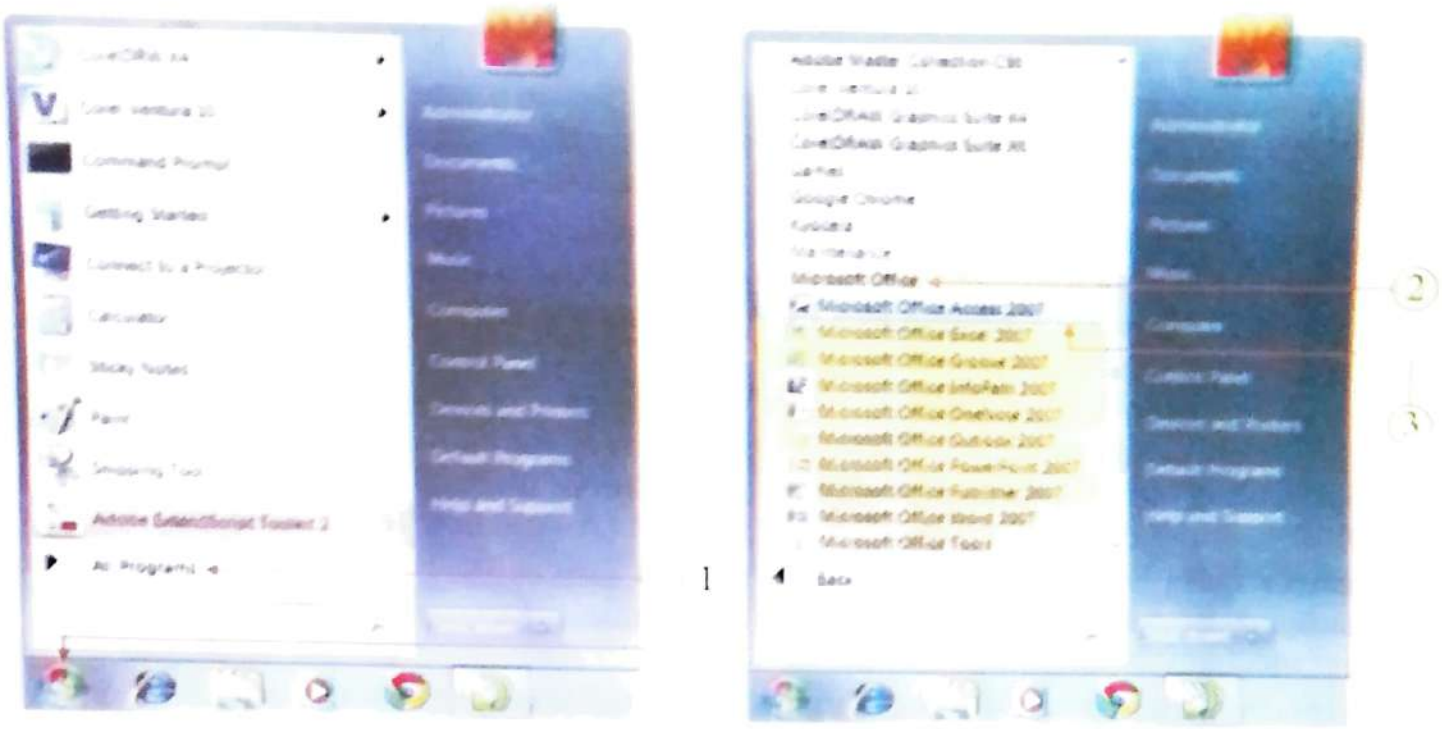
MS-Access makes use of tables and records to store information. It is a database management system from microsoft. It can also important data stored in other applications and databases. Now, let us learn how MS-Access 2007 application can be used.

STARTING MS-ACCESS 2007

The various steps to start MS-Access are:

- Click on the **Start** prompt of Windows desktop and select **All Programs.**

- A cascading menu appears from where you can select **Mircosoft Office** option
- Another cascading menu appears. Now, select **Microsoft Office Access 2007** option from this menu.



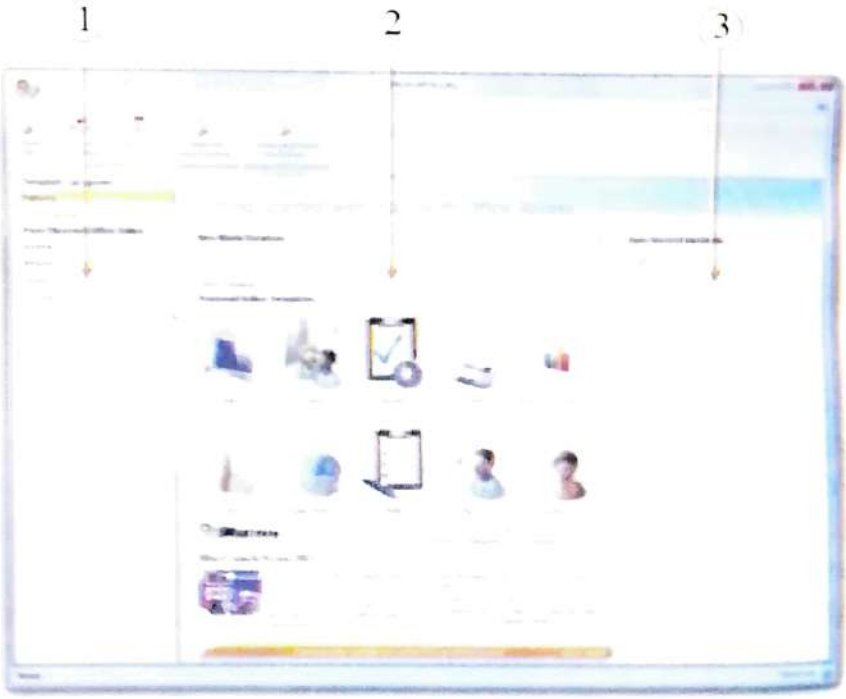
Starting MS-Access 2007

The opening screen of MS-Access is called **Microsoft Access Interface**. The main area of the Microsoft Access Interface is divided into the following three sections:

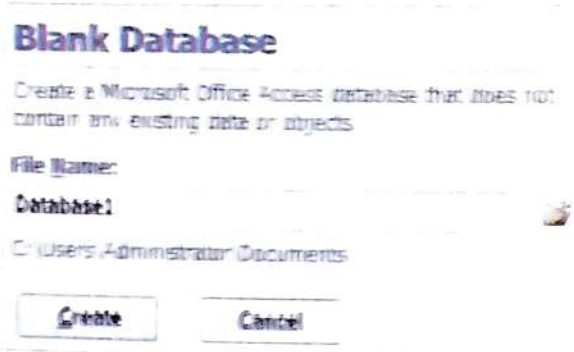
- The left side displays a column head Template with various links in it.
- The middle section has two parts. The top section is used to create a database. The bottom section displays some promotional information from Microsoft.
- The right side displays a column titled Open Recent Database with a More button under it. By default, the area under the More button is empty.

For Your Info

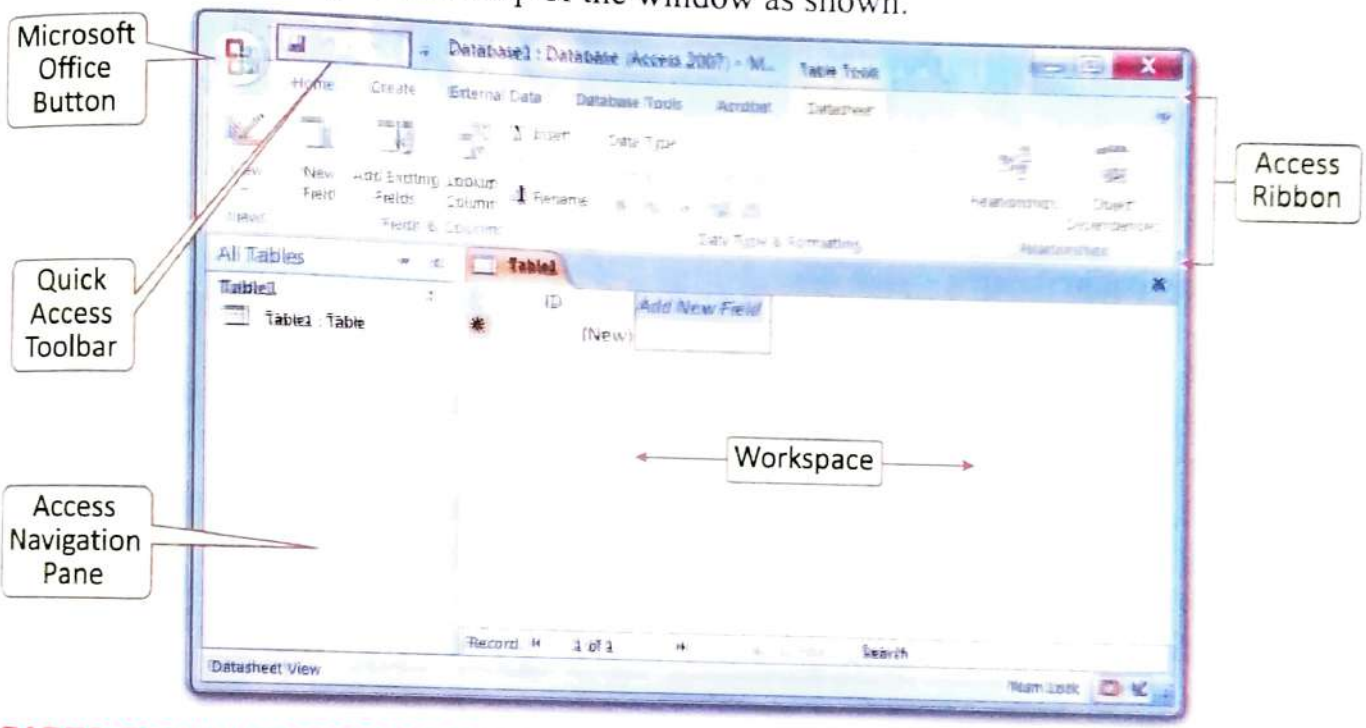
You can also start MS-Access by clicking on its shortcut icon on the desktop, if it is available.



Now, click on the Blank Database icon which is present at the top of the Microsoft Access Interface to create a new database. You will see a new dialog box on the right side of the opening screen window, where you need to type the file name and click on the Create button as shown along side.



You will see the Database Interface Window of MS-Access titled Database 1 : Database (Access 2007) – Microsoft displayed on top of the window as shown.



PARTS OF MS-ACCESS DATABASE INTERFACE WINDOW

The Database Interface Window of MS-Access 2007 consists of the following parts:

1. **Access Ribbon :** It consists of a row of tabs such as Home, Create, External Data and Database Tools. When you click on each tab, it opens with its own individual Ribbon and particular icon. Each tab on a Ribbon has a group of icons that perform similar tasks.
2. **Microsoft Office Button :** It is located at the top left corner of the Access screen. It is used to perform functions like Opening a file, Creating a new file, Printing a file, etc.
3. **Quick Access Toolbar :** It is located on the right side of Office button and is used to provide quick access to some of the common commands such as Save, Undo and Redo. You can also customise this toolbar to add additional commands.
4. **Access Navigation Pane :** It is located on the left side of the Access screen. Access database has four main components (called database objects) – Tables, Forms, Queries and Reports. Their icons can be seen at this navigation pane. When you enter the data in the workspace, you will find these options in the Access Navigation Pane. To open one of your database objects, you just have to click on one of these icons and the required object will open in the main Access window.

5. **Workspace** : It is the place where you actually create a table and carry out other database tasks.

Mind Feeder

An MS-Access database has a .accdb extension.

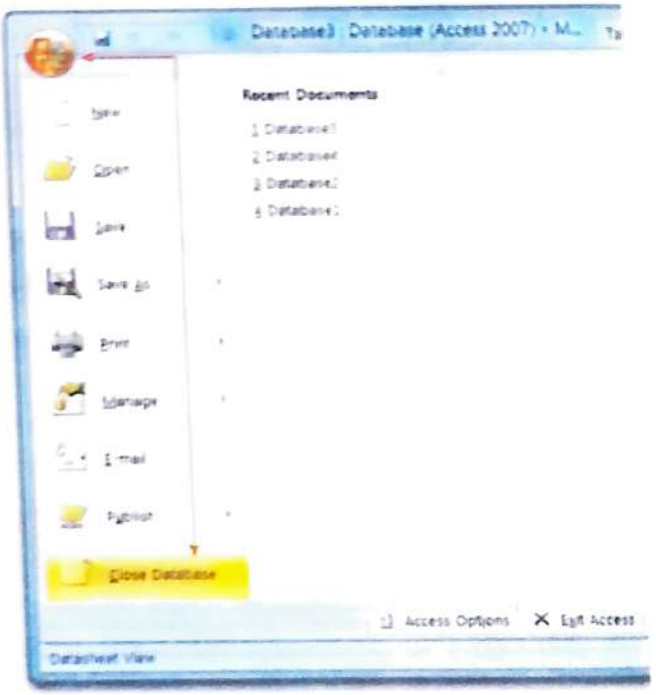
COMPONENTS OF MS-ACCESS DATABASE

An MS-Access database has the following components (or objects):

1. **Tables** : Tables are the database files logically organised in the form of rows and columns. In a relational database terminology, a row of a table is called **Tuple** (Record) and the column is called **Attribute** (Field). We enter the data in tables.
2. **Queries** : Queries are basically questions based on the data of a database. They allow you to extract data or information about the fields, records and summaries of the table or database.
3. **Forms** : Forms are the input screens designed to simplify the data entry process. A computer user generally prefers to enter data in a well-designed form, rather than a table.
4. **Reports** : Reports are the layouts designed for viewing or printing the data of a database. By using reports, you can view the records of a table in a well-designed layout as per your requirement.
5. **Modules** : Modules are the collection of programs written to access the database.
6. **Pages** : Pages are used to add, view and edit data of the tables.
7. **Macros** : Macros are the sets of instructions that help you to calculate your repetitive tasks performed on a database.

Closing MS-Access Database

To close MS-Access database, click on the **Microsoft Office Button** and select **'Close Database'** option from the menu. We can use the 'Exit Access' option from same menu for exiting from MS-Access.



Closing Database in MS-Access

Access vs. Excel

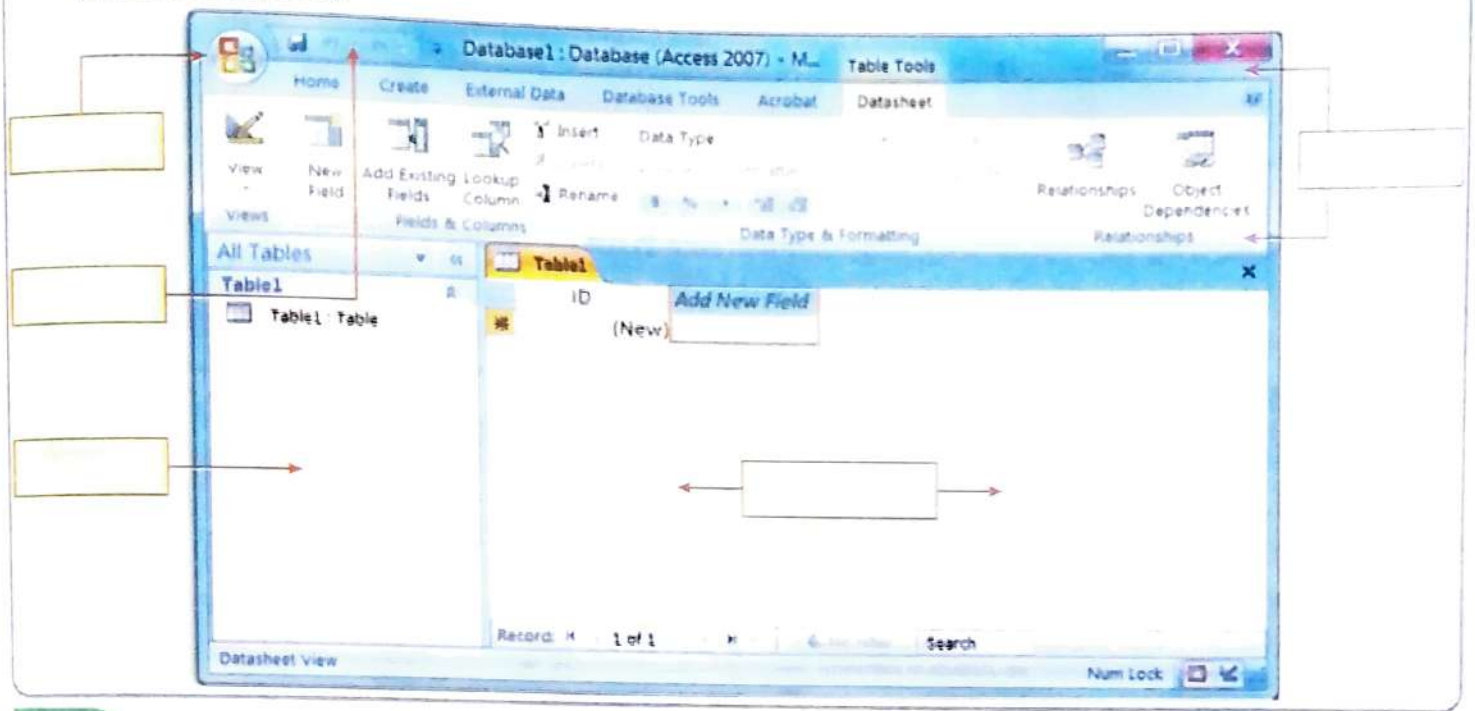
Access databases and Excel spreadsheets have similar functions. However, Excel is not a database management application. Excel spreadsheets store data in rows and columns called worksheets. The most common use of spreadsheets is to perform calculations. On the other hand, MS-Access stores data in tables that look similar to worksheets but function quite differently. Access allows the user to combine data from multiple tables, analyse and/or report information in a number of different ways.

Quick Key

To quit MS-Access, Press Key Combination	Alt + F4

Time to Drill

⊙ **Look at the picture shown below and label the different parts of MS-Access Database Interface window.**



Boost Your Brain

A. Tick (✓) the right option.

1. An application software which is used to create and maintain a database
   (a) DBBS ☐ (b) DBMS ☐ (c) DDMS ☐ (d) DPMS ☐
2. MS-Access is a :
   (a) Word Processor ☐ (b) Spreadsheet ☐
   (c) Database ☐ (d) Worksheet ☐
3. A database ..... data redundancy.
   (a) increases ☐ (b) reduces ☐
   (c) does not effect ☐ (d) none of these ☐
4. The main area of the MS-Access Interface is divided into ..... sections.
   (a) two ☐ (b) three ☐ (c) five ☐ (d) four ☐
5. ..... consists of a row of Ribbon tabs with headings such as Home, Create, External Data and Database Tools.
   (a) Access Ribbon ☐ (b) Microsoft Office Button ☐
   (c) Quick Access Toolbar ☐ (d) Workspace ☐

B. Fill in the blanks with the correct word.

accdb workspace database Microsoft Office Relational Database Management

1. A ..... is a system for collecting and organising data.
2. RDBMS stands for ..... System.
3. ..... button is located at the top left corner of the Access screen.
4. An MS-Access database has a ..... extension.
5. ..... is the place where you can actually create a table in database interface window.

C. State whether the following statements are true or false.

1. MS-Access is a Database Management System.
2. A database locates information with the help of a simple query.
3. A database does not support communication.
4. Quick Access Toolbar is located on the right side of Office button.
5. A column name is also called a field name.
6. Tables, queries, reports and forms can be created in MS Access.

D. Answer the following questions.

1. What is a database? Give examples of a database.

.....

2. Write any four advantages of a database.

.....

3. What are the database objects ? Name any four.

.....

4. What are the various parts of MS-Access Database Interface window?

.....

5. How is MS-Access different from MS-Excel?

.....

* Make a table of your friend's addresses and phone numbers with 10 records and 5 fields (Name, Address, City, Mobile No. and E-mail ID)

- Start MS-Access and write in your practical notebook about the various steps you will follow to open it.
- Open the MS-Access Database Interface window and make a chart showing its various parts in your practical notebook.

6 Working with Tables in MS-Access

Lesson Extract

- Creating a Database and Tables
- Basic Structure of a Table
- Opening a Database and Tables
- Modifying the Table Structure
- Inserting and Deleting Records
- Editing Records in Tables
- Sorting Data within a Table

In the previous chapter, you have discussed the basic concept of a database and the various components of an MS-Access database. A table is the basic component of a database in which you enter data. In this chapter, you will learn to work with the tables.

CREATING A DATABASE AND TABLES

There are basically two ways to create a database and tables in MS-Access:

1. Using local or online templates
2. Working with a blank database

Although using templates is the fastest technique to work on a database, it is however, not recommended for beginners who want to learn the database. Therefore, we will first learn to create a database by working on a blank database.

Creating a Database

Let's follow the steps given below to create a database:

- Start MS-Access by clicking on **Start** button and selecting **Microsoft Office Access 2007** option. The opening screen of MS-Access called Microsoft Access Interface will open before you.
- Click on the **Blank Database** icon at the top of *Microsoft Access Interface*. You will see a new dialog box at the right side of the opening screen window.
- Type the name of the database (say Student) and click on the **Create** button.

Now, MS-Access Database Interface window will appear on the screen, where you can create a table.

CREATING A TABLE IN MS-ACCESS 2007

There are mainly two ways to create a table:

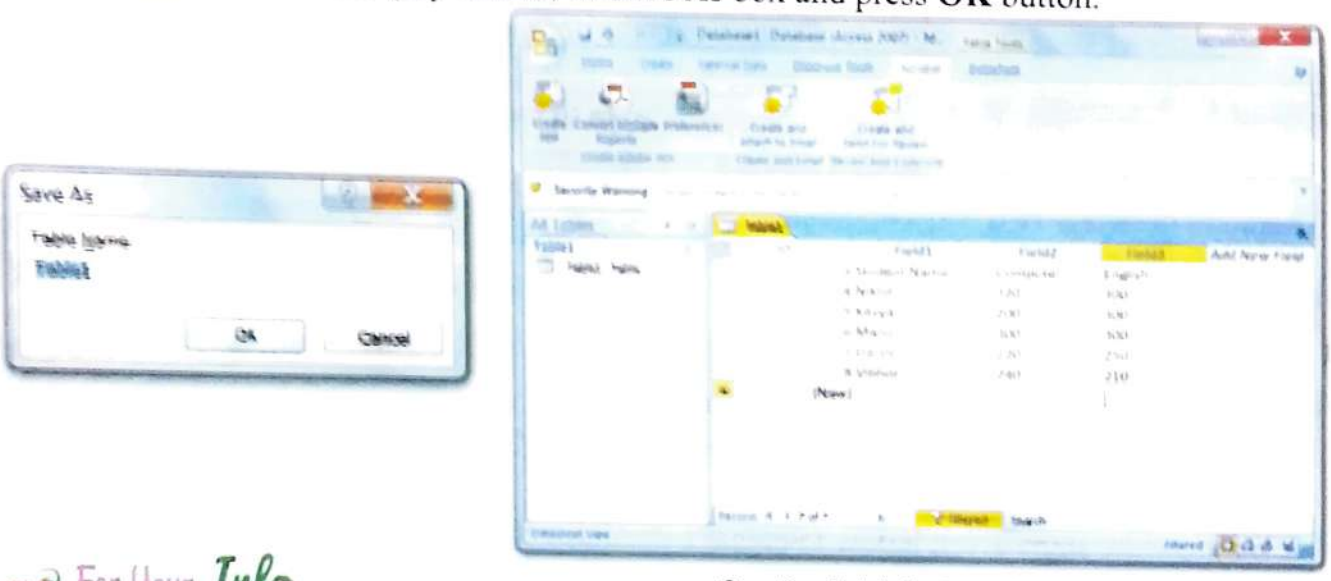
1. **Using Datasheet View :** This view allows you to create a table in the spreadsheet view that you commonly use in MS-Excel. Data can be entered directly into the table in rows and columns. Although, this is a simpler method, it is not a professional approach of working with tables in a database.
2. **Using Design View :** This view allows you to create a table in a professional way by first defining the structure of a table and then entering the data. This method is used by programmers and professionals.

Let's create tables using both views.

Creating a Table by Using Datasheet View

By default, a table is created in Datasheet View. When you create a database, the workspace of a Database Interface window shows a table with default name 'Table 1' in the Datasheet View. Just start entering the data in rows and columns of the table (without entering headings) as illustrated below.

In a datasheet the field names by default are seen as ID Field 1, Field 2, Field 3, etc. where ID is used for identification number generated automatically as 1,2,3,... and so on. However, you can also rename the fields later on. After entering the data, you should save the table either by pressing **Ctrl + S** keys together or choosing **Save** option from the **Office** button. Type the name of the table (say Marks) in **Save As** box and press **OK** button.



Creating Table in Datasheet View

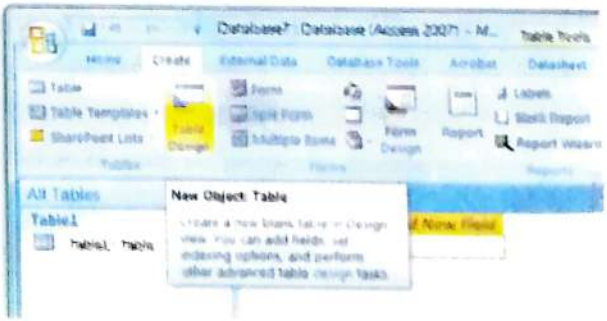
For Your Info

To change the name of a field, place the cursor anywhere on the column and click on Rename button of the Fields & Columns group of Datasheet tab and type the new name of the field.

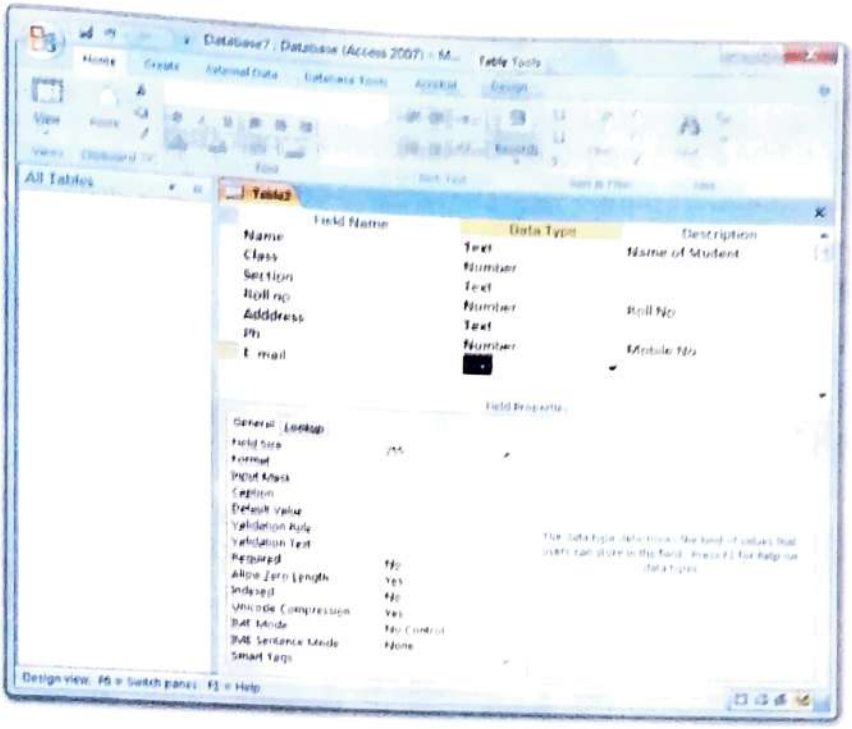
Creating a Table Using Design View

The Design View allows you to enter names of the fields in the table and specify their data types. A data type indicates the kind of data (for example, numbers, text, or dates) to be stored. Let's create another table in the database, 'Student', using Design View by following the steps given below:

- Select Table Design option from the Tables group on Create tab as shown along side.
- You will see the Table Design screen with three columns – Field Name, Data Type and Description. Enter the field name, data type and description in each field of the table as shown.

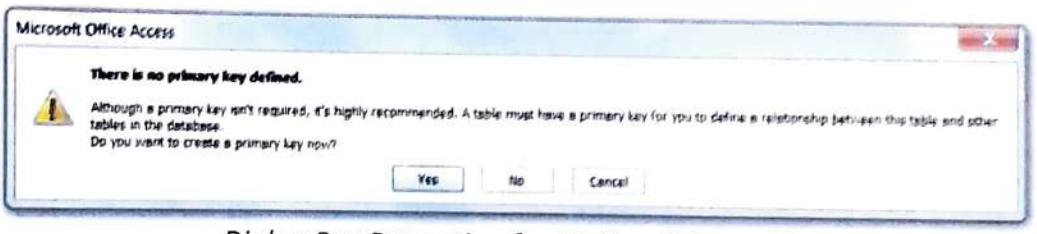


Creating Table in Design View



Defined Fields in Table

- Save the table either by pressing Ctrl + S keys together or choosing Save option from the Office button. Type the name of the table (say Address) in Save As box and press OK button.
- A message box appears on the screen giving you a warning that no primary key is defined. Click on No option.



Dialog Box Prompting for Making Primary Key

- Press Ctrl + W keys together to close the table window.

For Your Info

A primary key is a field that contains unique values such as Roll No, ID, etc.

BASIC STRUCTURE OF A TABLE

Various elements of a database table are Field Name, Data Types, Description and Properties. Let's discuss them.

1. **Field Name :** Field name can be of maximum 64 characters, that also includes spaces. However, it should be smaller and meaningful.
2. **Data Types :** A field can be in the form of numeric, character, date, etc. as listed below:
   - **(a) AutoNumber :** An AutoNumber field creates unique values automatically on creation of a new record. It is mainly used as a primary key.
   - **(b) Text :** A text field contains values that are in the form of text, numeric or a combination of both with a maximum length of 255 characters.
   - **(c) Memo :** It is a much larger version of a text field, allowing storage of up to 2 GB data. It also supports rich text formatting.

(d) **Number :** The Number field can store numeric values up to 16 bytes of data.

(e) **Date/Time :** The Date/Time field is used to store date and time data.

(f) **Currency :** The Currency data type stores values in a monetary format, which can be used for financial data.

(g) **Yes/No :** Logical data is used when only one of the two options is valid – Yes/No or True False.

(h) **OLE Object :** The OLE Object field stores images, documents, graphs, etc. from other Windows based programs.

(i) **Hyperlink :** The Hyperlink field type is used to store Web addresses.

(j) **Attachment :** The Attachment field type is used to store images, spreadsheet files, documents, charts and other types of supported files as an attachment for database.

3. **Description :** The name of a field may or may not be meaningful. Description describes the name of a field so that you can understand its purpose.

4. **Properties :** Every field in a table has its properties to define its characteristics and behaviour. You can specify the properties of various fields of your table in the Field Properties pane of the Table design screen. Various options available under the Field Properties pane are listed in the table below.

Field Property	Description
Field Size	It sets the maximum size for data stored in a field to accommodate text (0-255), numbers or auto number data type.
Format	It customises the way numbers, dates, time and text are displayed and printed.
Input Mask	It makes data entry easier and controls the values which a user can enter into it.
Decimal Places	It specifies the number of decimal places for numeric data.
Caption	It provides helpful information to the users through captions on objects in various views.
Default Value	When a new record is created, it allows the default values to be entered automatically.
Validation Rule	It enables you to limit the values that can be entered in a field.
Validation Text	It enables you to specify the error message that is displayed when the validation rule is not passed.
Required	It forces you to enter a value if Required property is set for Yes.
Allow Zero Length	It accepts a blank entry if Required property is set for Yes.
Indexed	It speeds up sorting but may slow down the database.
Smart Tags	It is used to add tags like date, telephone number, financial symbol or person name in the field. Each tags is associated with an action or a list of actions.

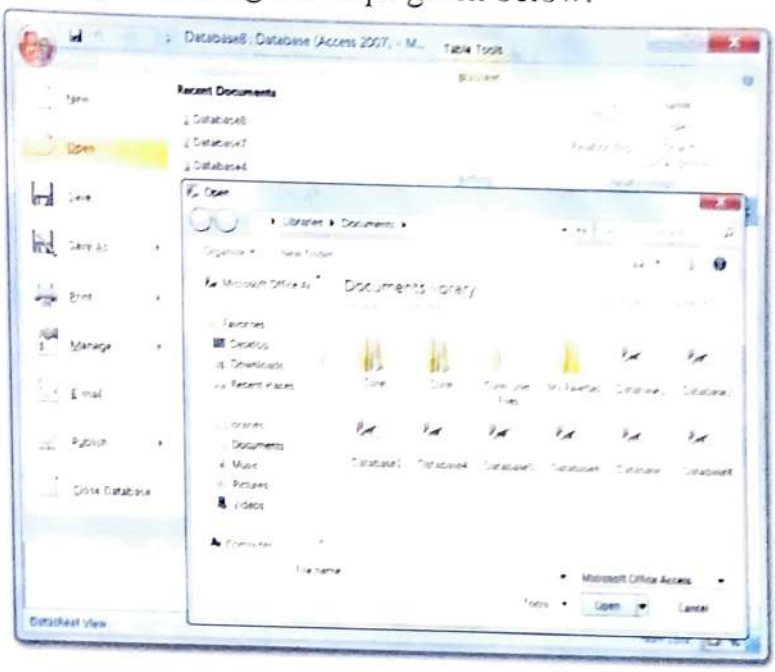
For Your Info

Rich Text Memo field allows better formatting of data in tables, forms and reports. In Datasheet View, you can apply formatting features such as bold, italics and bulleted lists to the Rich Text Memo field.

OPENING A DATABASE AND TABLES

You can open an existing database and tables by following the steps given below:

- Start MS-Access by clicking on Start button and selecting Microsoft Office Access 2007 option.
- Click on the More button located on the right side of Microsoft Access Interface. You will see an Open dialog box.
- Select the required database file from the box and type the name of the file. Click on Open button to open the MS-Access Database Interface window.
- MS-Access Database Interface window will appear on the screen. To open the required table, double-click on the table name from the Navigation pane. The table will be opened in a Datasheet View.



For Your Info

You can change the view of a table by selecting the required view (such as Datasheet or Design View) by clicking on the down-arrow key of View button in Views group on Home tab.

MODIFYING THE TABLE STRUCTURE

Sometimes, you may need to modify the structure of your table. You can insert new fields and delete any field. You can also change the name, data type and other parameters of the field.

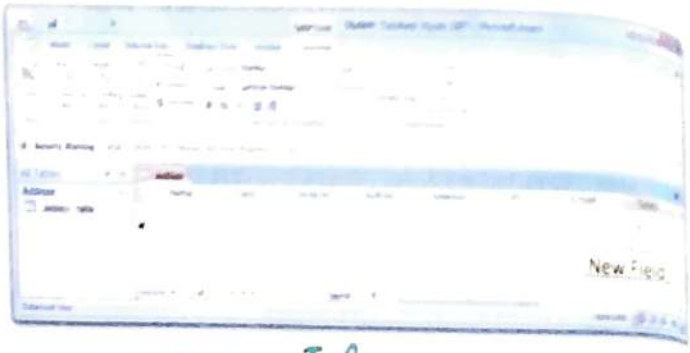
Let's first learn to insert a new field.

Inserting Fields

To insert a new field in the table 'Address' of database 'Student', follow the steps given below:

- Open the database 'Student' and table 'Address' as explained earlier.
- By default, the table opens in the Datasheet View. You can insert field in both Datasheet and Design Views. To insert a new field in Datasheet View, place the cursor anywhere on the column where you want to place the field.

- Click on the Insert button of Fields & Columns group located on the Datasheet tab as given.



- A new field with the name 'Field 1' will be inserted at the current column position. Now, click on the Rename button of Fields & Columns group of Datasheet tab to give a new name to this field. Type the name as Gender and change its formatting features (if required) by using the various options of Data Type & Formatting group.
- Save the table and database as explained earlier.

For Your Info

You can also insert a new field in Design View by clicking on Insert Rows button of Tools group on the Design tab.

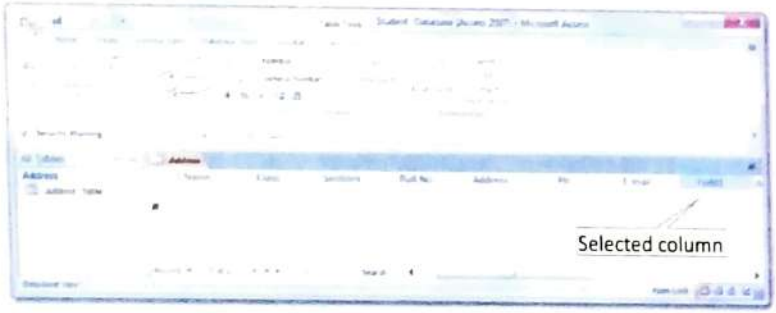
Deleting Fields

Deleting a field means deleting the entire data of that column from all the records. So, you should be very careful while deleting a field. Follow the steps given below to delete a field:

Mind Feeder

Delete a field only if it is empty or not required by you.

- Open the database 'Student' and table 'Address' as explained earlier.
- The table is opened in the Datasheet View. You can delete a field from both Datasheet and Design Views. To delete a new field from the Datasheet View, place the cursor anywhere on the column which you want to delete.
- Click on the Delete button of Field & Columns group on the Datasheet tab.
- The selected field will be deleted. Now, save the table and database as explained earlier.



For Your Info

You can also delete a field from Design View by clicking on Delete Rows button of Tools group on the Design tab.

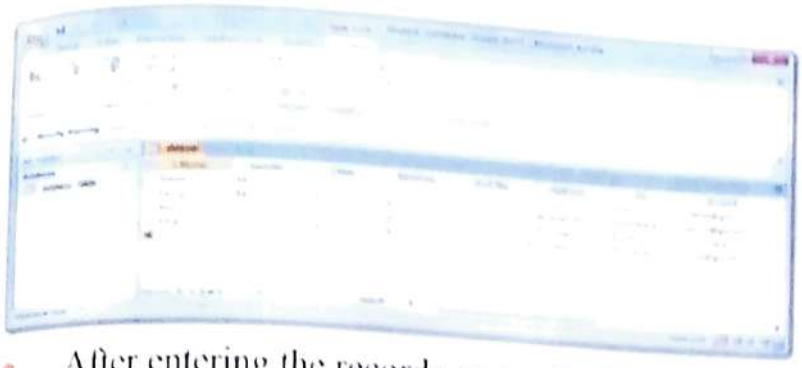
INSERTING AND DELETING RECORDS

In a database, inserting a record means adding a new record. It does not mean inserting a new record between two records. In fact, we cannot insert a record between records in a table. We can only add records at the end of a table. Deleting a record means deleting data from all the fields of a record.

Inserting Records

Let's insert a few records in 'Address' table of 'Student' database by following the steps given below:

- Open the database 'Student' and table 'Address' as explained earlier.
- The table will open in the Datasheet View. You can enter your data in the records as illustrated below:



For Your Info

You can also insert records by clicking on New button of Records group on the Home tab.

- After entering the records, press the keys Ctrl + W together to save and close the table.
- Save the database as explained earlier.

Deleting Records

You can delete a record by following the steps given below:

- Open the database 'Student' and table 'Address' as explained earlier.
- The table will open in Datasheet View. Select the record which you want to delete by clicking on the box placed on the left side of the same row in the Workspace.

- Click on the Delete button of Records group on the Home tab. A dialog box asking you to confirm the deletion process will display on the screen. Click on the Yes button if you want to delete the selected record.
- Save the table and database as explained earlier.

EDITING RECORDS IN TABLES

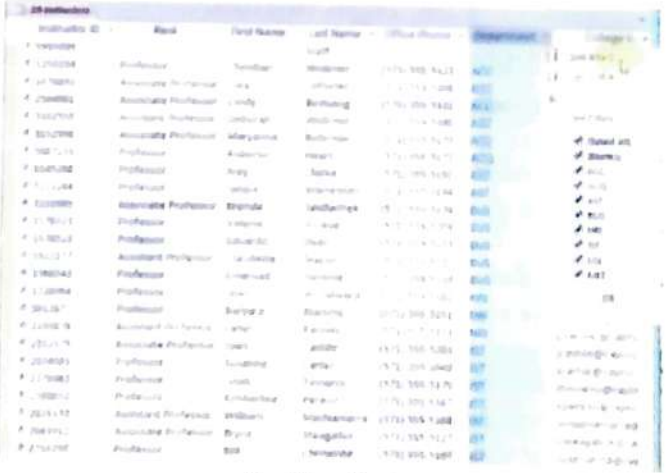
After entering data, sometimes it is required to make changes in the database. This can be done in various ways.

- To edit a record directly, scroll through the records or use the Navigation buttons to find the record to edit.
- Click the cell where you want to make changes. A pencil icon appears to indicate Edit mode.
- Type the information into the field.
- Click outside the record/row to apply the change.

SORTING DATA WITHIN A TABLE

We can sort data within a table with respect to a particular field either in ascending or descending order.

- Select the desired field.
- Click the drop-down arrow at the top of the field you wish to sort.



Sorting Data

- When the menu appears select either **Sort A to Z** or **Sort Z to A** option and observe the change in the database.

For Your Info

The Sort commands in Sort & Filter group on the Ribbon is another way to sort the data. To clear your sort, click the Clear All Sorts command in the Sort & Filter group on the Ribbon.

Quick Key

Save the table	Ctrl + S
Close the table	Ctrl + W
Create a new database	Ctrl + N
Open a database	Ctrl + O

Time to Drill

- **Circle any ten terms related with databases in the following grid.**

C	B	T	A	B	L	E	S	Z	A
A	D	A	T	E	T	U	B	A	U
P	C	K	L	V	R	W	X	Y	T
T	C	U	R	R	E	N	C	Y	O
I	F	A	J	D	Q	I	H	C	N
O	E	G	O	E	U	P	I	F	U
N	M	D	N	F	I	G	T	I	M
N	U	M	B	E	R	H	E	E	B
M	E	M	O	L	E	Q	X	L	E
R	E	C	O	R	D	R	T	D	R

Boost Your Brain

A. Tick (✓) the right option.

1. A view that allows us to create a table in a spreadsheet view:
   (a) Design View ☐ (b) Excel View ☐
   (c) Datasheet View ☐ (d) None of these ☐
2. A ..... key is a field that contains unique values.
   (a) Main ☐ (b) Primary ☐
   (c) Secondary ☐ (d) Junior ☐
3. A field that allows better formatting of data in tables, forms and reports:
   (a) Memo ☐ (b) Text ☐
   (c) Rich Text Memo ☐ (d) None of these ☐

4. ..... property enables us to limit the values that can be entered in a field.

(a) Validation Text ☐ (b) Validation Rule ☐

(c) Allow Zero Length ☐ (d) None of these ☐

B. Fill in the blanks with the correct words.

AutoNumber hyperlink 64 Memo Data Type

1. A field name cannot have more than ..... characters.
2. An ..... is mainly used as a primary key.
3. ..... is a much larger version of a text field, allowing storage up to 2 GB data.
4. The ..... field type is used to store web addresses.
5. ..... is a type of field that specifies the type of data you can enter into it.

C. State whether the following statements are true or false.

1. A field name cannot include spaces. ☐
2. We can delete a field in Design View. ☐
3. Deleting a field means deleting the entire data of that column from the selected records only. ☐
4. We can insert records by clicking on Insert button of Records group on the Home tab. ☐
5. When a new record is created, it allows the default values to be entered automatically. ☐

D. Match the Columns.

Column I	Column II
1. Number	(a) creates unique values automatically.
2. Text	(b) can store numeric data only.
3. AutoNumber	(c) stores values in a monetary formats.
4. Yes/No	(d) can contain values that are text, numbers or both.
5. Currency	(e) logical data used when only one of two options is valid.

E. Answer the following questions.

1. What are data types? Name all possible data types that can be used in MS Access 2007?

.....

2. Write the steps for inserting and deleting fields in a table.

.....

3. Explain the following properties:

(a) Field Size (b) Default Value (c) Caption (d) Allow Zero Length

.....

4. Give the difference between
   (a) Datasheet View and Design View
   (b) Number and AutoNumber data type

Activity Monitor

* Create a database and required tables for school Examination System. Write their structures in your activity notebook.
* Collect data of any one application (such as accounts, marketing, etc.) from newspapers and magazines and organise that into a database and required tables with the help of your computer teacher.

Lab Visit

Create a database with your school name and two tables 'Exams' and 'Fees' with the following structures:

Exam Table

Field Name	Data Type	Description
Term	Text	Term of Exam
Ex-Date	Date	Date of exam
Class	Number	
Section	Text	
Roll No.	Number	
Subject	Text	Subject Name
Marks Obtained	Number	Marks Obtained
Maximum Marks	Number	Maximum Marks

Fees Table

Field Name	Data Type	Description
Reg No.	Number	Student Registration No.
Name	Text	Name of Student
Admission Date	Date	Date of Admission
Photo	Attachment	Student's Photo
Month	Number	Month of Fees
Year	Number	Year of Fees
Payment Date	Date	Fee-Pay Date
Amount	Number	Fees Paid

Enter any 10 records in both tables and save the tables.

Open the database and tables created in the previous question and perform the following tasks:

(a) Insert the field 'Gender' in both the tables at an appropriate place and enter the data for the new field.

(b) Insert 10 more records in both the tables.

(c) Delete any 5 records from both the tables, which you do not require.

MS OFFICE 2010 UPDATES

MS-Access 2010

1. It allows the users to share a database on the web. A database is created using Access 2010 and published through Access Services in the Microsoft SharePoint 2010 server. This allows other users, who do not have Access 2010 on their system, to view the data.
2. It provides enhanced levels of security to the user's data. This has been made possible with the help of Microsoft SharePoint Foundation 2010. This ensures recovery of deleted files, setting access permissions and audit revision history.
3. It has a new functionality **Screenshot** which allows the user to take a snapshot of any active document.
4. **Smart Tags** allow additional information to be added to a database which otherwise would require the support of the web. It is in the Design View of the report, from or data access page. It can also be used to schedule meetings, add contacts of instant messaging. etc.

On Teacher's Desk

1. Use the Internet to learn more about how MS-Access 2007 is used in the corporate world.
2. Prepare a class list of students in alphabetical order and give them their attendance record of last three months. Given each student a copy of it and ask them to prepare a table in MS-Access 2007 based on it. Also, ask the students to generate a report.

7 More on MS-PowerPoint

Lesson Extract

- Slide Show Options
- Set Up Slide Show
- Record Narration
- Rehearse Timings
- Create Speaker Notes
- Spell Check
- Running a Slide Show
- Printing a Presentation
- Tips for an Effective Presentation

In the previous class you have learnt about some of the features of PowerPoint. Now, you will learn how to set up/view a slide show and print a presentation.

A slide show is an on-screen presentation of information/ideas presented on slides. A slide show enforces the ideas, comments, solutions or suggestions presented in the slide. Adding special effects to a presentation increases its impact on the audience.

SLIDE SHOW OPTIONS

The Slide Show tab on the Ribbon contains many options for the slide show on the Start Slide Show group. These options include :

- Starting the slide show from the beginning.
- Starting the slide show from the current slide.
- The third option is to create or play a custom slide show.

A custom slide show displays only the slides you select. It enables you to have several different shows within the same presentation.

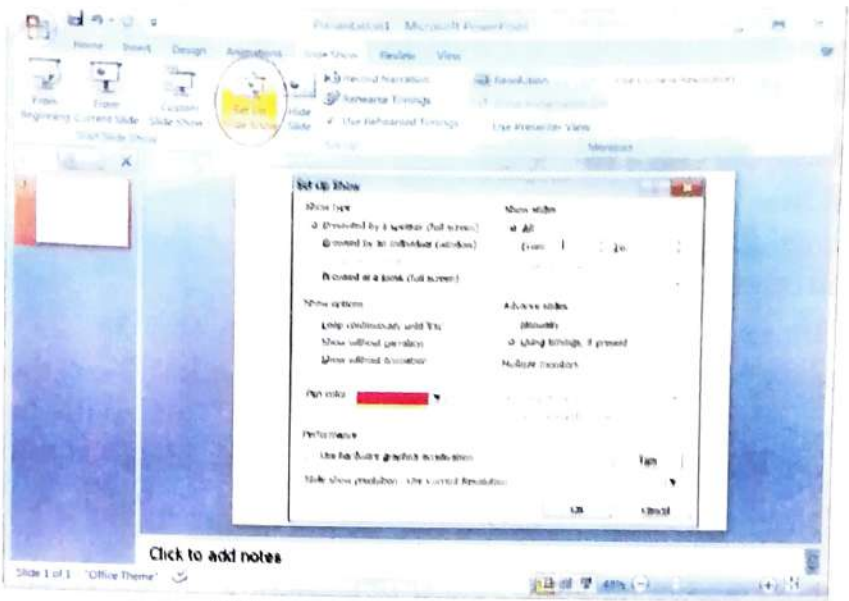
SET UP SLIDE SHOW

This option allows you to set preferences on how the slide show will be presented. When you click on this option, a Set Up Slide Show window appears on the screen. It presents many alternatives for the slide shows. It has many options like Show type, Show slides, Show options, Advance slides, etc. Let's know the functions of these options.

With the options on the Set Up Slide Show dialog box you can do the following :

1. **Show type :** This option will configure the presentation slide show type. It gives options to present the show as presented by a speaker (Full Screen) or browsed by an Individual (Window).
2. **Show options :** This option will run the slide show until you press Esc.

   You can present the slide show with or without a narration or animation in it.
3. **Select pen color :** This option is used to select the color of the pen in presentation. This pen may be used to white something on the computer screen at the duration of presentation.



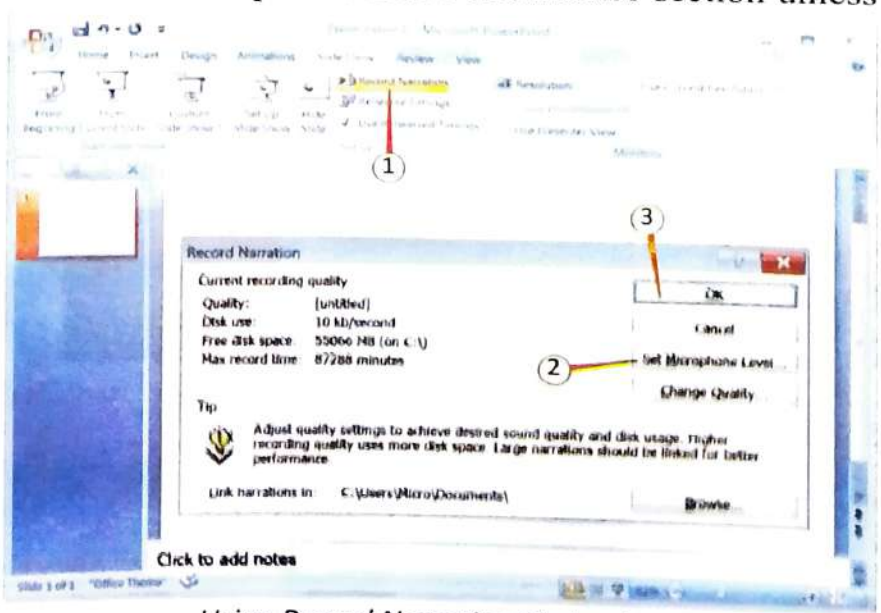
Using Set Up Show Dialog Box

4. **Show slides :** This option is used to select the number of slides for the slide show. You can select All to include all slides or choose a few selected slides.
5. **Advance slides :** You can choose to change the slides manually by pressing Enter or clicking on the slide. To set the show to proceed automatically, select the other option of Using timings, if present.
6. **Multiple monitors :** This option is used to select the monitor from the drop-down list in the Multiple monitors area.
7. **Performance :** This option is used to enable or disable graphics acceleration features. Check the Use hardware graphics acceleration option under Performance section unless your presentation isn't working properly.

RECORD NARRATION

MS-PowerPoint allows you to record a narration for the slide show. As you record narration, it stores slide files separately so that the slides are synchronized with the narrations you recorded. You need to connect a recording device to your system and make sure that the microphone software is installed in it.

The various steps to record narration for the slides are :



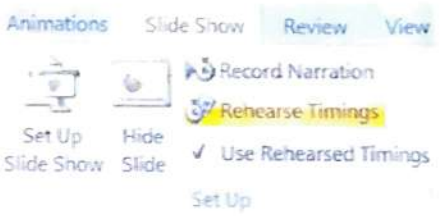
Using Record Narration Dialog Box

- Go to the **Record Narration** option from the **Set Up** group of the **Slide Show** tab and click on it. A Record Narration dialog box appears. It informs you how much hard drive space you have and calculates the maximum length of the narration that you can record.
- Set Microphone Level to check the level of audio input.
- Click **OK** to record the narration.

REHEARSE TIMINGS

While creating the PowerPoint presentation, it will be difficult to choose the right timing to give the presentation a natural flow. MS-PowerPoint 2007 has the features to rehearse timings of the slides with audio.

The various steps to rehearse timings in MS-PowerPoint are :



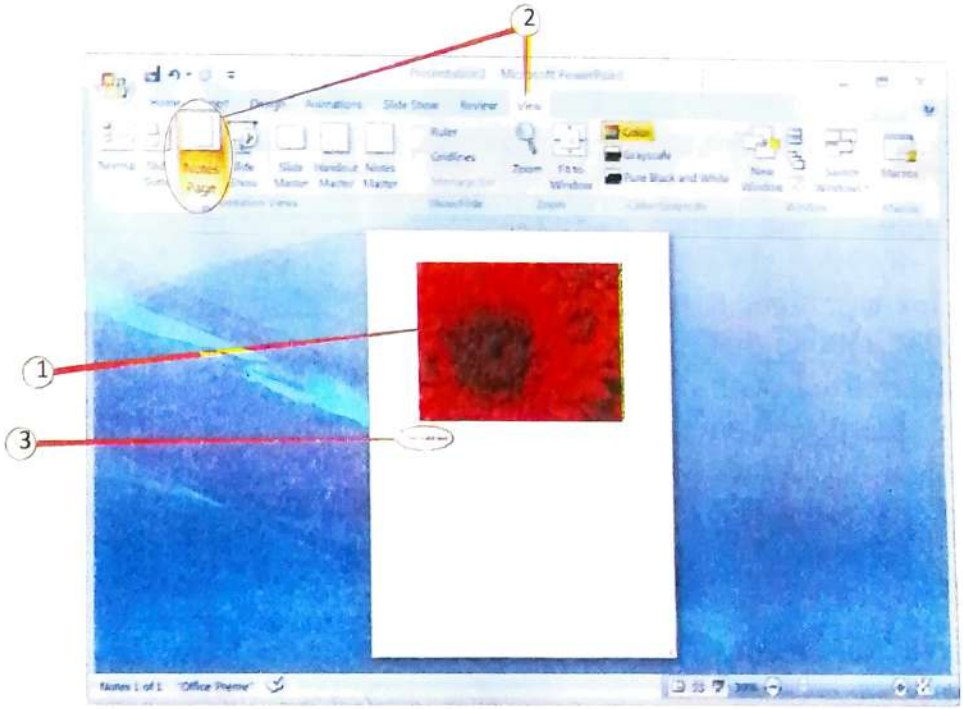
- Click on the **Rehearse Timings** option from the **Set Up** group of the **Slide Show** tab. This will begin the **PowerPoint** presentation but in the rehearsal dialog box.
- Practise speaking and advance the slides as required in the presentation.
- Choose whether or not to keep this timing or try it again.

CREATE SPEAKER NOTES

Speaker notes or Notes Pages are notes added to the presentation slides as a reference for the presenter. They allow you to create for each slide.

The various steps to add speaker notes are :

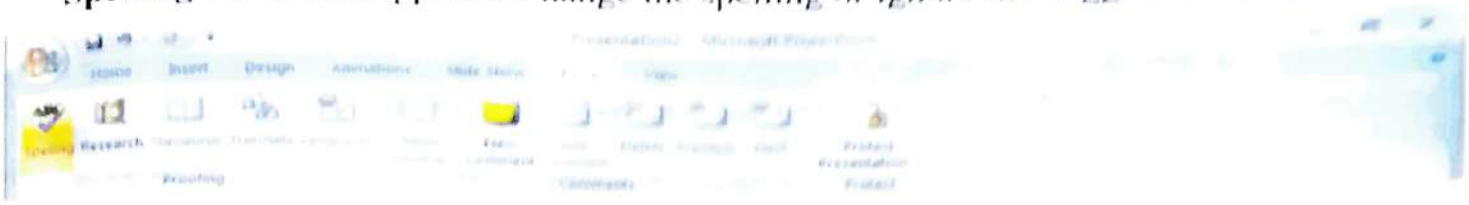
- Select the slide.
- Go to **View** tab of **MS-PowerPoint** window and select **Notes Page** option from the **Presentation Views** group. Click to add text section appears below the slide.
- Type in the notes for that slide.



SPELL CHECK

This text allows you to check your entire presentation for spelling errors. PowerPoint has a dictionary which you can customize with words of you choice. To check the spelling throughout a presentation :

- Go to the **Review** tab and click on the **Spelling** button in the **Proofing** group. A **Spelling** check box appears. Change the spelling or ignore the suggested changes.



Using Spelling Button in the Proofing Group of Review Tab

RUNNING A SLIDE SHOW

You can run your presentation in the following way:

- To start the Slide Show, click on the **Slide Show** button of the **Presentation Views** group on the **View** tab.
- Use the arrow keys at the bottom of the screen to move forward or backward in a presentation.
- Press the **Escape (Esc)** key to end the slide show.

Quick Key	
Run a slide show	F5

PRINTING A PRESENTATION

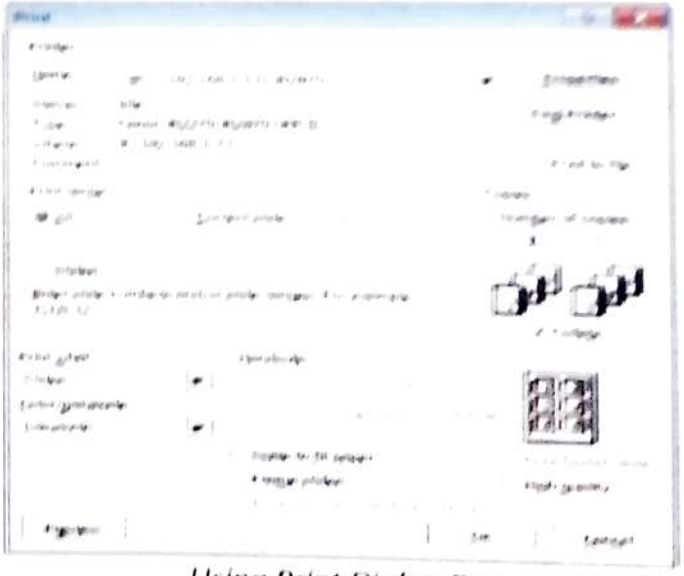
There are many options available for printing a PowerPoint presentation. They are:

- **Slides :** Slides are like the pages of the presentation.
- **Handouts :** This option allows you to have more slides in a page.
- **Notes Page :** This includes the slides and the speaker notes.
- **Outline View :** This will print the outline of the presentation.

Quick Key	
Print	Ctrl + P

The various steps to take a printout are:

- Click on the Microsoft Office Button. A drop-down menu appears.
- Click on Print option. A print dialog box appears on the screen.
- In the Print dialog box, click on the arrow next to Print range.
- Choose the other options as required and click OK to print. Before taking the printout you can see its preview.
- To exit print preview, click on the Close Print Preview button.



Using Print Dialog Box

TIPS FOR AN EFFECTIVE PRESENTATION

While designing and running a presentation, the following points should be kept in mind :

- Slides should be of a consistent design throughout the presentation.
- Use graphics and pictures to make the presentation attractive.
- Remove unnecessary information and graphics.
- Use contrasting background and text colours.
- Use maximum three fonts for the text in a presentation.
- Keep the fonts consistent throughout the presentation.
- Identify the critical information for your presentation.
- Use not more than 6 bullets per page.
- Text under buttets should be short ideas, not complete sentences.
- Be sure to preview the slide show using a projector if it is required during a presentation. Words or graphics that are close to the edge of the screen may be cut off by the projector.

Boost Your Brain

A. Tick (✓) the right option.

1. Slide Show option is there in the ..... tab.
   (a) View ☐ (b) Home ☐
   (c) Insert ☐ (d) None of these ☐
2. Which is not correct about an effective slide show?
   (a) Use graphics ☐ (b) Use complete sentences ☐
   (c) Use consistent design for all slides ☐ (d) None of these ☐
3. Notes Page is for
   (a) speaker notes ☐ (b) handouts ☐
   (c) slide show ☐ (d) None of the above ☐
4. Which option(s) can be used to get the printout of a PowerPoint?
   (a) Slide ☐ (b) Handout ☐
   (c) Both of these ☐ (d) None of these ☐
5. Which is the short-cut command to print a slide?
   (a) Ctrl+Alt+P ☐ (b) Ctrl+P ☐
   (c) Ctrl+Print ☐ (d) None of these ☐

B. **Fill in the blanks.**

Close Print Preview Record Narration Slide Show Review
Escape Proofing Escape View

1. To start the Slide Show, click ..... button on the Presentation Views group on the ..... tab.
2. ..... button is used to end the Slide Show.
3. ..... button is used to record narration for the slides.
4. To exit print preview, click on the ..... button.
5. To check the spelling throughout a presentation, click on the spelling button in the ..... group on the ..... tab.

C. **Match the following.**

Columns A	Columns B
1. Show type	(a) Select number of slides
2. Show options	(b) Full screen/Window view
3. Show slides	(c) With or without a narration or animation
4. Advance slides	(d) Graphics acceleration
5. Performance	(e) Manual or automatic change of slides

D. **Answer the following questions.**

1. What are the various slide show options?

.....

.....

2. List out the steps to create the speaker notes.

.....

.....

3. List out the steps to record a narration for the slide show.

.....

.....

4. Illustrate the steps to print the presentation.

.....

.....

5. List out some important things to keep in mind for an effective presentation.

.....

.....

6. While taking the printout, why do you make a choice among the slides, handouts, notes pages and outline view? Give your reasons.

.....

Activity Monitor

- Create a PowerPoint presentation of ten slides on festivals of India and take the printouts of the slides and paste them in your Social Science Project file.

Lab Visit

- **Create a PowerPoint presentation about the following quotes on Friendship as shown below.**

Slide 1 : Friendship

Slide 2 : Happiness is like perfume, you can't pour on others without getting a few drops on yourself.

Slide 3 : Friendship and love has its own time, season and own reasons! You can't ask it to stay, you can only embrace it as it comes and be glad that for a moment in your life it was your!

Slide 4 : True friendship doesn't have a happy an ending.

That's because true friendship doesn't have an ending.

Slide 5 : As long as we have memories, yesterday remains, as long as we have hope, tomorrow awaits. As long as we have friendship, each day is never a waste.

Slide 6 : Friends are like stars. You can't always see them, but you know they are there. Have great hope and dare to go all out for them. Have great dreams and dare to live them. Have tremendous expectations and believe in them.

Slide 7 : The recipe of friendship : 1 cup of sharing, 2 cups of caring, 1 cup of forgiveness and hugs of tenderness. Mix all these together.. to make friends forever.

8 MS-Excel 2007

Lesson Extract

- Starting MS-Excel
- Components of MS-Excel
- Formatting Cells
- Inserting Rows and Columns
- Deleting Rows/Columns
- Find and Replace
- Go To Command
- Adding a Picture
- Adding a Clip Art
- Adding Shapes
- Adding a SmartArt
- Exiting Microsoft Excel

MS-Excel is an application software in which calculations are done after you have entered data into the grid of rectangular cells called **Worksheet**. In your previous class, you have learnt how to work with a workbook and worksheets in MS-Excel. In this chapter, you will learn some features of MS-Excel on formatting to make the worksheets and their data visually appealing, organised and attractive. Before discussing these features, let's understand the components of MS-Excel Windows alongwith the way to start MS-Excel.

STARTING MS-EXCEL

MS-Excel is a spreadsheet program that comes with the Microsoft Office package.

The various steps to start MS-Excel are:

- Click on the Start button.
- Select All Programs.
- Go to Microsoft Office.
- Click on Microsoft Office Excel 2007 to open it.

An MS-Excel 2007 window opens before you.

Using Start Menu to Start MS-Excel

COMPONENTS OF MS-EXCEL

An MS-Excel file has the following components:

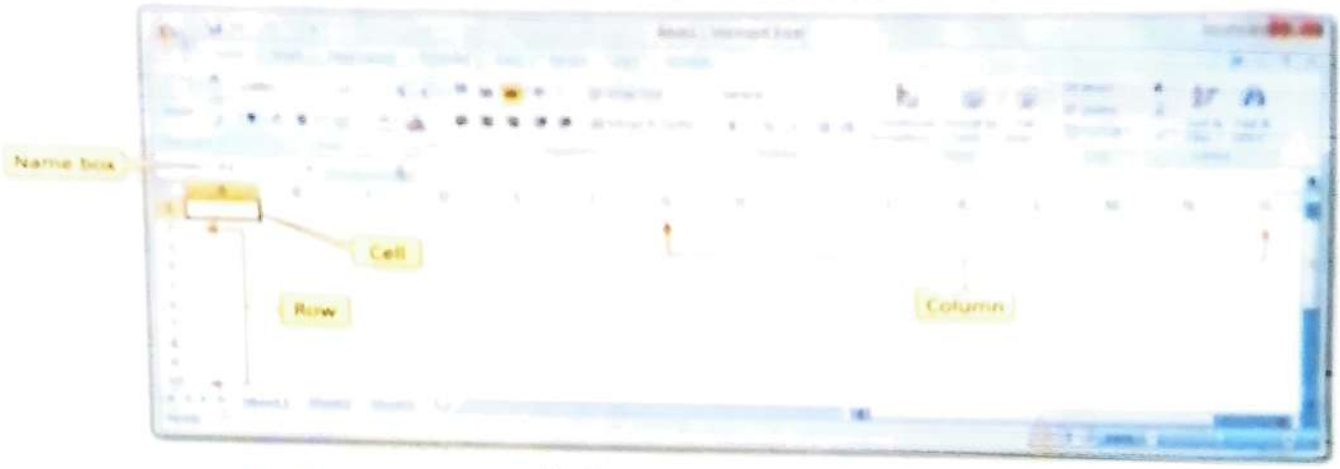
Workbook : An MS-Excel document is called a workbook. A workbook contains many sheets to work on. It may open any number of sheets till it finds memory available for it.

Worksheet : Just as a book has a number of pages, an MS-Excel workbook has a number of sheets called worksheets. A worksheet is also known as a spreadsheet.

For Your Info

To create a shortcut of MS-Excel, select the MS-Excel option from the start menu and drag it to the desktop.

The default names of worksheets in a workbook are sheet1, sheet2, sheet3. The name of sheet currently in use, called the active sheet is indicated in bold



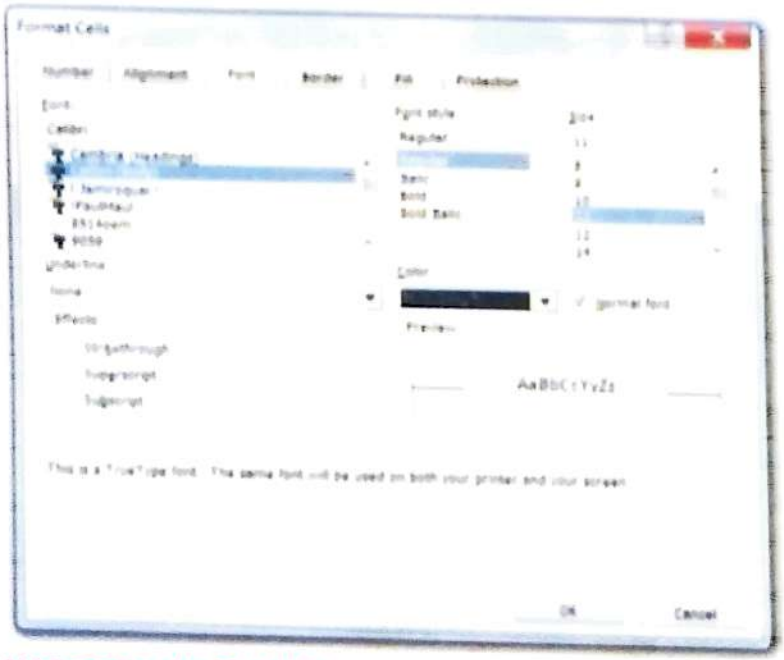
An Opening Scren of MS-Excel

For Your Info

The new MS-Excel workbook contains three worksheets by default.

Cell

A cell is an intersection of a column and a row in a worksheet. Each cell is denoted with a cell address. For example, A5 refers to the cell at the intersection of column 'A' and row 5. Data is stored in a cell. A cell can contain up to 32,767 characters.



INSERTING ROWS

The various steps to insert a row in a worksheet are:

- Select the row above which a row is to be inserted.

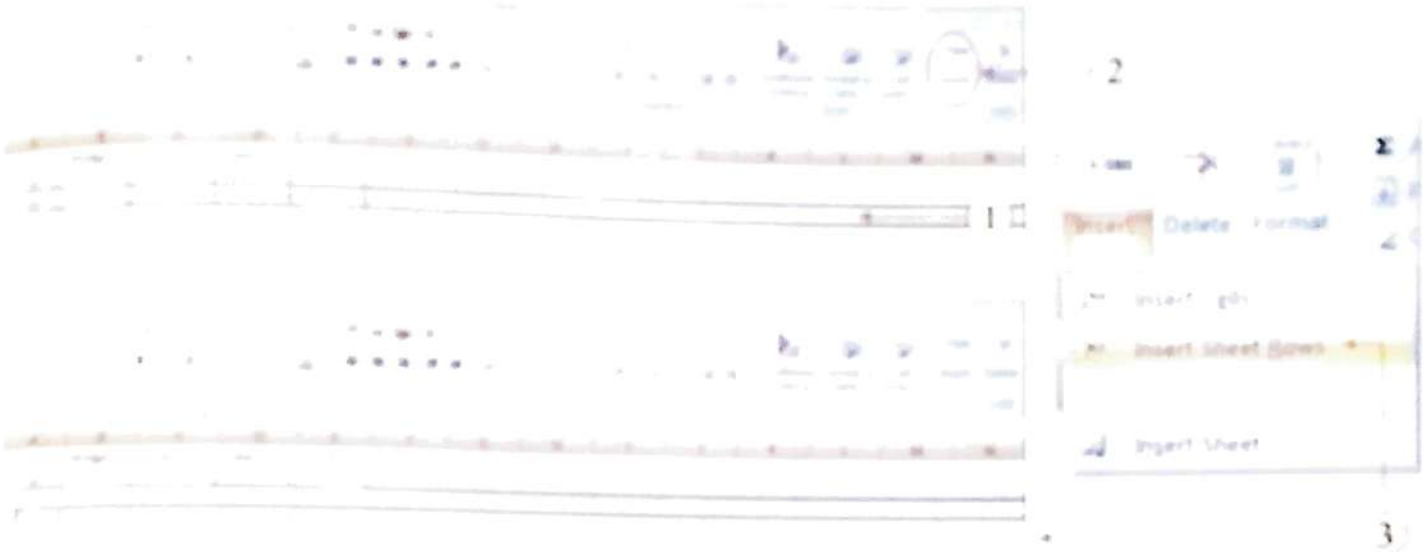
FORMATTING CELLS

We can use different formatting features of MS-Excel to make the data of the worksheet presentable.

The various steps to format cell are

- Select the cells containing the data
- Click on the arrow on the dialog box launcher of the Font group of the Home tab. A Format Cells dialog box appears on the screen.
- You can change various features like Font, Font style, Font size & Effects from the box and click OK to apply it.

- Click on the Insert button from the Cells group of the Home tab of the Ribbon. A drop down menu appears.
- Click on Insert Sheet Rows option. A new row gets inserted above the selected row.



Inserting a Row

INSERTING COLUMNS

The various steps to insert a column in a worksheet are:

For Your *Info*

F12 key in MS-Excel 2007 displays the 'Save As' dialog box.

- Select the column to the left of which a column has to be inserted.

Inserting a Column

- Click on the Insert button from the Cells group of the Home tab of the Ribbon. A drop down menu appears.

For Your *Info*

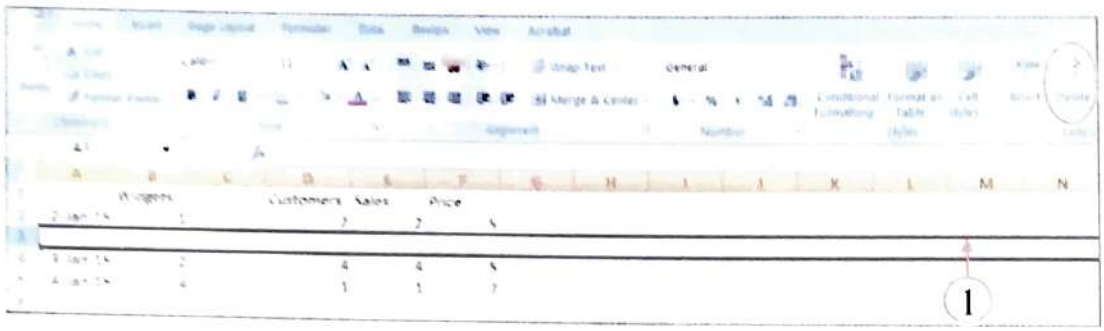
To open a workbook, click on 'Open option' on the Office button menu or press Ctrl + O key combination.

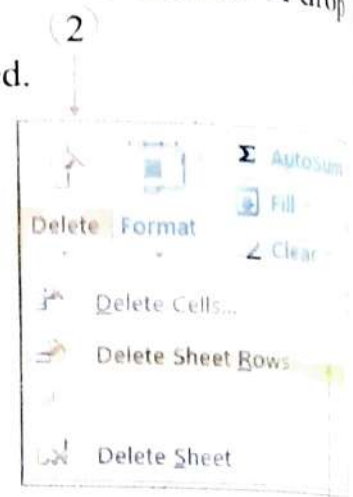
- Click on the Insert Sheet Columns option. A new column gets inserted to the left of the selected column.

DELETING ROWS/COLUMNS

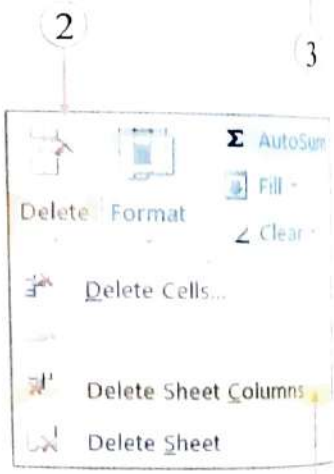
The various steps to delete a row/column from a worksheet are:

- Select the row or column that has to be deleted.
- Click on the Delete button from the Cells group of the Home tab of the Ribbon. A drop down menu appears.
- Select the desired option. The selected row or column gets deleted.





Deleting a Row



Deleting a Column

FIND AND REPLACE

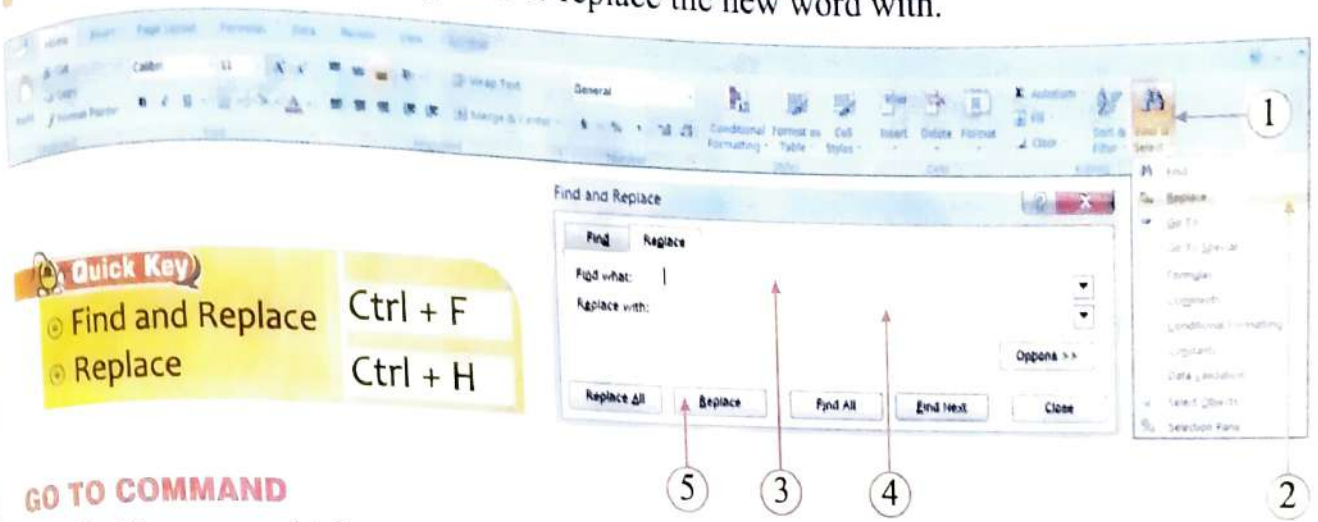
When you are working on a worksheet, you may need to search for a word or replace a word of the worksheet. The Find option on the Ribbon is used to locate a word in the worksheet. The Find option is combined with Replace command to replace a word from the worksheet.

The various steps to Find and Replace a word are:

- Click on the Find & Select button on the Editing group of the Home tab. A drop-down menu appears.
- Choose Find or Replace option. A Find and Replace box appears on the screen.
- Type the word for Find what option.
- If you need to replace the word with a new word, type the new word in the Replace with option.

Then, click on the Replace button.

You may search for more options to replace the new word with.



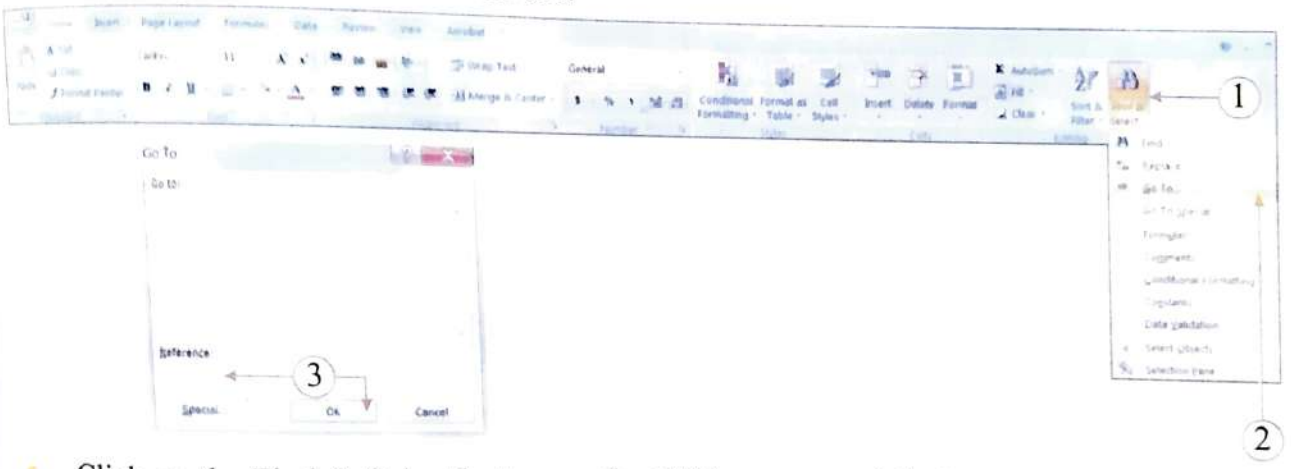
Quick Key

Find and Replace	Ctrl + F
Replace	Ctrl + H

GO TO COMMAND

The Go To command takes you to a specific cell either by the cell reference (cell address) or cell name. Depending on the type of document, you can navigate to a specific page number, line number, footnote, table, etc. with the help of Go To command.

The various steps for Go To command are:



- Click on the Find & Select button on the Editing group of the Home tab. A drop-down menu appears.
- Select Go To option and click on it. A Go To box appears on the screen.
- On giving the cell reference, in the Reference option and clicking OK in the Go To box, the cursor selects the specific cell.

ADDING A PICTURE

You can select a picture from your files in the computer and insert it in the worksheet.

The various steps to add a picture from a file are:

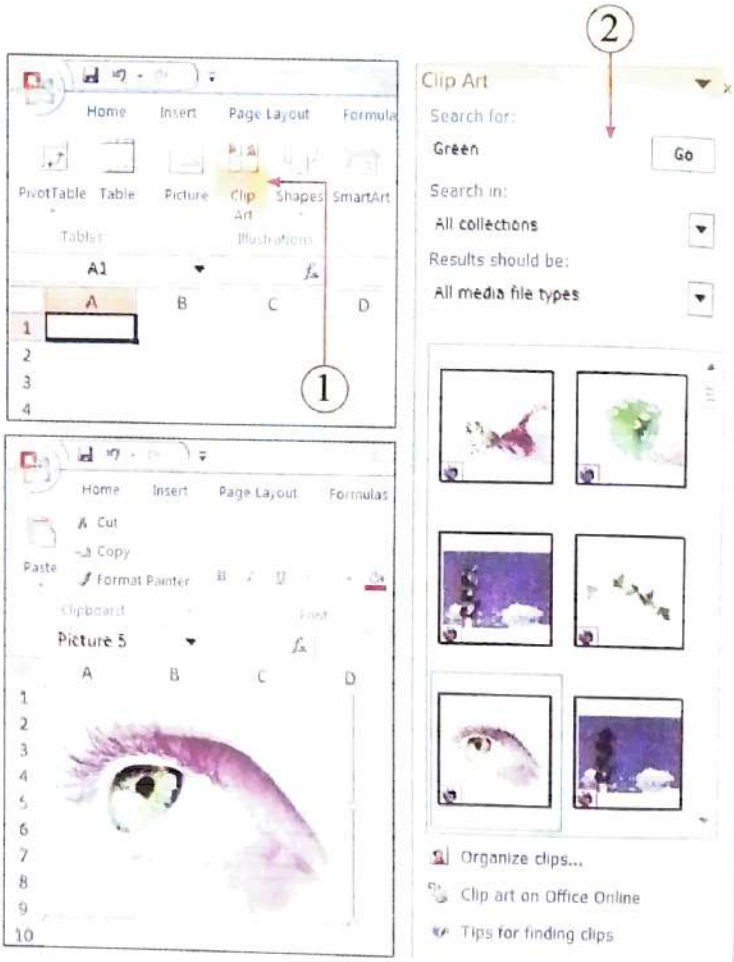
- Click on the Picture option from the Illustrations group of the Insert tab. An Insert Picture box appears.
- Locate the picture from your files.
- Select the picture. The name of the picture will appear in the File name box.
- Click Insert. The picture gets inserted in the worksheet.
- To move the picture, click and drag it anywhere on the worksheet.

ADDING A CLIP ART

Clip Arts are the picture files that can be inserted into a worksheet.

The various steps to add a Clip Art in a worksheet are:

- Place the selection box in the worksheet where you want to insert the Clip Art. Now click on the Clip Art in the Illustration group of Insert tab. A Clip Art box at the right hand side of the window appears.
- Click in the Search for box and type the name of the picture.
- Then, click on the Go button. Many Clip Arts appear. Click on a picture to select it.
- The selected clip art gets inserted in the worksheet.



Adding Clip Art

Formatting Pictures and Clip Arts

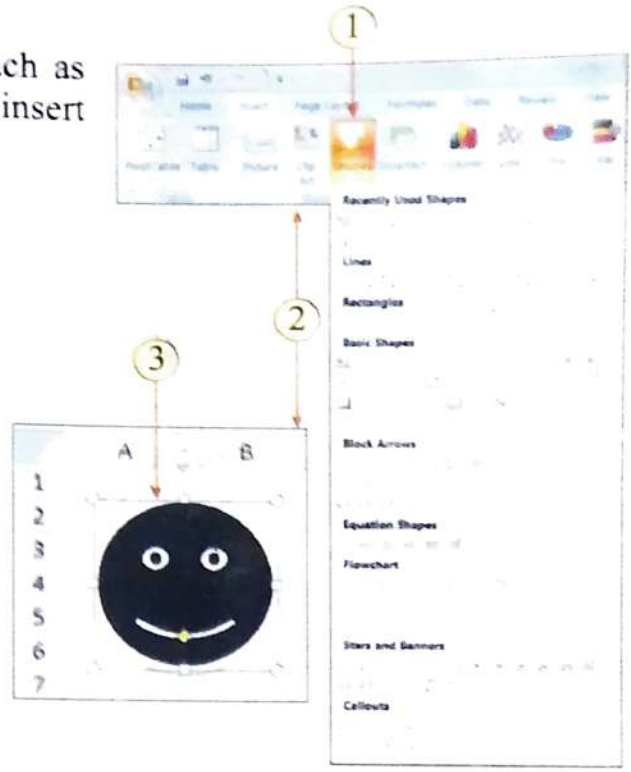
On inserting a picture or a Clip Art in the worksheet, an additional tab, i.e. Format tab appears on the Ribbon. The Format tab gives many options to make changes in the picture or a Clip Art.

ADDING SHAPES

There are some pre-defined shapes (Autoshapes) such as line, oval, cube, flowchart, banner, etc. that you can insert into a worksheet.

The various steps to add a shape are:

- Click on the Shapes button from the Illustrations group of the Insert tab. Many shapes are displayed on the window.
- Click on the shape you choose.
- Click on the left mouse button at the place in the worksheet where you want to insert the shape. The shape gets inserted.
- You can drag the cursor to increase or decrease the size of the shape.



Adding Shape

Formatting the Shapes

On inserting a shape in the worksheet, a Format tab appears on the Ribbon. It has various options to make changes in the shape.

ADDING A SMARTART

SmartArt is a feature in Office 2007 that allows you to create visual presentation of facts and information. It includes a variety of graphics like pyramid, list, cycle, process and many more.

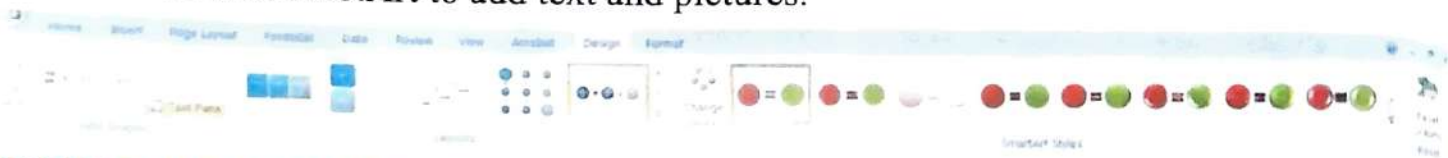
The various steps to insert SmartArt in a worksheet are:

- Click on the SmartArt button from the Illustrations group of the Insert tab. A Choose a SmartArt Graphic dialog box appears on the screen.
- Choose the desired SmartArt diagram and click on OK to insert it.
- You can drag it to the desired location in the worksheet. You can add labels to it by typing in the text area.

Formatting the SmartArt

The various steps to format the SmartArt diagram are:

- Click on the SmartArt diagram.
- Click either on the Design or the Format tab. There are various options available to make changes in the style of boxes and the text of the SmartArt diagram.
- Click on the SmartArt to add text and pictures.



EXITING MICROSOFT EXCEL

After you finish working with the workbook, you can exit the Excel application. To close window, click on the button [×] in the upper-right corner of the window. The workbook in the window will be closed. When you have several workbooks open, they can be closed by the following ways:

- Click on the Office button and select the Close option [×]. This will close every workbook window you have opened.
- If you want to save your work you are working on, you just click Yes in the Microsoft Office Excel box that appears after clicking on the close button [×]. The file will be saved and the Excel workbook will be closed.

⑤ **Shreya typed the following data in an MS-Excel worksheet :**

	A	B	C	D
	Roll No.	Marks	Name	
1	101	450	Monika	
2	102	645	Seema	
3	103	446	Sudha	

She typed marks in column B instead of Column D. What should she do to rectify her mistake?

Boost Your Brain

A. Tick (✓) the right option.

1. Clip Art is a ..... file that can be inserted in a worksheet.

(a) Shape ☐ (b) Picture

(c) Figure ☐ (d) Text

2 ____ tab allows you to format the pictures and graphics

(a) Home ____ (b) Insert ____

(c) Format ____ (d) View ____

3 Autoshapes are

(a) predefined figures such as line, oval, flowchart, etc ____

(b) automatically generated shapes as required by a user ____

(c) Clip Arts ____

(d) none of these ____

4 ____ is a kind of SmartArt.

(a) Flowchart ____ (b) Symbol ____

(c) Text graphic ____ (d) none of these ____

5 Find command is used to:

(a) locate specific text in a worksheet. ____

(b) find cells on a worksheet. ____

(c) search for new words. ____

(d) none of these ____

8 Fill in the blanks with the correct word.

SmartArt F12 Column three Insert Picture option

1 By default, a worksheet contains ..... worksheets.

2 Pressing the ..... key opens the Save As dialog box.

3 Click on the ..... of the ..... tab to add a picture.

4 ..... is a vertical division in a worksheet.

5 ..... allows you to create visual presentation of facts and information.

State whether the following statements are true or false.

1 Microsoft Excel is the most suited program for documentation. ____

2 A worksheet can contain any number of worksheets according to user's need. ____

3 The default names of worksheets in a workbook are Book1, Book2 and Book3. ____

4 A cell is a intersection of a column and a row in a worksheet. ____

5 On intersecting a shape in a worksheet a Home tab appears on the Ribbon. ____

Answer the following questions.

1. What do you understand by MS-Excel?

2. Differentiate between a workbook and a worksheet.

3. What is a cell? How many characters can a cell contain?

4. Write the steps to insert the rows, columns and cells in a worksheet.

5. What is a Clip Art? Write the steps to insert a picture from the Clip Art.

Activity Monitor

* Prepare your school time-table in an MS-Excel spreadsheet. Highlight the subject periods of computer in it. Take its printout and paste it in your diary.

Lab Visit

⊙ Insert a SmartArt diagram in your MS-Excel worksheet. Using SmartArt tools available on Design and Format tabs, make changes in the text and the boxes of the SmartArt diagram.

9 Creating Charts in MS-Excel

Lesson Extract

- Chart : Components and Types
- Creating a Chart
- Modifying a Chart
- Chart Tools
- Copying a Chart in MS-Word

In your previous classes, you have learnt the basic features of MS-Excel, which is a popular spreadsheet software.

It sometimes becomes difficult to analyze and compare data in a complex spreadsheet and obtain useful inferences from them. In such cases, it is useful to represent these data graphically. In this chapter, we will learn to create charts in MS-Excel.

CHART: COMPONENTS AND TYPES

A Chart is a pictorial representation of data in a workbook, which helps us to compare and analyze data and observe patterns and trends in it. It also helps us to see the relationship between different parts of data.

For Your Info

Spreadsheet is an electronic sheet consisting of rows and columns. It is also called worksheet and is a part of workbook in MS-Excel.

A two-dimensional chart has two axes—X-axis and Y-axis—representing two different variables. Data are plotted on (X, Y) co-ordinates. A chart can also be three-dimensional, in which case data are plotted on three different variables, represented by X, Y and Z axes.

Components of a Chart

An MS-Excel Chart has different parts that display its different features.

The various components of a chart are:

Data Series : It refers to the data entries from which a chart is derived. A chart can have one or more than one data series.

X-Axis : It is the horizontal axis of a chart. It is also known as the Category axis.

Marks obtained by some students in an Annual Examination

Student	Maths	English	Science	Hindi
Nikhil	80	60	75	65
Vikas	75	80	85	55
Manoj	80	85	75	70
Vijay	90	70	65	55
Raj	85	65	75	80

Y-Axis : It is the vertical axis of a chart. It is also known as the Value axis. The value of each data point is plotted on this axis.

Chart Title : It is usually placed at the top of the chart which helps the users to understand what the chart represents.

For Your Info

You can have as many as 256 data series in a chart in MS-Excel.

Axis Title : It is the title given to an axis. A 2D graph has two axes. (X, Y) and a 3D graph has 3 axes (X, Y, Z).

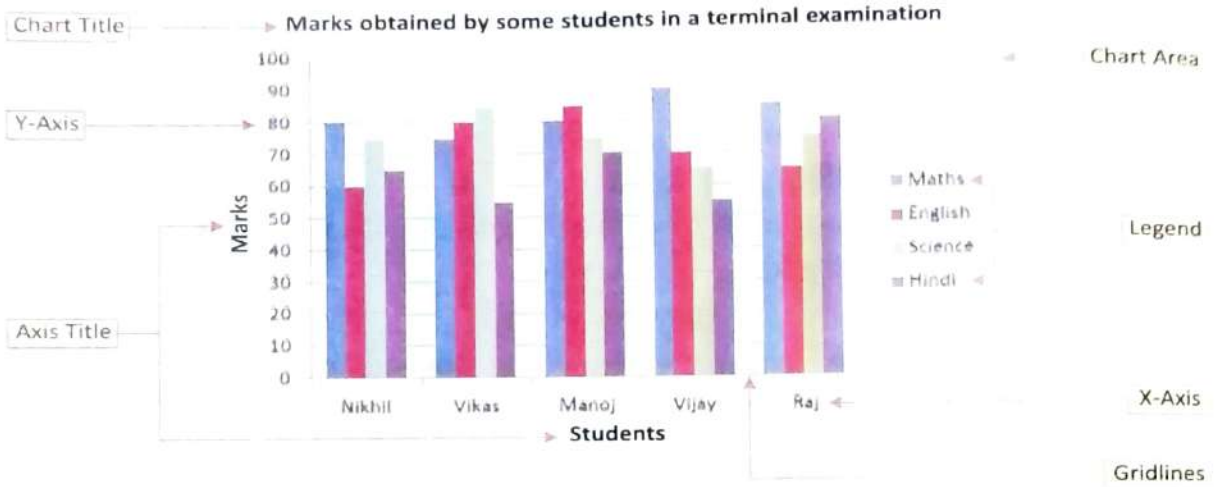
Chart Area : It refers to the area within which all chart components are found.

Plot Area : It is the rectangular area bounded by the two axes. The X-axis and Y-axis define the two sides of a rectangular plot area.

Legend : It identifies each data series. A unique color or pattern is assigned to each data series to make it easier to distinguish between them visually.

Gridlines : They are lines that run from each category on the X-axis and from each value on the Y-axis across the plot area.

Data Label : This is a label that provides additional information about a data marker which represents a single data item or value coming from a worksheet cell.



A Column Chart in Excel

Types of Charts

Some of the most commonly used charts are:

1. Column chart
2. Line chart
3. Pie chart
4. Bar chart
5. Area chart
6. XY Scatter chart

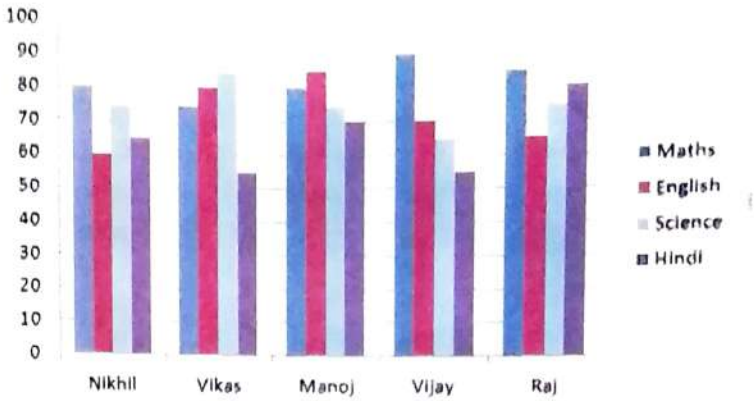
It is also possible to create combination charts, where two or more different sets of data can be plotted in the same chart using different chart types. For example, a single chart could be used to show the expected sale of a company's products across two quarters using columns and the actual sale during the same period as lines.

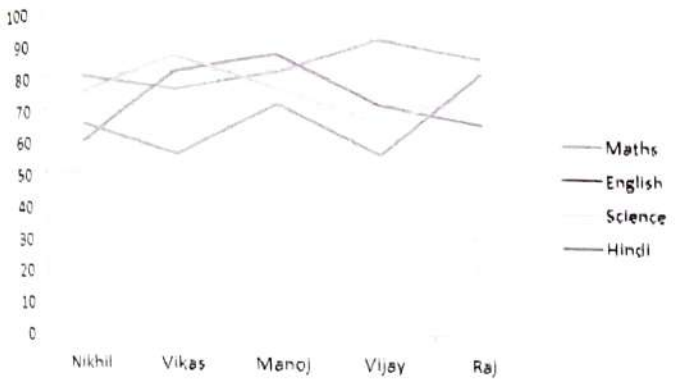
A Combination Chart Containing Column and Line Charts

Column Chart

A column chart is useful for showing data changes over a period of time or for illustrating comparisons among items. In column charts, categories are typically organized along the horizontal axis and values along the vertical axis. These charts are used to compare values across the different categories.

Marks obtained in different subjects by different students are shown through column charts.





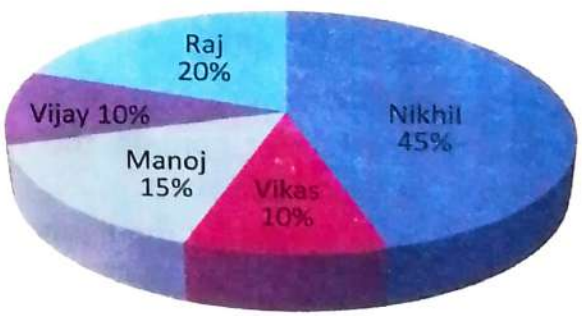
Line Chart

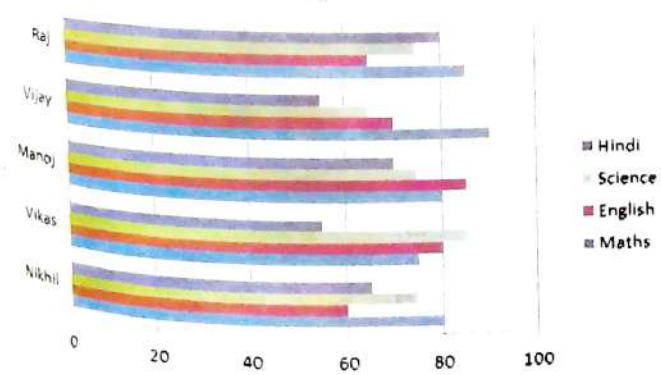
A line chart compares trends in data at equal intervals. It is useful for depicting the changes in the data over a period of time. It is useful when you have many points to plot or when data trends are important. Line charts are used by people in production and sales departments.

Here in this chart the trend of marks obtained by different students in different subjects is shown.

Pie Chart

A Pie chart is used to plot the data for a single data series. Each data point is represented by one slice of the circular pie chart. The size of each slice is proportional to the value it represents; so all the data points taken together make a complete circular pie chart.





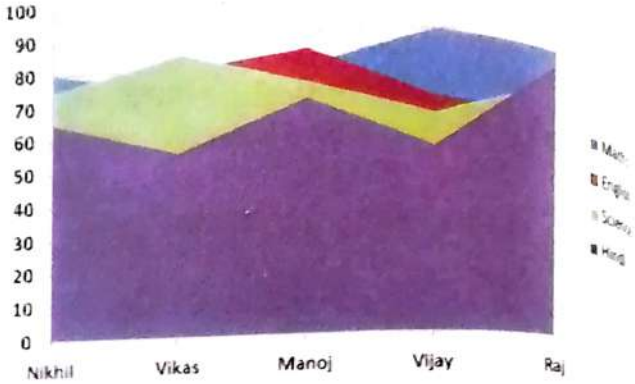
Bar Chart

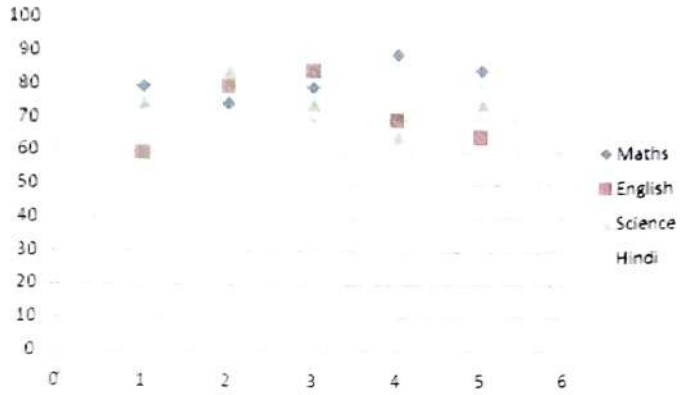
A bar chart illustrates comparisons among individual items through a cluster of bars. Categories are organized vertically and values horizontally in the bar charts. It is very similar to a column chart. A bar chart can be described as a column chart drawn sideways.

It is used for comparing multiple values through horizontal and vertical bars.

Area Chart

An area emphasizes the magnitude of change in data overtime. It is similar to a line. It is used to emphasize differences between several sets of data over a period of time. This chart is mainly used for representing sales and production figures of a company.





XY Scattered Chart

This type of chart is used for comparing pair of values. XY scatter chart is used wh values being charted represent differe measurements.

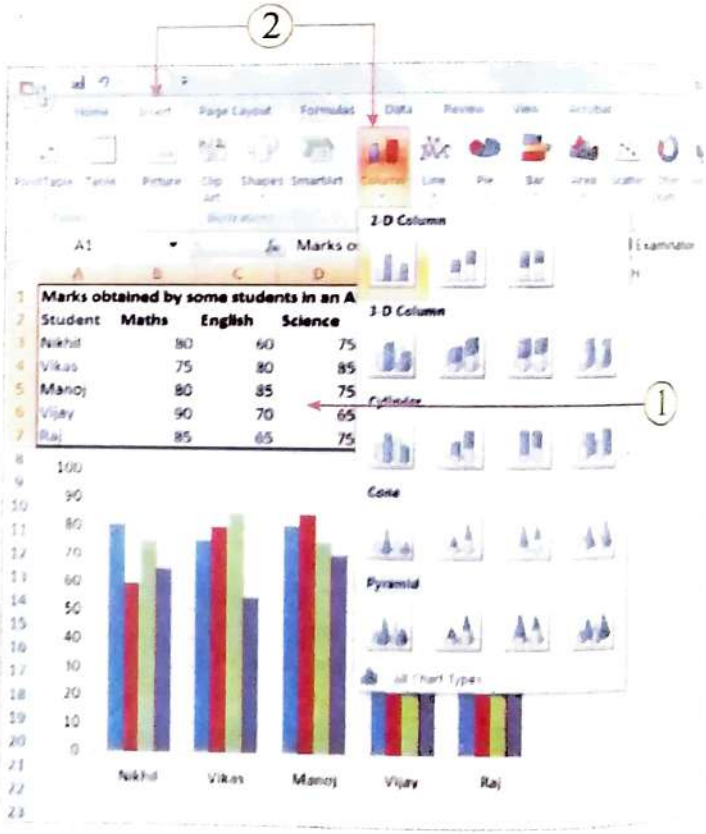
CREATING A CHART

Now, you are familiar with different types of charts and the different components of a chart. To make a chart, first enter the data into a worksheet.

The various steps to create a chart are:

- Select the cells that contain the data you want to use in the chart.
- Click on the Insert tab of the Ribbon to select the type of Chart you want to create from the Charts group.

A chart of your choice is made. It is based on the data series. On clicking the chart different options are shown in the Chart Styles group to choose from.



MODIFYING A CHART

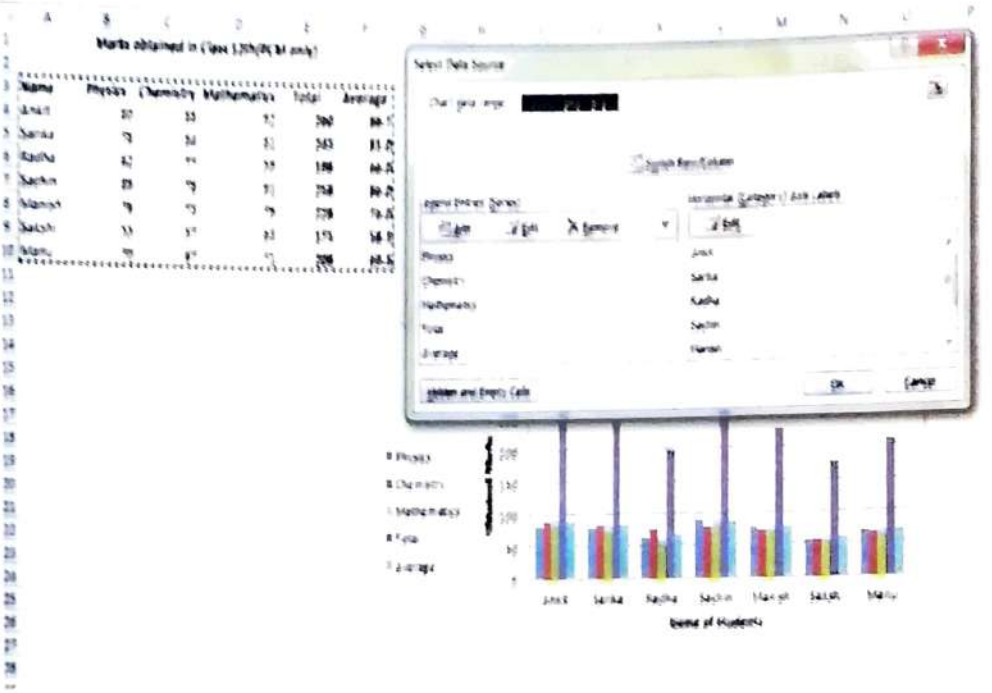
Once a chart is created, several things can be done to modify it. You can move a chart to different location on the same worksheet or you can take it to your desired location in another file.

The two ways to move a chart are:

1. Click on the chart and drag it to another location on the same worksheet.
2. Click on the Move Chart button from the Location group of the Design tab that appears when you select chart. Choose the desired location in the Move Chart box and click OK.

The various steps to change the data included in the chart are:

- First, click on the Chart to select it.
- Then, click on the Select Data button from the Data group of the Design tab of the Ribbon. A Select Data Source dialog box appears. Make the required changes in it.
- Changes are reflected in the chart.



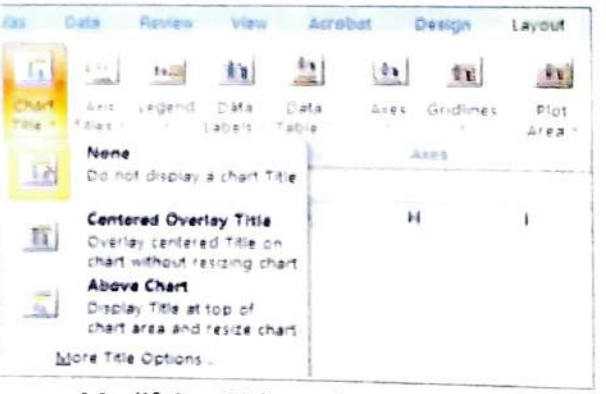
Changing Data from Various Aspects

The various steps to reverse data from the rows to columns or vice-versa are:

- Click on the Chart to select it.
- Click on the Switch Row Column button from the Data group of the Design tab of the Ribbon. The changes appear in the chart.

The various steps to modify the labels and titles are:

- Click on the Chart to select it.
- On the Layout tab, click on the Chart Title or the Data Labels button from the Labels group. A drop-down menu appears. Select the appropriate option from the drop-down menu.
- Change the Title or the Data Labels and press the Enter key.

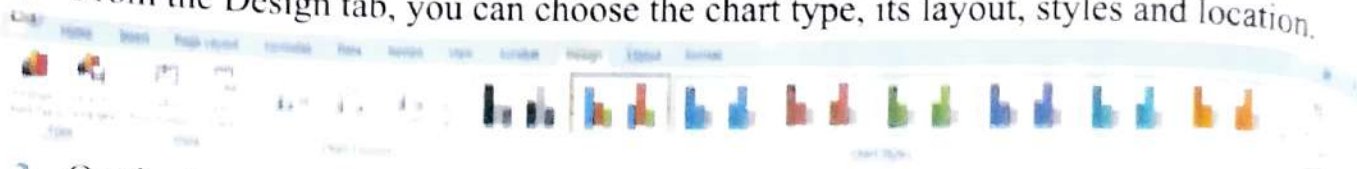


Modifying Title and Data Labels

CHART TOOLS

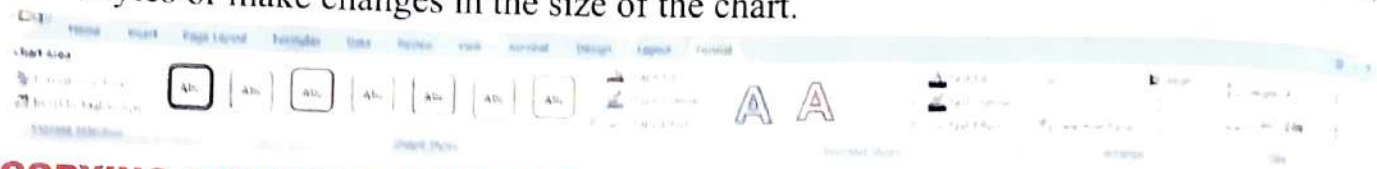
The Chart Tools appear on the Ribbon when you click on the chart. The tools are located three tabs: Design, Layout and Format.

1. From the Design tab, you can choose the chart type, its layout, styles and location.



2. On the Layout tab, you have many options to choose from and select for your chart. You can insert Pictures, Shapes, Text Boxes, Labels or different backgrounds to your chart.

3. Under the Format tab, you will find many options to modify the Shape Styles, WordArt Styles or make changes in the size of the chart.



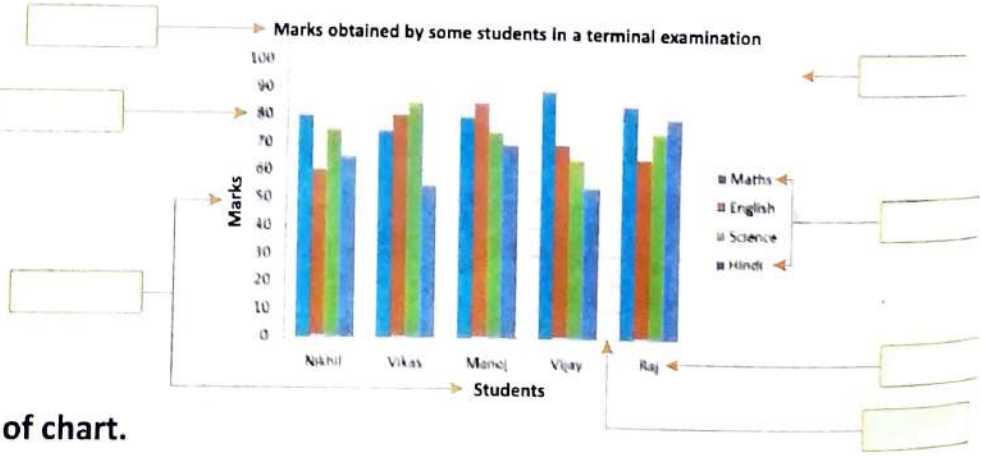
COPYING A CHART IN MS-WORD

Once a chart is created in MS-Excel, you can easily relocate it to another place in MS-Word. The various steps to copy a chart from MS-Excel to MS-Word are:

- Click on the chart to select it.
- Go to the Home tab and click on Copy button from the Clipboard group to select it.
- Open the MS-Word document where you want to copy the chart.
- Click on the Paste button from the Clipboard group of the Home tab. You get the copy of the chart there.

Time to Drill

- **Tabulate the marks obtained by the students of your class in different subjects in the recently held unit test for drawing a column chart.**



- **Label the components of chart.**

Boost Your Brain

A. Tick (✓) the right option.

1. A _____ helps us to see the relationship between different parts of data
   (a) Chart ___ (b) Legend ___ (c) Data Label ___ (d) Title ___
2. The horizontal axis of a chart is also known as _____
   (a) Category axis ___ (b) Value axis ___ (c) Legend ___ (d) Y-axis ___
3. Chart area is defined as
   (a) the area within which all chart components are found. ___
   (b) the area within horizontal and vertical axes ___
   (c) the area where the chart title is typed ___
   (d) none of these ___
4. Vertical axis of the chart is also known as _____
   (a) Category Axis ___ (b) Value Axis ___ (c) Legend ___ (d) X-axis ___
5. A _____ chart is used to plot the data for a single data series.
   (a) Pie ___ (b) XY Scattered ___ (c) Column ___ (d) Bar ___

B. Fill in the blanks with the correct word.

Legend Bar X-axis Analyze Pie compare

1. A _____ chart plots data in a circular chart.
2. A _____ chart can be called a column chart drawn sideways.
3. A chart helps us to _____ and _____ data.
4. _____ is the horizontal axis of the chart.
5. A _____ identifies each data series.

C. State whether the following statements are true or false.

1. Charts can present information in an attractive manner. ___
2. Information represented in charts is not compact. ___
3. The Bar chart shows columns with a conical shape. ___
4. Data series is defined as the data on the X-axis. ___
5. In MS-Excel, you can create as well as modify a chart. ___

D. Answer the following questions.

1. What is a chart? Why are charts useful?

2. What are the differences between a 2D-Chart and a 3D-Chart?

3. Can we have two pie charts in 2D and 3D formats for the same data series?

4. What are the steps involved in modifying the labels and titles of a chart?

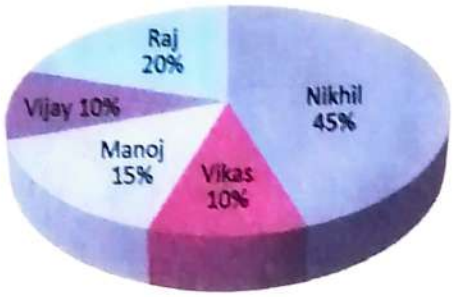
.....

5. What is a Pie chart? Write the steps to draw a Pie chart.

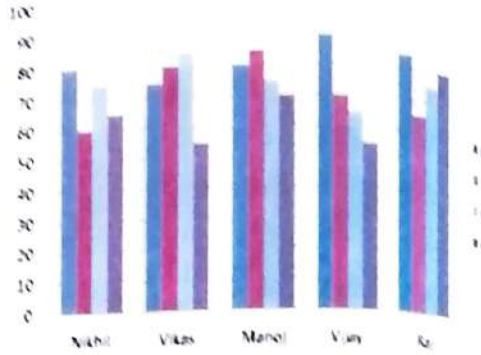
.....

Activity Monitor

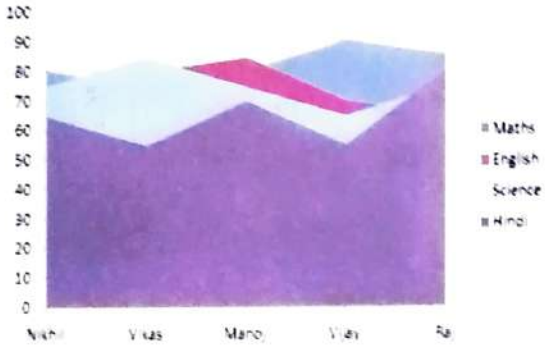
- Make a data series on the literacy rates of different states of India.
- Identify the types of chart and name it.



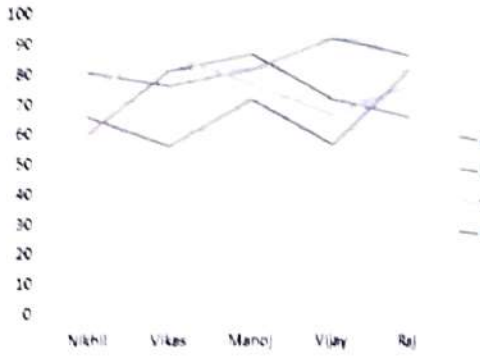
(a) .....



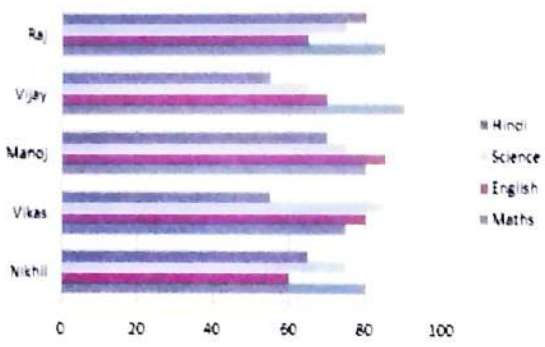
(b) .....



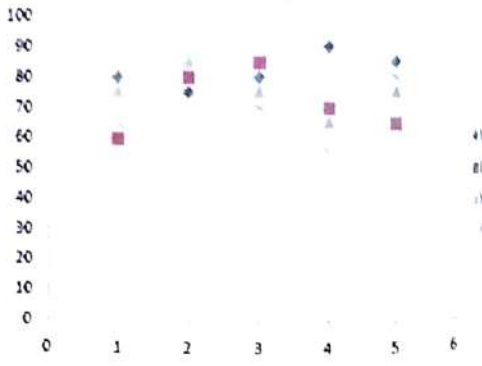
(c) .....



(d) .....



(e) .....



(f) .....

LAB VISIT

Create a column chart to show the board results of you school for five consecutive years.

Create a bar chart to show the year-wise strength of your school in the last ten years.

Create a spreadsheet on results of any international sports event. Create a Pie chart on the percentage of medal distribution for each country.

Make a report card of your class in MS-Excel worksheet. Create a line chart to see the performance trend of each subject in the last three tests.

Follow these instructions.

1. X-axis shows the test number.
2. Y-axis shows the marks obtained by students.
3. The chart contains a line of a particular colour for each subject.

Rishi's monthly allowance is ₹ 500. Out of this, he spends ₹ 100 on food, ₹ 150 on gifts, ₹ 125 for entertainment, ₹ 75 as charity and the remaining is his savings for the month.

1. Create a worksheet with this data.
2. Create a Pie chart that shows how his monthly allowance is distributed.
3. Show the percentage for each category on the chart.

10 MS-Excel : Formulae and Functions

Lesson Extract

- Cell References
- Using Formulae
- Functions
- Function Library
- AutoSum Feature

Formulas are used to perform calculations involving addition, subtraction, division and multiplication. It establishes a relationship between two or more cells. A formula is an expression that can include cell addresses, numbers, arithmetic operators and parentheses. We can perform simple as well as complex calculations using functions.

Formula must begin with (=) symbol followed by cell references and operators. It may contain any one or more of the following elements :

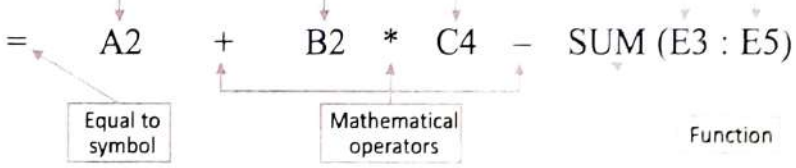
References : The cell or range of cells that you want to use in your calculation.

Operators : Symbols (+, –, *, ^, %, $, #, etc.) that specify the calculation to be performed.

Constants : Numbers or text values that do not change.

Functions : Predefined formulae in Excel.

ELEMENTS OF FORMULAE IN EXCEL



CELL REFERENCES

A cell's location in a spreadsheet is referred to as its cell reference. To find a cell reference, simply look at its column and row positions in the spreadsheet. It is a combination of the column letter and row number such as A1, B3 or D15. While writing a cell reference, it is noticed that the column letter always comes first.

For Your Info

When you click on a cell containing a formula in Microsoft Excel, the formula always appears in the formula bar located above the column letters.

For Your Info

To enter or edit a formula in a cell, you can also press F2 after selecting the cell instead of double-clicking on it.

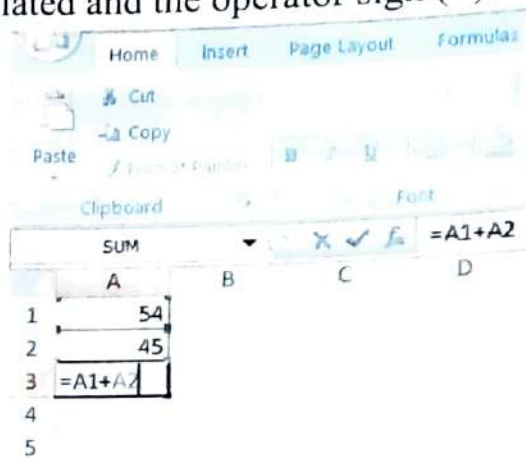
USING FORMULAE

Formulae can be entered in the formula bar or inside a cell. The various steps to write a formula are:

- Select the cell in which you want the result to be displayed.

- Type the (=) sign in the formula bar. It will automatically appear in the selected cell.
- Type the reference of the cell whose result is to be calculated and the operator sign (+).
- Press the Enter key.
- The result will appear in the selected cell.

Suppose you have to calculate the value of 54 + 45. 54 is placed in A1 cell and 45 is typed in the A2 cell. Then, the formula for this calculation would be = A1 + A2, which you can type in the Formula bar and press Enter key to get the result (99).



Entering Formula

The following arithmetic operations are used in a formula:

Operators	Operations	Formulae for (A1) and (A2)	Result (If A1 = 10 and A2 =2)
^	Exponent	= A1 ^ A2	$10^2 = 100$
*	Multiplication	= A1 * A2	$10 \times 2 = 20$
/	Division	= A1 / A2	10/2 = 05
+	Addition	= A1 + A2	10 + 2 = 12
–	Subtraction	= A1 – A2	10 – 2 = 08

Error Results

Sometimes a formula displays a result such as #VALUE! rather than the result it was intended to display. # VALUE! is a type of error displayed by MS-Excel. Some other errors that MS-Excel returns are:

Errors	Possible reasons
#####	The column is not wide enough to display the numbers.
#DIV/0!	The formula contains an invalid operation – Division by 0
#N/A	Data are not available

FUNCTIONS

A function is a built-in formula in MS-Excel that is used to carry out common mathematical calculations. Functions save us from writing lengthy formulae. Excel can be used to perform tasks such as finding average or sum for a range of numbers.

In Excel, we should write function in a specific order called *syntax*.

Functions should begin with the (=) or @ sign followed by the function name. SUM or AVG is a function name.

The third part is arguments. It can be numbers, text or cell reference. Arguments are enclosed within parentheses (). When there is more than one argument, each is separated by a comma.

1 Equal sign → **SUM (B3 : B10)** ← Argument

↑ Function name

This is an example of a function with one argument.

2 Equal sign → **AVG (B3 : B10, C3 : C10)** ← Argument

↑ Function name

This is an example of a function with more than one argument.

For Your Info

Formulae & functions follow BODMAS rule for arithmetic calculations.

Performing Functions

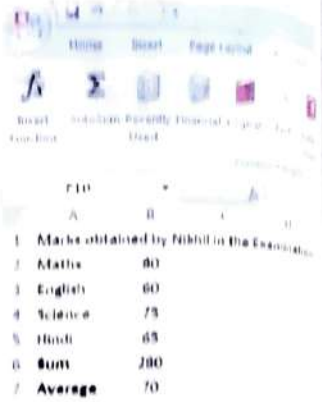
There are various predefined functions in MS Excel which we can use. Some of them are given below:

Sum : Adds all cells in the argument.

Average : Calculate the average of the cells in the argument.

Max : Finds the maximum value.

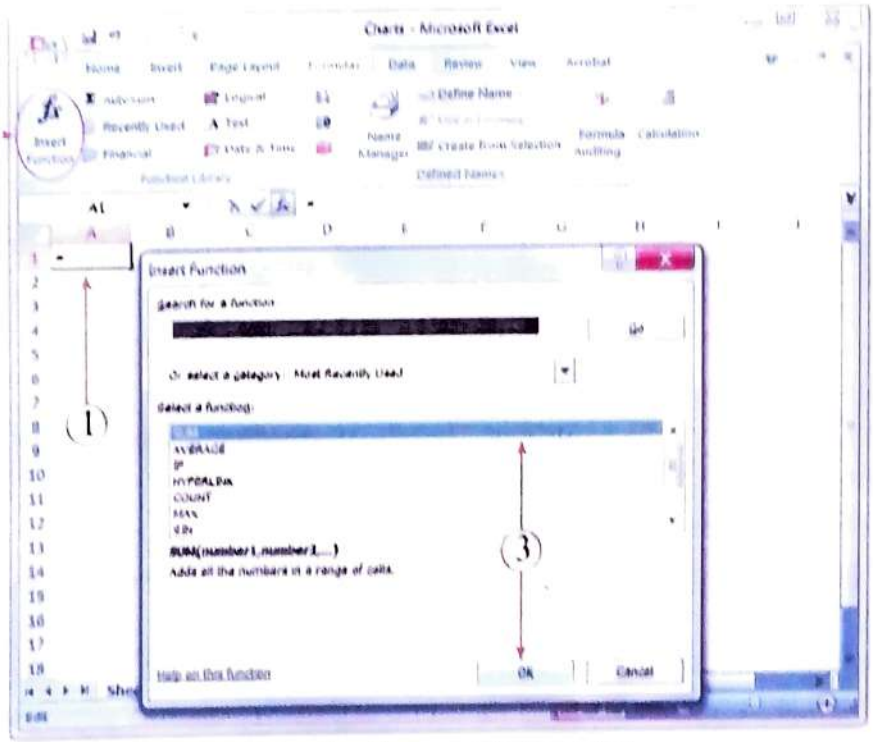
Count : Finds the number of cells that contain a numerical value within a range of the argument.



The various steps to use a function are:

- Click on the cell where you want to apply a function.
- Click on the Insert Function button from the Function Library group of the Formulas tab of the Ribbon.
- An Insert Function dialog box appears.

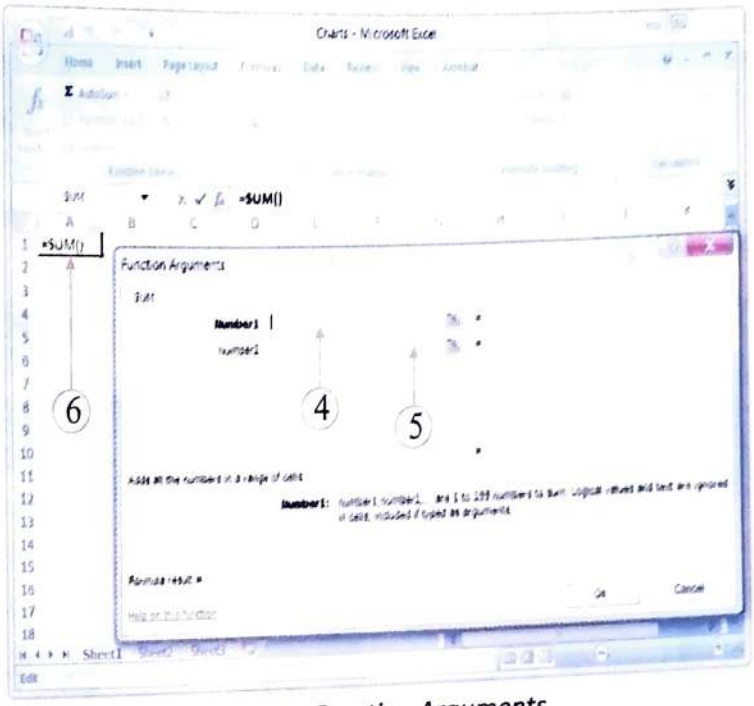
Choose the function and click OK.



Selecting Appropriate Function

A Function Arguments box appears on the screen.

- Fill in the Number 1 box for the first cell in the range that you want to calculate.
- Fill in the Number 2 box with the last cell in the range that you want to calculate.
- You may enter more then two arguments in the same way, if required. Click on OK button.
- The result will appear in the selected cell.



Entering Function Arguments

FUNCTION LIBRARY

The Function Library is a large group of functions on the Formula tab of the Ribbon. These functions are available under the following categories:

AutoSum : It calculates the sum of a range of numbers.

Recently Used : All recently used functions are included.

Financial : It is a list of financial functions such as accrued interest, cash flow return rates, additional financial functions and others.

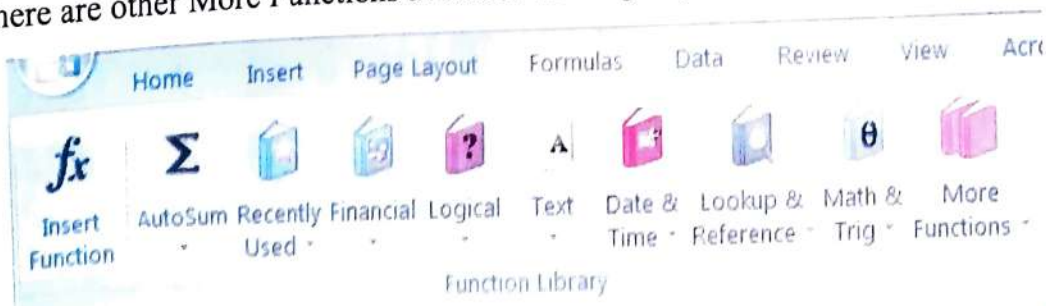
Logical : It is a list of logical functions.

Text : It includes text based functions.

Date & Time : It includes functions to calculate date and time.

Math & Trig : It is a list of mathematical and trigonometric functions.

And there are other More Functions available in the group.

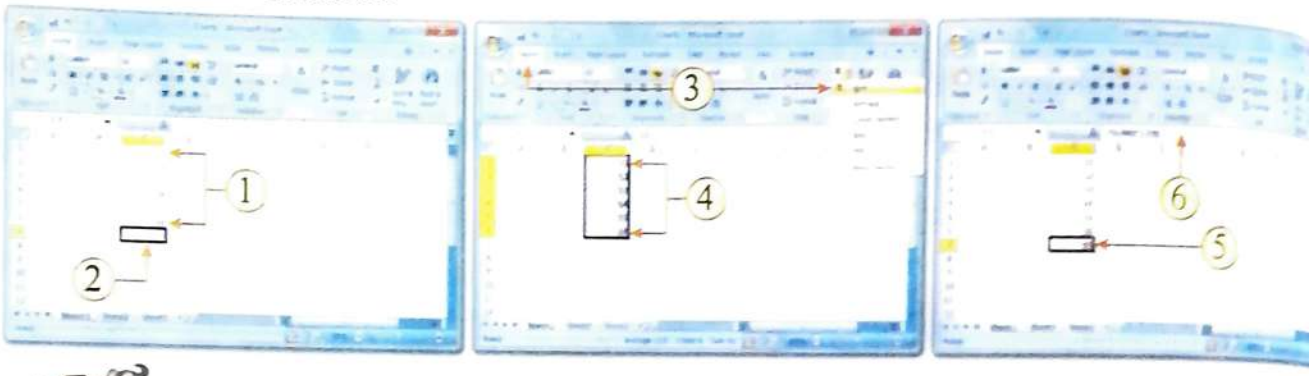


AUTOSUM FEATURE

The AutoSum is a short-cut feature for using MS-Excel's SUM function. It provides a quick way of adding up columns or rows of numbers in a spreadsheet.

The various steps to apply AutoSum feature are:

- Enter the following data into cells C1 to C6 : 11, 12, 13, 14, 15, 16.
- Make sure that the cell C7, the location where the result will be displayed, is blank.
- Click on the Home tab to select the AutoSum button form the Editing group on the Ribbon to enter the SUM function into cell C7.
- Drag the mouse to select cells C1 to C6 in the spreadsheet.
- Press the Enter key to get the result. The answer 81 appears in the cell C7.
- Click on cell C7 and the complete function = SUM (C1 : C6) appears in the formula above the worksheet.



Circle the various categories of functions available in the function library of MS-Excel in the following grid.

R	L	M	B	L	A	C	K	J	P	D
E	A	U	T	O	S	U	M	K	Z	A
C	C	N	E	G	B	G	A	Y	P	T
E	D	Y	D	I	I	G	H	F	E	E
N	Z	Y	C	C	I	J	K	O	N	&
T	F	I	N	A	N	C	I	A	L	T
L	A	E	F	L	W	X	S	R	Q	I
Y	B	D	G	H	V	M	U	N	T	M
U	M	A	T	H	&	T	R	I	G	E
S	A	P	Q	V	B	L	O	E	U	P
E	R	T	O	U	W	V	W	X	Y	S
D	S	T	S	R	Q	P	X	T	A	B

Boost Your Brain

A. Tick (✓) the right option.

1. ..... error indicates that the column is not wide enough to display the numbers.
   (a) ##### ☐ (b) ### ☐ (c) # ☐ (d) none ☐
2. ..... is a kind of error.
   (a) # N/A ☐ (b) %%% ☐ (c) ××× ☐ (d) none ☐
3. A cell reference is .....
   (a) its location in the spreadsheet. ☐
   (b) the name of a cell in MS-Excel. ☐
   (c) a group of cells in a spreadsheet. ☐
   (d) number of cells in MS-Excel. ☐
4. AutoSum feature is used to ..... .
   (a) add numbers in the selected cells. ☐ (b) subtract numbers in a given cell. ☐
   (c) perform logical functions. ☐ (d) none of these ☐
5. A formula is :
   (a) a sequence of values, all references, functions, and/or operators contained in a cell. ☐
   (b) used to carry out common mathematical calculations ☐
   (c) defined as a group of symbols. ☐
   (d) none of these ☐

B. Fill in the blanks with the correct word.

Home Formula calculations #N/A =

1. Formulae are used to perform ..... .
2. A formula always begins with an ..... sign.
3. AutoSum feature is present on ..... tab.
4. ..... error indicates that data are not available.
5. The function library is on the ..... tab.

C. State whether the following statements are true or false.

1. Formulae must begin with ? sign. ☐
2. # Div/0 indicates the formula contains an invalid operation—Division by 0. ☐
3. Formula can be entered in the Tool bar. ☐
4. The function library is a small group of functions. ☐
5. There are various predefined functions which we can use. ☐

D. **Answer the following questions.**

1. What is a Formula? Explain with the help of examples.

.....

.....

2. What is a cell reference?

.....

.....

3. Define Functions.

.....

.....

4. Name any two error results displayed in MS-Excel and state their possible reasons.

.....

.....

5. Describe any five functions present in the Function library on the Formula tab of the Ribbon.

.....

.....

* **Calculate the sum and average of the marks obtained by the three students in different subjects. Use functions of MS-Excel to verify your answers.**

	English	Hindi	Maths	Science	Social Studies	Sum Average
Ria	70	90	60	64	50	
Agrim	80	58	74	88	86	
Kriti	96	92	78	80	82	

- Make your report card in MS-Excel and calculate the total and average marks using AutoSum feature of MS-Excel.

11 Working with Flash CS3

Lesson Extract

- What is Flash?
- Opening Flash
- The Workspace
- Setting Document Properties
- Drawing an Object and Grouping
- Outline with Fill
- Applying Gradient Fill
- Creating a New Gradient
- Modifying a Linear Gradient
- Editing Objects
- Importing Graphics
- Animation in Flash
- Tint Tweening
- Creating a Simple Text Shape Tween

WHAT IS FLASH?

Flash is a powerful animation software package developed by Adobe Systems (formerly Macromedia). Flash provides a versatile and easy way to create animation that consists of images, sound and video with various effects. Flash is a vector based program which means that the graphics created in it can be scaled to any size without losing the quality. Flash is extremely useful for developing highly interactive websites, online advertisements, computer games and contents for various mobile devices. One advantage of Flash is that, we can play the movies in any browser.

OPENING FLASH

- Click on **Start > All Programs > Adobe Flash CS3 Professional**.
- The opening screen appears.
- Click on **Flash File (Action Script 3.0)** under **Create New** section to open the flash document.

Opening Window of Flash

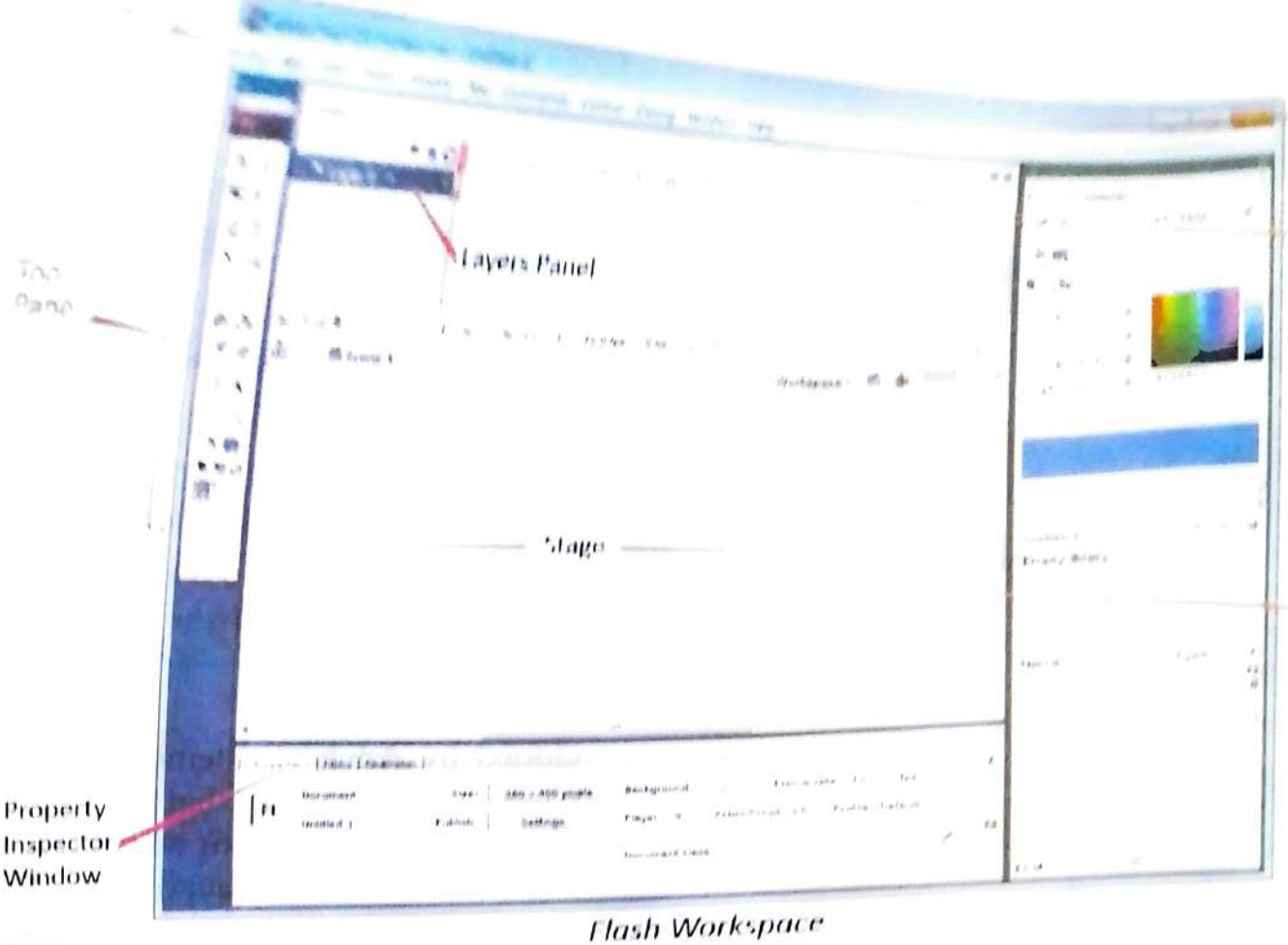
THE WORKSPACE

Flash is similar to the Paint software in Windows. It has almost the same tools that Paint uses but it is mainly used for animation.

The 'workspace' is the arrangement of various Flash elements such as the Tools panel, Control panel, Property Inspector and Window.

The Stage

The stage is a drawing board where we can create graphics, animation, make modifications in it. It is a large white space that is present at the centre of the workspace. By default, the stage dimensions are 550×400 pixels. The gray area surrounding the stage is called the **Work Area,** where we can also place the contents and animate them. We can change the view of the stage size by selecting **View > Zoom in** and **View > Zoom Out** option.



Flash Workspace

Menu

The menu contains controls for common functions like opening and saving files as well as specific functions like copying and pasting, calling up specific panels and controlling the overall Flash environment.

For Your Info

Jonathan Gay is considered as the main programmer and visionary of Flash, an animation editor for web pages.

Tools Panel

The Tools panel consists of various tools to draw, paint, select and modify objects in the workspace. The Tools panel is divided into four parts: **Tools, View, Colors** and **Options.**

The Tools section : It contains tools that are used for drawing, painting and selecting objects.

The View section : It consists of tools for zooming and panning the application window.

The Colors section : It includes modifiers to select colors for the shape you draw using **Stroke** and **Fill Color** picker.

The Options section : It displays modifiers for the currently selected tools. Modifiers affect the tool's painting or editing operations.

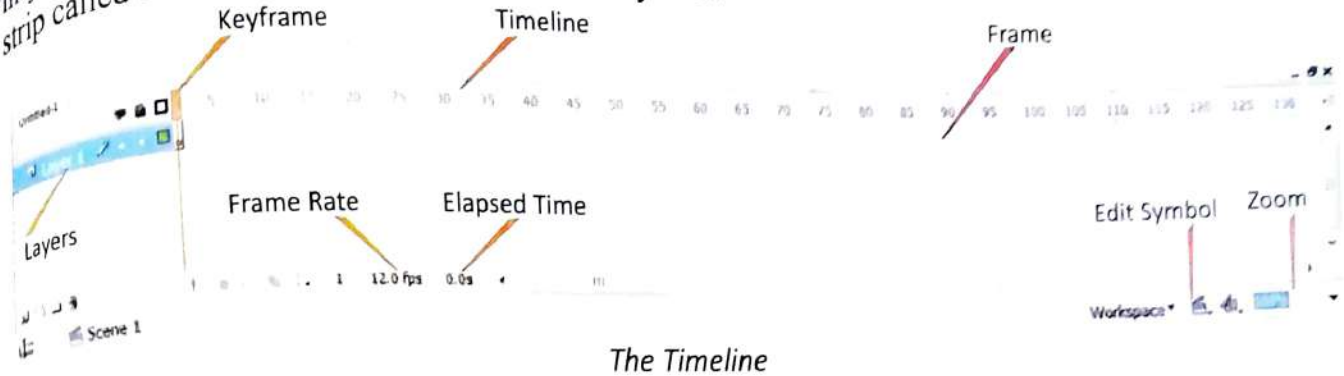
Tools Panel

For Your Info

The default extension of Flash file is .fla.

The Timeline

The Timeline is a fixed window that stays on top of every object in the workspace. It organizes and controls the content of a document overtime in frames as well as in layers. The major component of the Timeline are Frames, Layers and the Playhead. It has a ruler like a strip called **Frames** and field labelled as Layer 1.



The Timeline

Frames

Animations in Flash are created with the help of frames. Frames in Flash can be defined as the little rectangular cells that appear on the Timeline. Each frame has a number, which you can find on top of the Timeline. Like films, Flash document divides the length of time into frames. A frame displays the content of the movie at a specific moment on time.

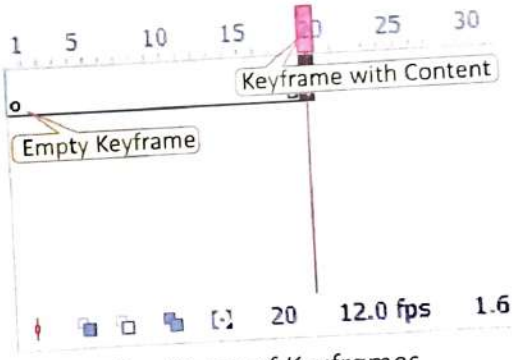
For Your Info

Different versions of Flash have been released till now, from Flash 1.0 to Flash CS6 Professional.

Flash was earlier known as Animator Future Splash, until Macromedia Inc. bought the company which developed it later on.

Keyframes

Keyframes are special types of frames where we define some change to an object's properties for an animation– like position, color, shape etc. We can easily change the length of a tweened animation by dragging a keyframe in the Timeline.



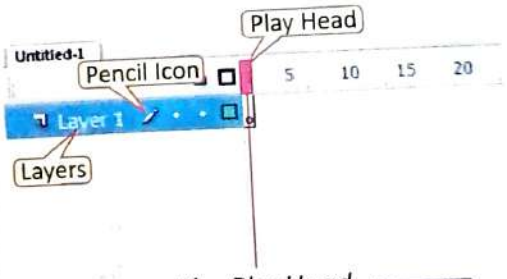
Two Types of Keyframes

Layers

Layers are like multiple film strips stacked on top of one another, each containing a different image that appears on the stage.

A layer contains its own timeline with endless frames. It could be defined as one independent movie of only one level.

When we open a new Flash document, it contains only one layer. We can add more layers to organize the artwork and animation in a document. We can draw and edit objects on one layer without affecting objects on another layer. The active layer is indicated with a pencil icon next to a layer name in the Timeline.



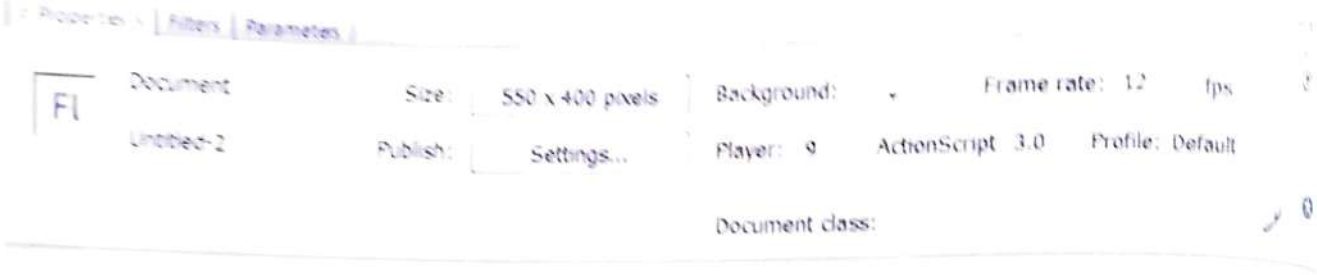
The PlayHead

Playhead

The **Playhead** indicates the current frame displayed on the stage. The playhead moves fro left to right through the Timeline.

Property Inspector

The **Property Inspector** is a panel that displays the properties of the selected object (lev symbol, an image, a line or a shape). The list of properties also very in the **Proper Inspector.** You can make changes to the object or document attributes in the **Proper Inspector.**

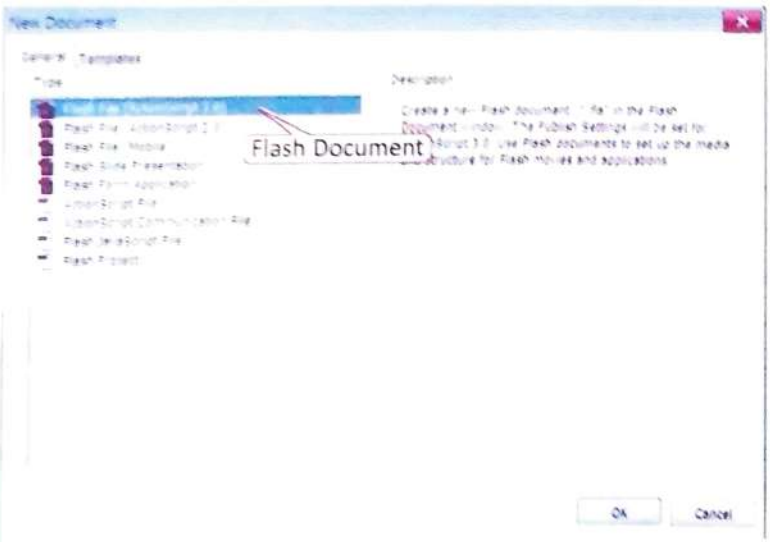


The Property Inspector

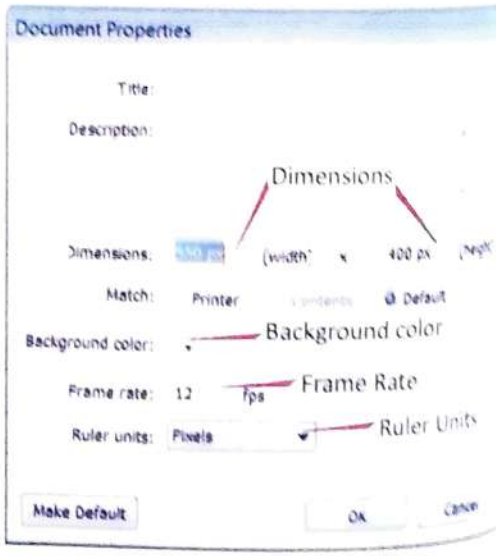
SETTING DOCUMENT PROPERTIES

Each time when we open Flash, the application opens a new file with the default settings fo the movie properties. We can create a new movie as we work. To set the frame rate background, color and ruler units, we use the following steps :

- Click on **File > New.** The **New Document** dialog box is displayed.
- Select the **Flash File (Action Script 3.0)** option in the **Type** list. Click **OK.**
- Select **Modify > Document.** The **Document Properties** dialog box appears.
- To change the **Frame rate,** specify the speed of a movie in frames per second. B default the frame rate is 12 fps (frame per second). Type 8 fps in **Frame rate** box.
- To specify the stage size in pixels, enter the values of width and height in th **Dimensions** text box.



New Document Dialog Box



Document Properties Dialog Box

To set the background color of the document, choose any color for the stage from the **Background color** swatch.

To set the stage size to the maximum available print area, click the radio button **Printer** under **Match** section.

Select the unit from the drop-down list of **Ruler units.**

Click on **OK** after specifying the required options.

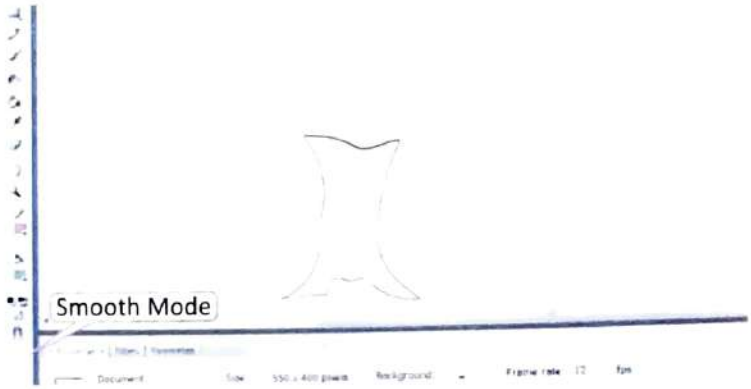
Quick Key

The shortcut to insert a frame F5

DRAWING AN OBJECT AND GROUPING OUTLINE WITH FILL

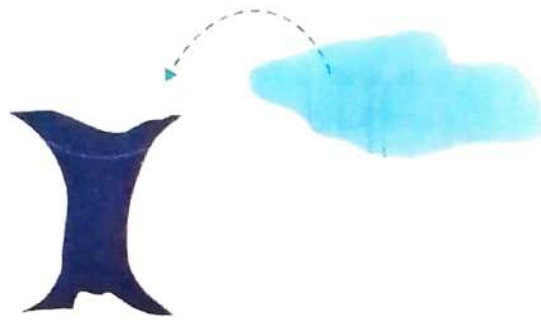
When we make a drawing in Flash, it actually creates two objects—the **fill** and the **outline.** To manipulate elements as a single object, we need to group them.

- Select the **Pencil Tool** and select brown as the **Stroke color** and **Fill color.** Draw the stem as shown in the figure.
- Choose the **Selection Tool** and move the pointer on the tree trunk. A curve is displayed below the arrow. Hold down the left mouse button and drag the lines to give a proper shape.
- Select the **Pencil Tool** and select **Smooth** mode from the **Options** section.
- Select green as the **Stroke** and **Fill Color.** Draw the curves of the tree top as shown in the figure.
- Select the **Paint Bucket Tool** and click inside tree top. Similarly, fill brown color in the stem.
- Select the **Selection Tool** and double-click on the tree top. Drag the tree top over the tree trunk.
- Choose the **Selection Tool** and then select the tree by dragging around the tree.



Selecting the Smooth Mode of Pencil Tool

Filling Colour in the Object



Dragging the Object

For Your Info

Keyframes can be of two types. If a keyframe has content in it, then it is represented by a dark circle.

An empty circle preceded by a keyframe represents that it is an empty keyframe.

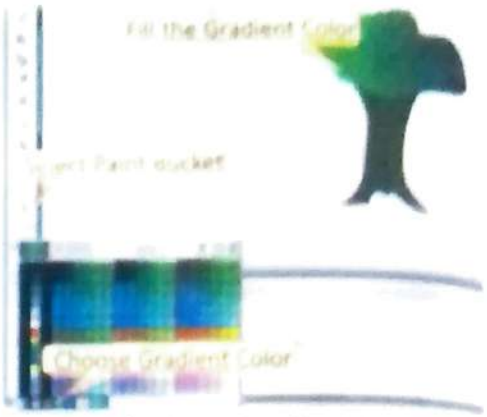
Sticky Note

To select both the objects, choose the **Selection Tool**, hold down the **Shift** key and double-click on the objects. Then select **Modify > Group**.

APPLYING GRADIENT FILL

Gradient means filling color in an object from light to dark that basically gives shade to an object or a color formed by mixing of two or more color in an object.

- Select the tree using the **Selection Tool**.
- Select the **Paint Bucket Tool**.
- Click the **Fill Color** drop-down arrow to get the color palette.
- Select the gradient effect and click inside the object. The gradient color fills the shape.



Applying Gradient Fill

CREATING A NEW GRADIENT

Flash can create two types of Gradients.


Liner


Radial

Quick Key

The shortcut key to display Document Properties dialog box. Ctrl+J

Linear Gradient changes color from the starting point to the end point in a straight line.

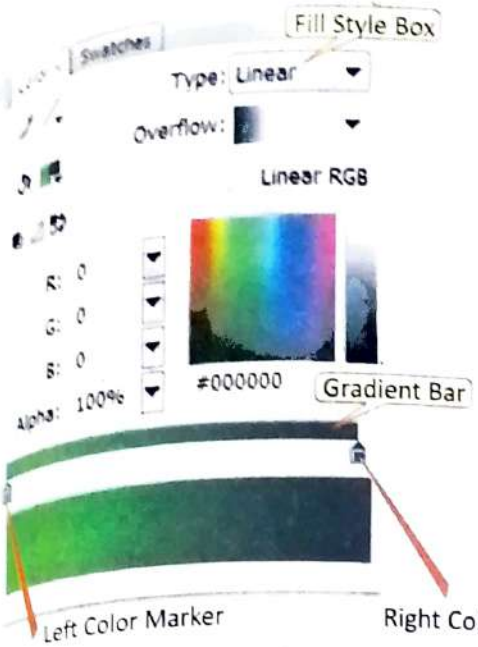
Radial Gradient changes color in an outward direction starting from the focal point.

To create a new gradient, follow these steps:

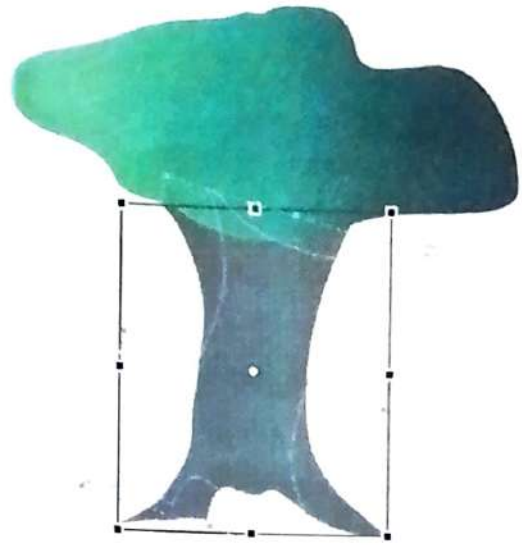
- Select the stem of the tree.
- Choose **Window > Color Mixer** to display the **Color Mixer** panel.
- Click the drop-down arrow of **Fill Style** box and select **Linear** or **Radial.**
- Double-click on the left color marker. The color palette appears. Select the brown color.
- Select the **Paint Bucket Tool** and click on the stem.
- Double-click on the right color marker and select the orange color.
- Click the drop-down arrow below the **Free Transform Tool** and select the **Gradient Transform Tool** from the **Tools panel.** Click on the stem filled with a gradient fill. The gradient transform controls the appearance on the stage around the object.
- To rotate the gradient fill, drag the **Gradient Rotate** handle to rotate the linear gradient clockwise as shown in the figure.
- A bounding box with editing handles appears.

Info

The minimum Stage size is 18 × 18 pixels and maximum is 2880 × 2880 pixels.



Color Mixer Panel



Gradient Rotate

- To scale a liner gradient or a file, drag the square handle at the centre of the boundary box.
- To change the focal point of a circular gradient drag the middle circular handle on the bounding circle.

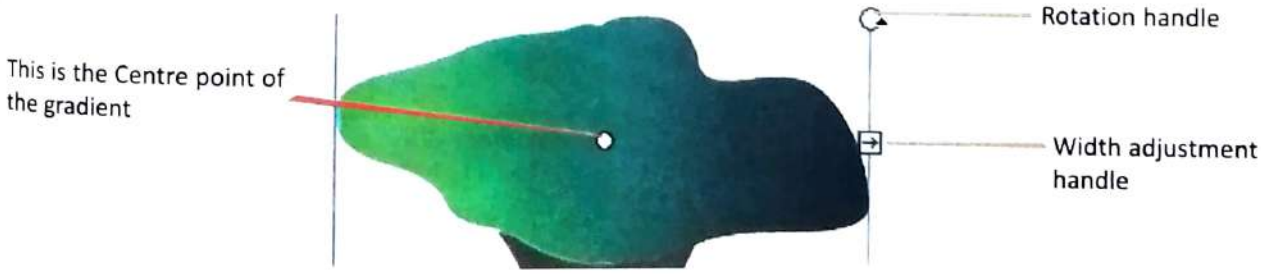
For Your Info

It is not always required to draw an object on the stage and then create an animation in Flash. If you want, Flash can also be used to create animations from external images and bitmaps.

MODIFYING A LINEAR GRADIENT

Draw a tree on the stage and fill a linear gradient color in it. Let us now modify the radient filled in the shape by using the **Gradient Transform Tool.**

- Select the upper portion of the tree.
- Now, select the **Gradient Transform Tool** in the Tools Panel. Click the object filled with gradient colour in it.
- The shape will appear as shown below:



Modifying a Linear Gradient

Changing the Centre of the Gradient

The centre point of the gradient is the place where all the mixing colors are present in equal proportion. To change the centre of a gradient, use the following steps:

- Bring the pointer over the centre point.

- Drag the centre point in a desired direction to change its position and observe t changes.

Changing the Centre of the Gradient

Changing the Width of the Gradient

To change the width of the gradient filled inside the shape, follow the steps given below:

- Position the pointer over the width adjustment handle. It will change to a double head arrow.
- Drag the adjustment handle to the left or right to increase or decrease the gradien width.

Changing the Width of the Gradient

Rotating the Gradient Fill

To rotate the gradient color filled inside a shape follow these steps:

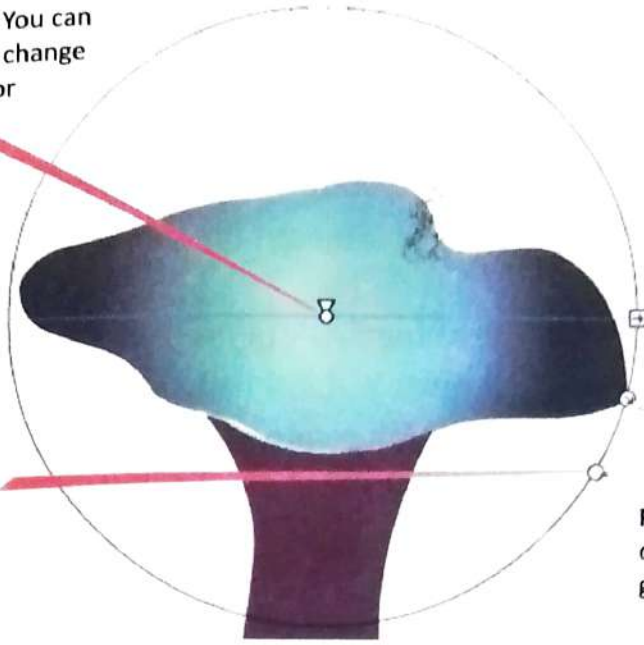
- Position the pointer over the **Rotation Handle.** The pointer shape changes to ⟲.
- Drag the rotation handle clockwise or anticlockwise according to the need and obser the changes.

Rotating the Gradient Fill

Modifying a Radial Gradient

Likewise, you can modify a Radial gradient color filed inside the tree. Let us now mod the gradient filled in the shape by using the **Gradient Transform Tool.**

- Select the upper portion of the tree.
- Now, select the **Gradient Transform Tool** in the Tools Panel and click on the object
- The shape will appear as shown at the next page.



Center of the gradient : You can drag the centre point to change the starting point of color mixing of the gradient.

Width adjustment handle : You can drag the width adjustment handle to increase/decrease the gradient width.

Rotation handle : You can drag the rotation handle clockwise or anticlockwise to rotate the gradient as required.

Resizing handle : You can drag the diagonal resize handle to alter the gradient size proportionately

Modifying a Radial Gradient

EDITING OBJECTS

Selecting Objects

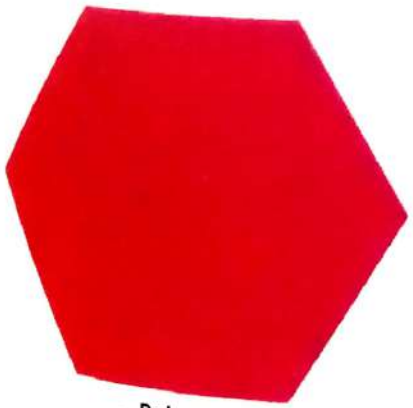
To edit an object, we have to first select it, otherwise the command will not be applied.

- Click the **Selection Tool.**
- Click and drag the selection box around the object and release the mouse button. *Or*
- Double-click on the object to select both the stroke and fill. The object will be selected.

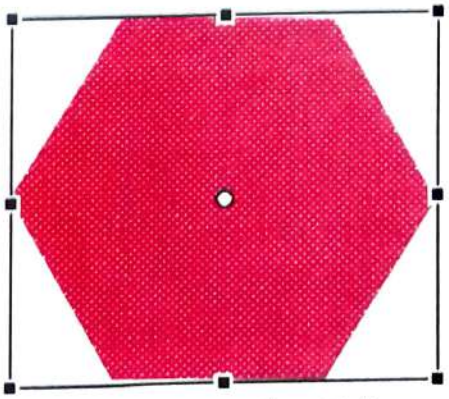
Transforming the Shape

Using the **Free Transform Tool,** we can scale, rotate, compress, stretch or skew lines and shapes. To compress the drawing, follow these steps:

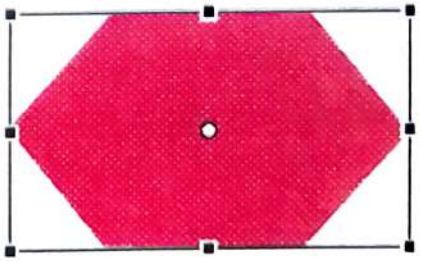
- Draw a hexagon using the **PolyStar Tool.**
- Select the **Free Transform Tool** in the **Tools** panel.
- Double-click on the hexagon on the stage to select the both stroke and fill.
- Drag centre handle of the **Free Transform Tool** down to transform the hexagon into the following shapes.



Polygon



Using Free Transform Tool



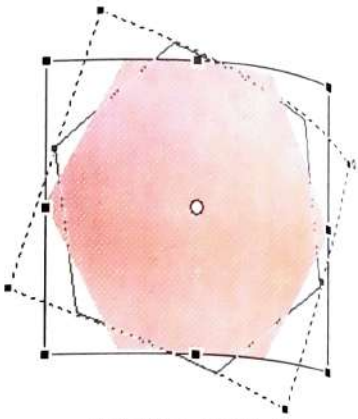
Skewing a Polygon

Using Free Transform Tool

Rotating an Object

Follow the given steps to rotate/skew the object:

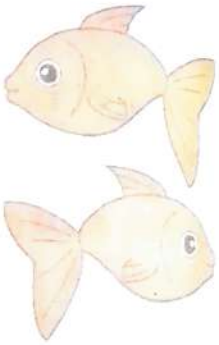
- Select the object.
- Select **Modify > Transform > Rotate and Skew.**
- Click on the corner handle of the object, the pointer changes to rotation handle.
- Drag a corner handle to rotate the object.
- To end the transformation, click outside the selected object.
- An outline of the object appears as you rotate.
- Release the mouse button and see that the object has rotated.



Rotating an Object

Flipping an Object

- Draw a fish using the **Pencil Tool** and fill color in it using the **Paint Bucket Tool.**
- Choose the **Selection Tool** and double-click on the object to select it.
- Select **Modify > Transform.**
- Then select **Flip Vertical** or **Flip Horizontal** and observe the change in the object.



Flip Horizontal

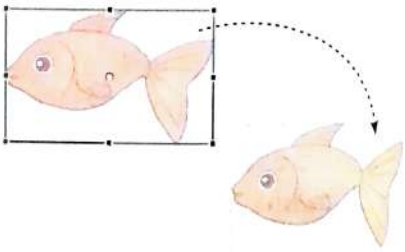
Copying an Object

- Select the object that you want to copy by using the **Selection Tool.**
- Select **Edit > Copy.**
- Click on the blank area on the stage.
- Select the **Paste** option from the **Edit** menu and you will get a duplicate copy of the object.

Paste

Moving an Object

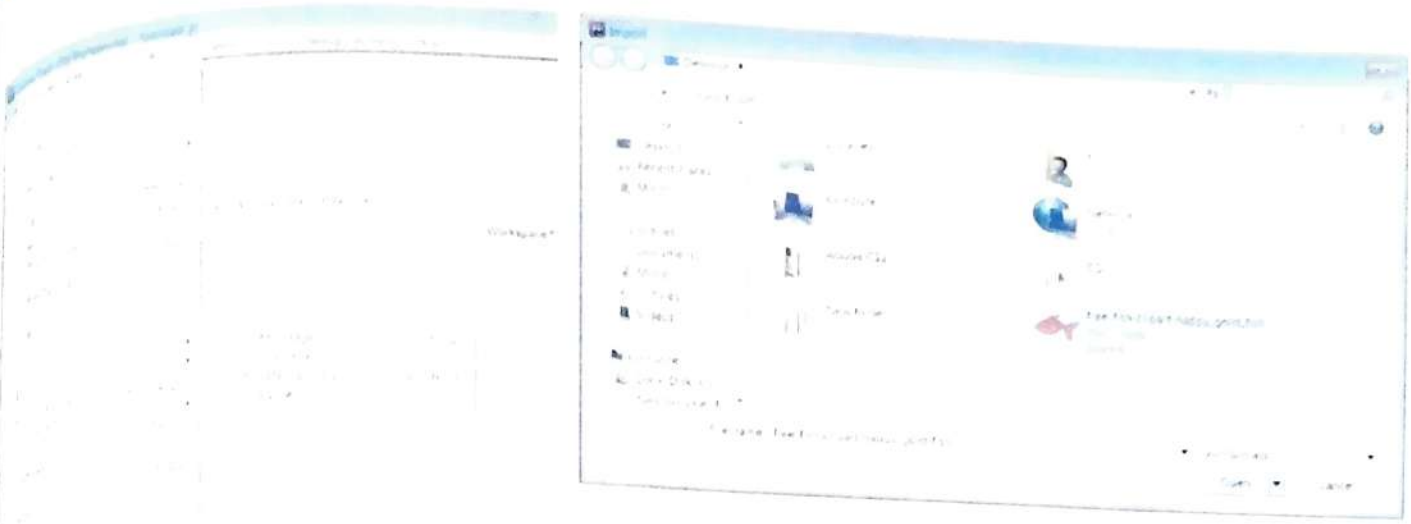
- Select the object that you want to move by using the **Selection Tool.**
- A **Plus** sign appears next to the arrow.
- Click and drag the object to a new position.
- Release the mouse and you will see that object has moved to a new location.



Moving an Object

IMPORTING GRAPHICS

- Select **File > Import > Import to Stage.**
- You will get the **Import** dialog box.
- Browse the filename to import. Select the filename and click on **Open.**
- The picture will be placed on the stage.



Importing Object

ANIMATION IN FLASH

Animation involves a series of still images, usually painted or sketched, displayed in rapid sequence. Then only it appears to show some movement.

Quick Key

The shortcut key to import a picture to flash	Ctrl + R

Animation in flash is created by changing the contents of successive frames. We can make an object move across the stage, increase or decrease its size, fade in or out, change color or shape using animation.

There are two methods for creating an animation in Flash:

Frame by Frame Animation

In Frame-by-Frame Animation, we create an image in every frame.

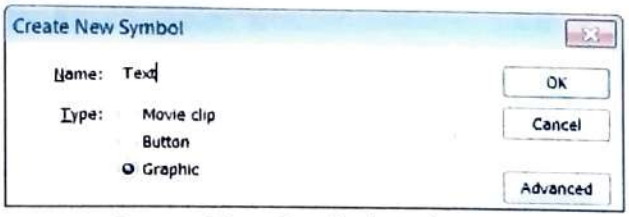
Tweened Animation

In the Tweened Animation, we create the starting and ending keyframes to animate the object. Flash itself creates the motion effects in between the frames.

TINT TWEENING

Tint Tweening is used to change the color of an object. Tint effects work only on symbols and cannot be added to the object that are drawn directly on the canvas of the movie.

- To create a symbol, select **Insert > New Symbol.**
- Type a name TEXT for the symbol in the 'Name' field in the **Convert to Symbol** dialog box. Select **Graphic** option in behavior and click **OK.**

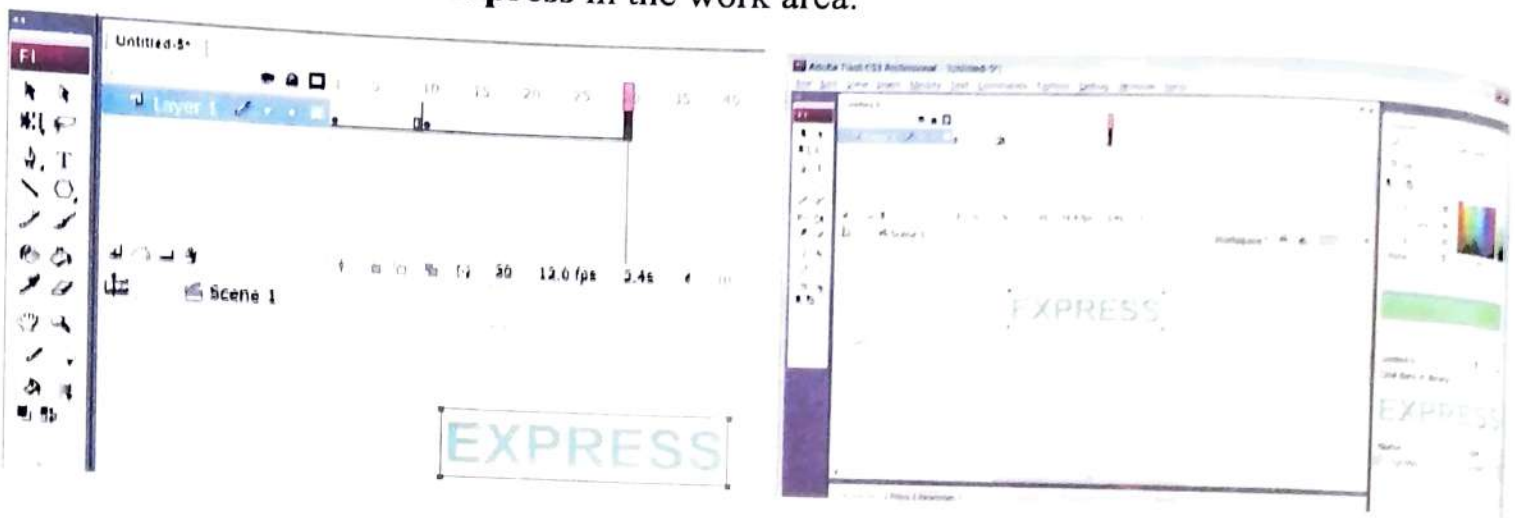


Create New Symbol Dialog Box

- Select the **Text Tool** in the Tools panel. Select **Text > Font > Arial** to set the font type. Choose **Text > Size > 48** from the menu to set the font size big. Select **Text Style > Bold** to make the text bold or you can make changes in formatting of text in 'Properties dialog box' as shown in the given figure.

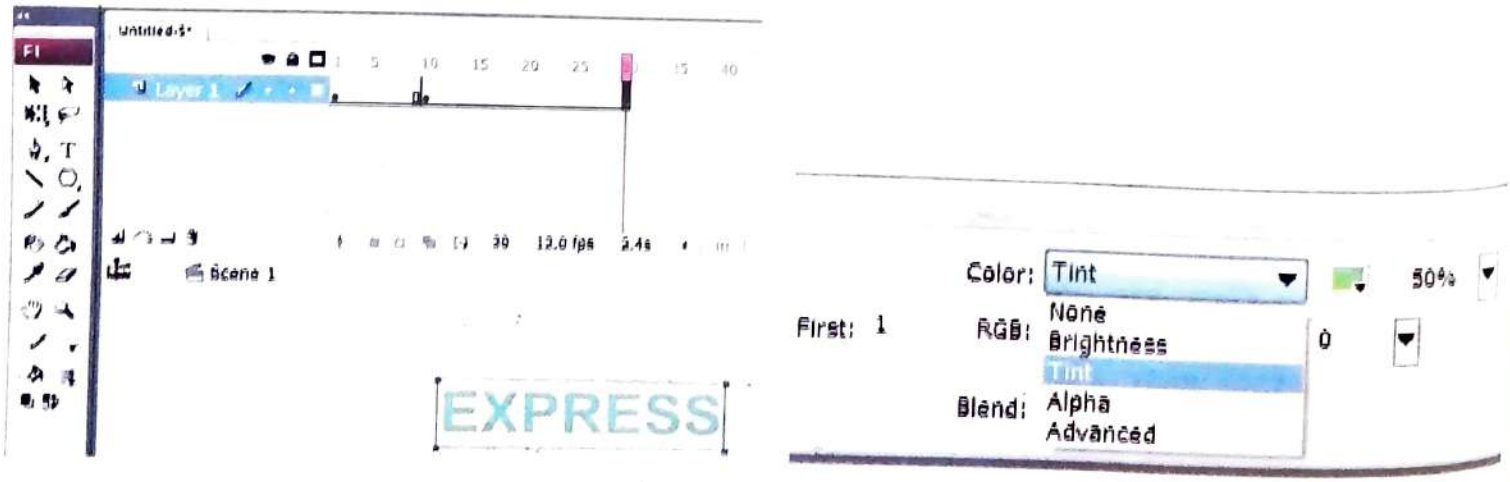
Property Dialog Box

- Now type the text—**Express** in the work area.



Library Displaying the EXPRESS Symbol

- Select **Edit > Edit Symbols.** You can change the properties of the text.
- Graphic symbol automatically saves in Library.
- Select the Frame 30 in the Timeline and press **F5.**
- Insert a keyframe in Frame 10 and Frame 30. Position the pointer on Frame 10 then press **F6.**
- Repeat this step on Frame 30.
- To add Tint effect, select Frame 1 and click on text.



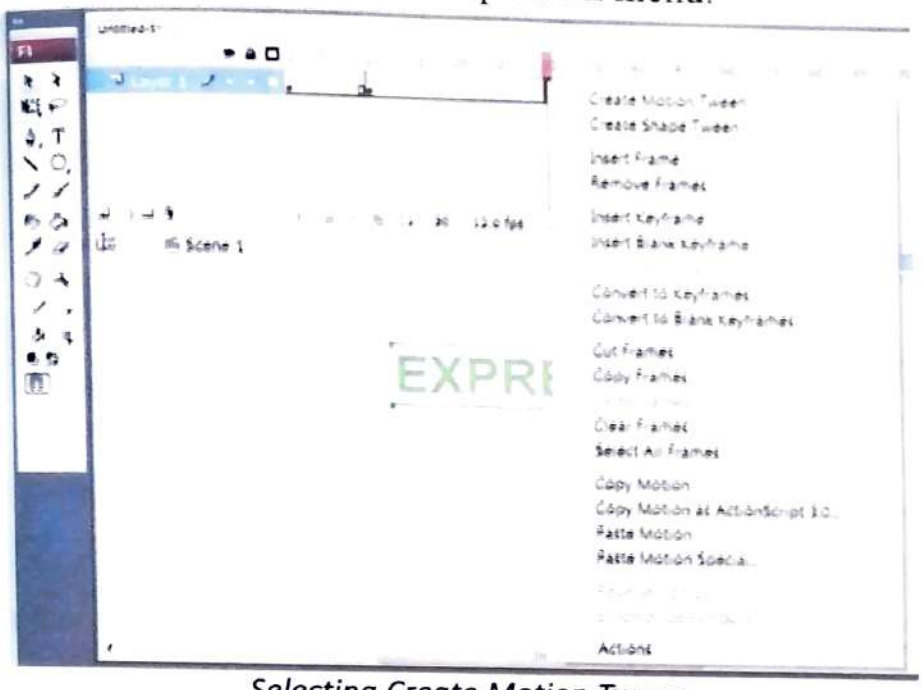
Selecting Tint Option

In the **Property Inspector,** select **Tint** color from the **Color** option list. Position the **Tint Amount** bar at 100%. You will get the color map. Set the colors to Red = 255, Green = 0, Blue = 0 (RGB Colours).

Similarly, add Tint tweening to keyframe 10 and set the colors R= 0, G = 255, B = 0.

Add Tint tweenting to keyframe 30 and set the colors R= 0, G = 0, B = 255.

Right-click on the Timeline at any place between Frame 1 and Frame 10 and select **Create Motion Tween** option from the drop-down menu.



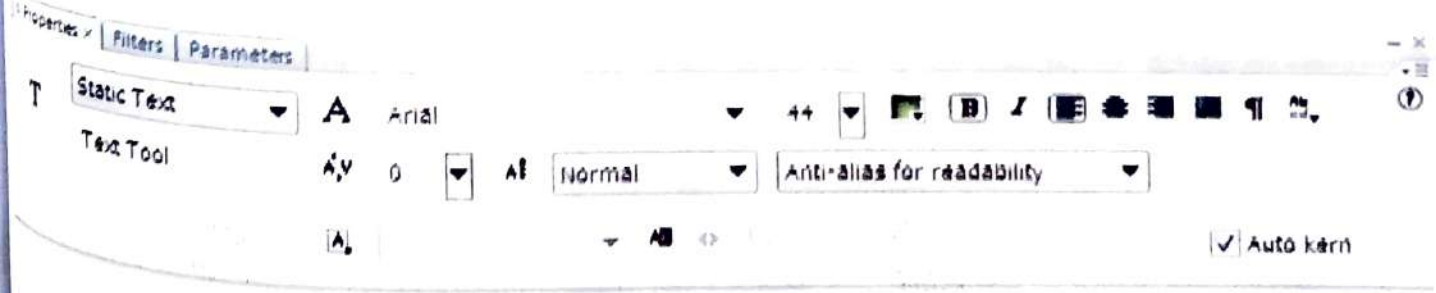
Selecting Create Motion Tween

- Similarly, right-click on the Timeline at any place between Frame 10 and Frame 30, and choose **Create Motion Tween** from the drop- down menu.
- Click on **Control > Test Movie** and view the Tint tweening effect on the text.

CREATING A SIMPLE TEXT SHAPE TWEEN

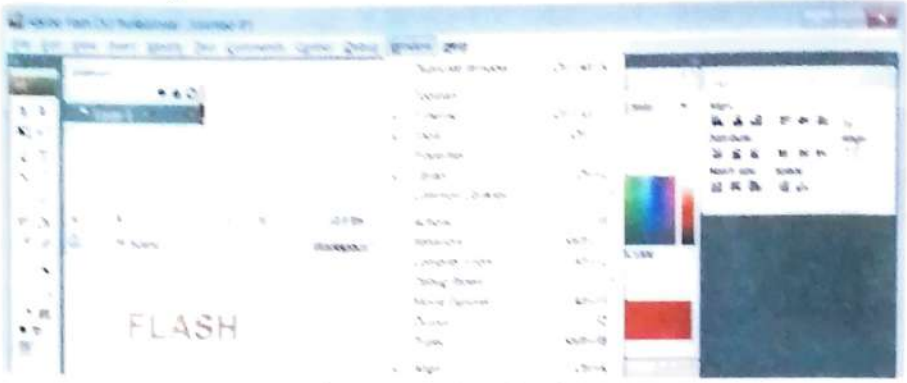
With Shape tweening, you can change one object into another. Let us try:

- Select the **Text** Tool T and choose **Text > Size > 44** from the main menu and select **Text > Style > Bold** to make the text thick.
- You can also select the font, size and style from the **Properties** panel.
- Click on the **Text** (Fill) color in the **Properties** panel. The Color palette will be displayed. Select any color of your choice.



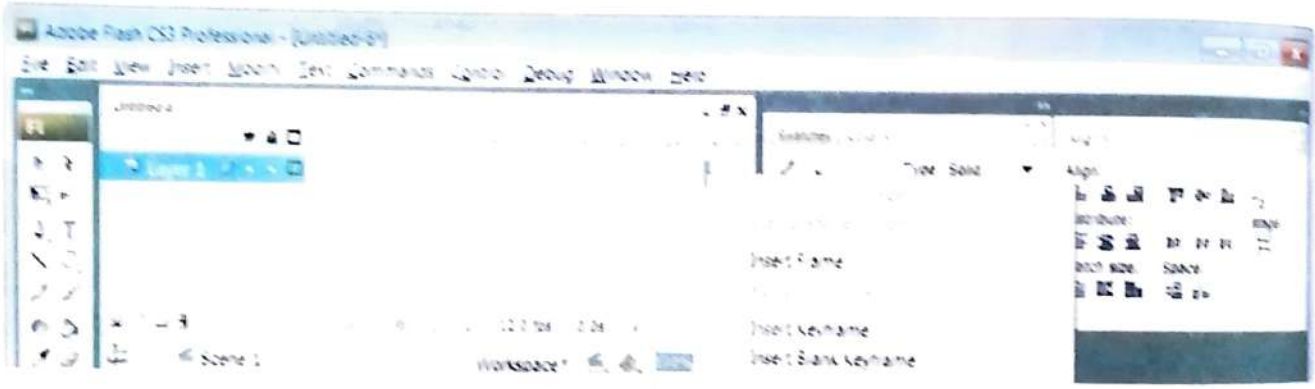
Properties Panel

- Type the text on the **Stage** in the first frame of the main **Timeline**. Select **Window > Align**. In the **Align** panel, select the **To stage** button. Click the **Align Horizontal Center** button and **Align Vertical Center** button. Close the **Align panel**



Selecting Align Option

- Move the pointer at Frame 49 and right-click the mouse. Select **Insert Keyframe** option from the pop-up menu.
- Similarly, **Insert Blank Keyframe** at Frame 24.
- Types some new text and then align **Horizontal Center** and **Vertical Center.**
- Select the text in Frame 24 then select **Modify > Break Apart.**
- Break apart the text in Frame 1 and Frame 49.



Inserting Keyframe at Frame 49

- Click between Frame 1 and Frame 24 in the **Timeline.**
- Go to **Properties** panel and select **Shape** from the **Tween** drop-down menu.
- Then click between Frame 24 and Frame 49 and select **Shape** again from the Tween drop-down menu.
- Select **Control > Play** option from the main menu to play your animation.

Selecting Shape Tween

Quick Key

- The shortcut to insert a keyframe is **F6.**
- To make the Properties panel visible on the screen press **Ctrl + F3.**
- To group the selected objects, make use of **Ctrl + G** key combination.
- The shortcut of the **Pencil Tool** is **Y** and for the **Selection Tool** is **V.**
- The shortcut key to use **Free Transform** tool is **Q.**
- The shortcut key to import a picture to flash is **Ctrl + R.**
- The shortcut key to convert an object to symbol is **F8.**
- **Ctrl+Enter** is the shortcut key to play an animation in Flash.
- **F7** is the shortcut key to insert a Blank Keyframe.

Boost Your Brain

A. Tick (✓) the right option.

1. Which of the shortcut key is used to insert a frame?
   (a) F2 (b) F5 (c) F10 (d) F6 ☐
2. Which panel acts as a store house in Flash?
   (a) Library (b) Tools ☐
   (c) Properties (d) None of these ☐
3. What are the little rectangular cells called that appear on the Timeline?
   (a) Frames (b) Layers ☐
   (c) Keyframes (d) Stage ☐
4. Which shortcut key is used to play the animation in Flash?
   (a) Ctrl + Alt (b) Shift + Enter ☐
   (c) Ctrl + Enter (d) None of these ☐
5. Which is the extension of Flash?
   (a) .fla (b) .flash (c) .fas (d) .Fas ☐

B. Fill in the blanks with the correct word.

Workspace Work Area Stage Timeline Animation Adobe System

1. Flash is a powerful ..... software package developed by ..... .
2. The ..... is the arrangement of various Flash elements such as the Tools Panel, Control Panel, Property Inspector and Windows.
3. The ..... is a fixed window that stays on top of every object in the workspace.
4. The ..... is the large white space that is seen at the centre of the workspace.
5. The gray area surrounding the stage is called the ..... .

C. **State whether the following statements are true or false.**

1. Jonathan Gay is considered as the main programmer and visionary of Flash.
2. The shortcut key to import a picture is Ctrl + G.
3. Radial gradient changes color in an outward direction starting from the focal point.
4. Rotation handle cannot be dragged clockwise or anticlockwise.
5. The default stage size is 550 × 400 pixels.
6. Tools that are used for drawing, painting and selecting objects are present in View section of the Tool Panel.

D. **Answer the following questions.**

1. What are the parts of Tools panel? What does the options section of Tools panel display?

.....

.....

.....

2. What are the default stage divisions displayed on the Flash Window?

.....

.....

.....

3. What do you know about Flash?

.....

.....

.....

4. What is the difference between Frame and Keyframe?

.....

.....

.....

5. What do you know about animation?

.....

.....

6. What do you understand by Gradient? What are the types of Gradient? Name them.

.....

.....

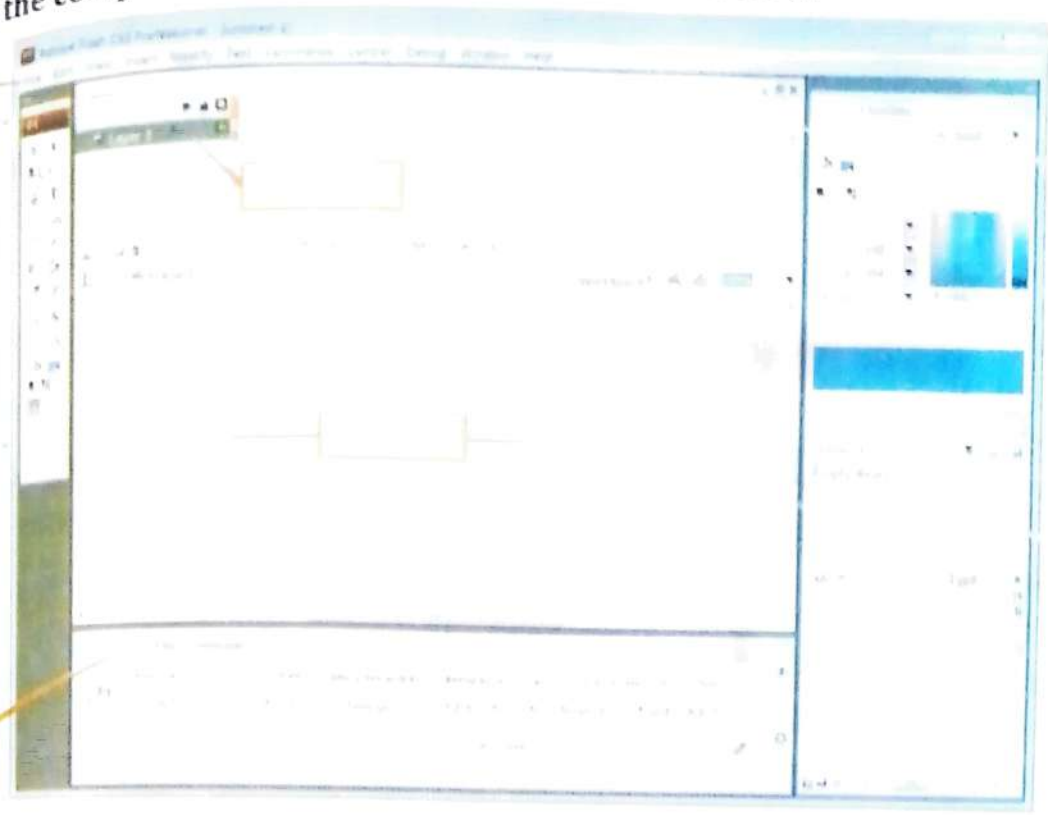
7. What is Tint Tweening?

.....

.....

Activity Monitor

Label the components of the Flash Window shown below.



Lab Visit

Create your school logo in Flash and add it as a symbol.

Create a Flash animation to create a Tint tween effect on the text.

Type "Express Screen Fun"

Select the font Times Roman and font size 56.

Create a simple Text Shape Tween

Type your name

For example : RIYA in Frame 1 and JAIN in Frame 20.

12 More on Internet

Lesson Extract

- Introduction to E-Commerce
- Advantages of E-Commerce
- E-Commerce Sites & Ethics
- Advance Uses of Internet
- Chatting

E-COMMERCE

You know about the term **commerce.** It is involved with buying and selling a product. You can see commerce all around. It may take different forms. Three different types of people are involved with commerce. These are

- Producers
- Sellers
- Buyers

For Your Info

URL stands for Uniform Resource Locator. It specifics the address of a website.

Commerce revolves around these categories of people.

Producers are the people who produce different kinds of products or items and services.

Seller are the people who sell items or goods and services to people.

Buyers are the people who purchase items and services.

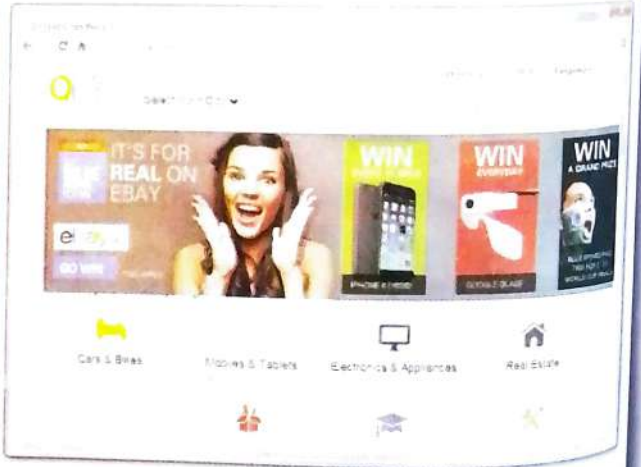
For example, Amul produces Amul Chocolate, which the shopkeeper in your neighbourhood sells and you buy it.

So, Amul Company is the producer, the shopkeeper is the seller and you are the buyer.

E-Commerce

Electronic commerce or E-commerce means buying and selling any product online using the Internet technologies. Many companies have set up their website, which provide the facility to order and purchase their products and services. These websites, which provide E-commerce are specially designed and have some extra features.

www.ebay.com



www.quikr.com

There are three modes of E-commerce available at present. These are:

- Business-to-Business
- Business-to-Customer
- Digital Middleman.

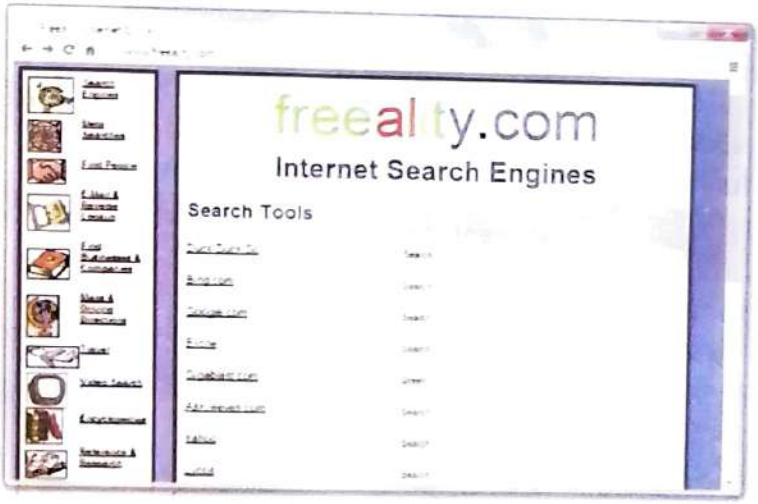
Business-to-Business refers to a company selling or buying products or services from other companies.

www.hp.com

Digital Middleman refers to a company which provides information about several companies on a single website. This company gathers information from other companies about the same type of products or services. A commission is charged for every sale or purchase by the company hosting the website.

www.walmart.com

Business-to-Customer refers to a company which establishes Website for its products and services. The customer can order any product or service and also gather information about these products and services.



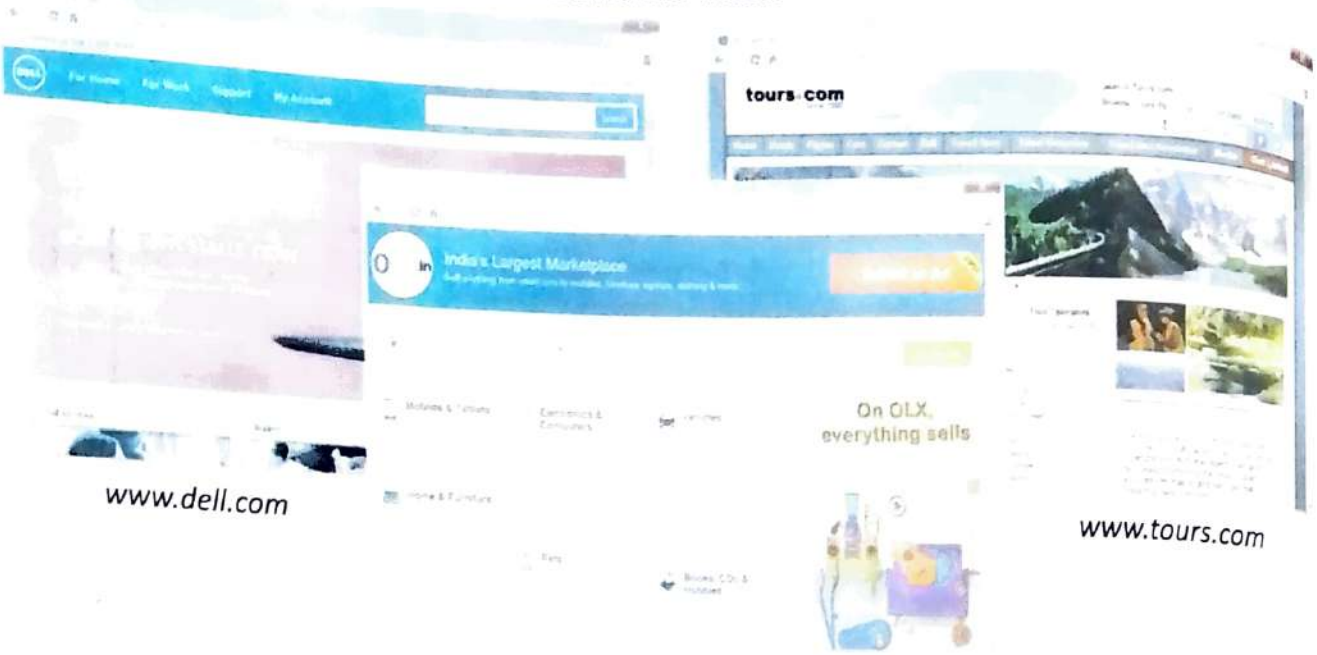
www.freality.com

ADVANTAGES OF E-COMMERCE

There are several advantages of E-commerce. Some of them are as follows:

- You do not need to go to showrooms or shops.
- You do not need to carry cash from home to shop with a fear of losing it.
- You do not need to search an item manually with the help of a sales person.
- There are no geographical and time barriers. You can buy products from anywhere in the world.
- Even small companies can go global.

You do not need to travel to other countries for purchasing products.
You can save time, money and effort.
You can choose products from all over the world.



www.dell.com

www.tours.com

www.olx.com

E-commerce sites are special sites with some extra security features. **Trust** is one of the key factors for these sites. Buying products through Internet is very easy and simple. But you must not do it alone or without permission of your parents or elders. There are numerous companies which sell the products and services but actually they are fraud. They may steal the credit card codes and PIN and you may run up with huge bills on credit cards while you might have purchased products for a few hundred rupees only.

Some of the popular E-commerce sites are:

www.amazon.com
www.ebay.com
www.automart.com
www.indiatimes.com

You have studied about Internet in your previous class. It is the largest computer network. It contains millions of computers.

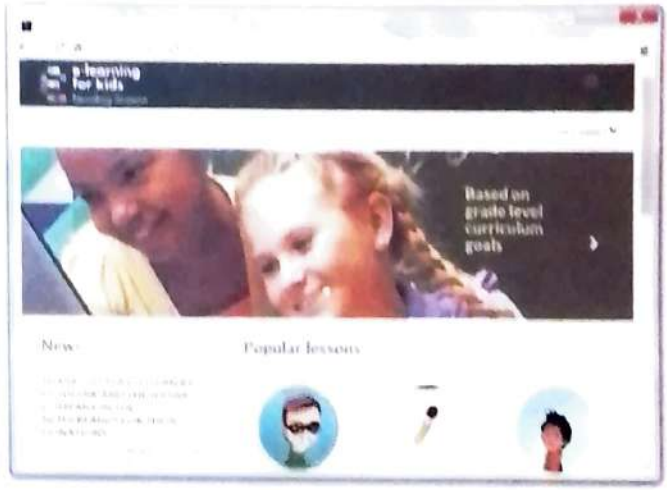
Internet is very useful to us. It helps in sending e-mails. You can find information on almost every subject on Internet. It is like a big library. You can exchange views and ideas with other people. Let us learn some of the uses and services available on the Internet.

Education

Many educational institutes from all over the world nowadays provide online educational facility. Internet makes it possible to learn in an environment where the teachers and the students are not needed at the same place or in a classroom. Some institutes conduct online tests for their courses. You can appear in an exam from your home sitting in front of your computer with simply an **Internet connection.**

Distance education becomes easier and affordable with the use of Internet.

www.leapfrog.com

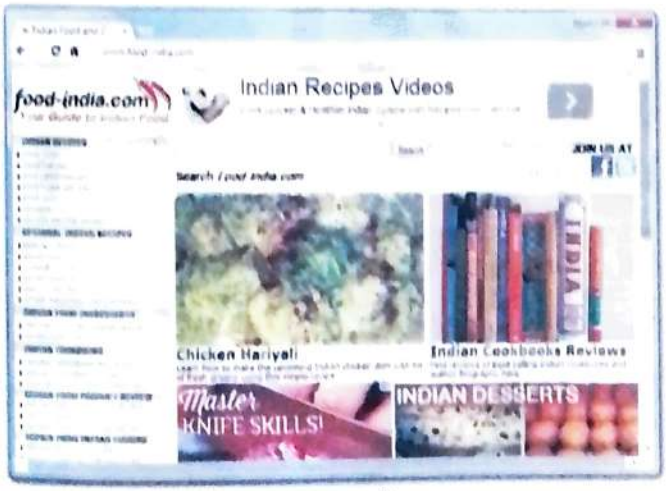


www.e-learningforkids.com

Searching Information

Internet is like a big library. Information on almost every subject is available on the Internet. More and more websites are coming up with the sole aim of providing information to people, be it about people, country, universe, food and cooking, books, movies, history and a lot more.

You can search for information and visit sites which provide different types of information.



www.food-india.com

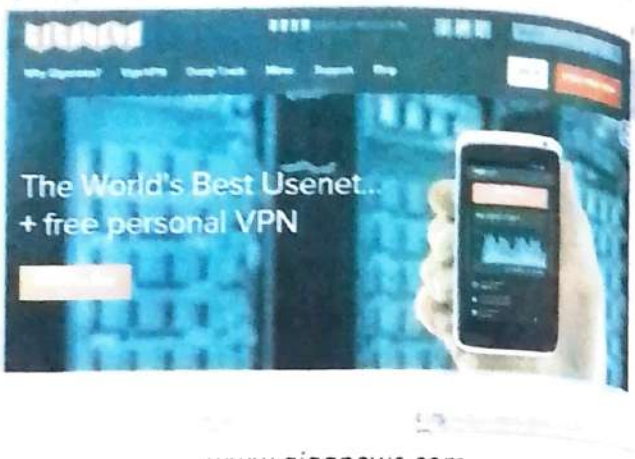
www.mapsofworld.com

Newsgroups

There are thousands of places on the Internet where you can exchange views and ideas on different subjects with other people. These places are called **newsgroups.** You can join any newsgroup of your interest.

You can read messages posted by other people, reply to these messages, post questions regarding something, and so on. You can search newsgroups of your interest using some search engines.

www.newsgroups.com



www.giganews.com

Online Newspapers

Most of the newspapers nowadays have an Internet version. You can visit these newspapers. So, using the Internet you can have access to newspapers from all over the world.

Some online newspapers are:

- www.hinduonline.com
- www.nytimes.com
- www.kidnews.com

www.hindustantimes.com

www.bbc.co.uk

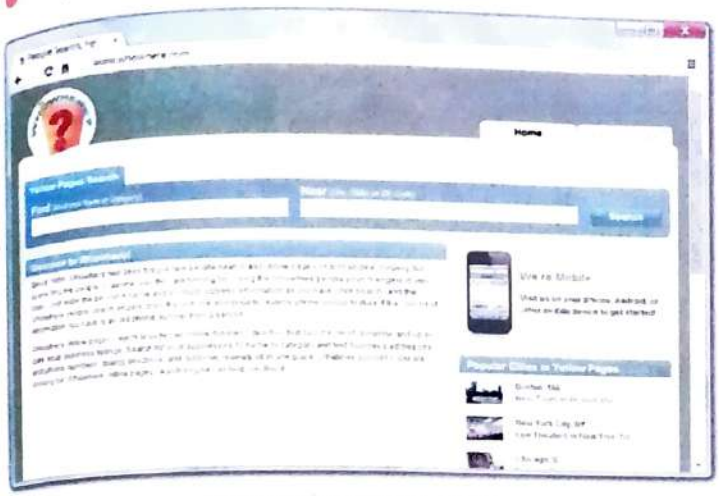
Finding People

You can find people on the Internet. You can find your classmates, relatives and other great personalities. There are sites which offer this facility.

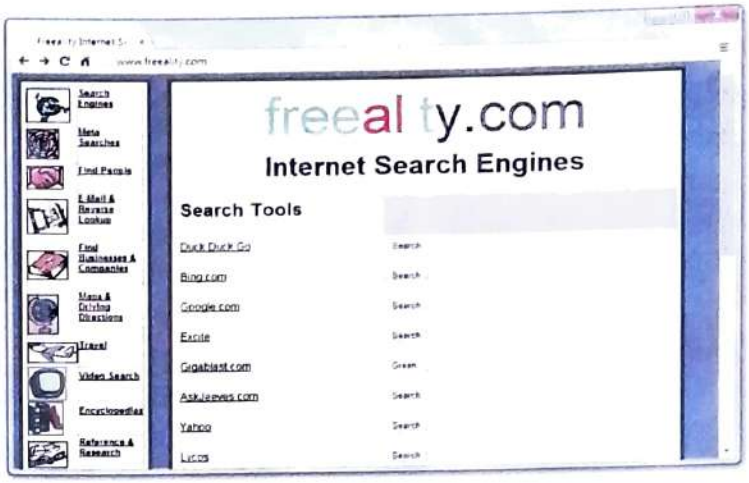
You can find their addresses, telephone number, e-mail ID, etc. provided that the person has a profile on the Internet.

Some other popular people-finder on Internet are:

- www.whowhere.com
- www.freeality.com



www.whowhere.com



www.freeality.com

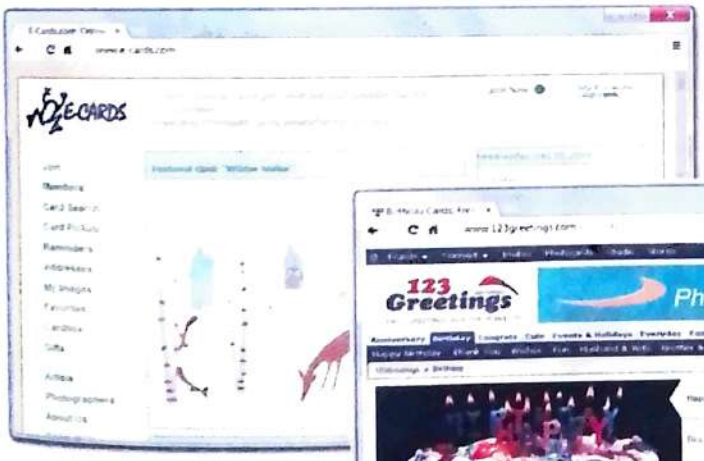
E-Greeting Cards

You send greeting cards to your relatives, friends. You can send greeting cards through Internet in the same manner as you send e-mails to them.

There are several sites, which provide this facility. E-greeting Cards are both free and paid, i.e. you can send greeting cards for free as well as by paying money. There are cards for all occasions and for all seasons.

Some of the popular E-greeting cards websites are:

- www.amazon.com
- www.e-cards.com



www.e-cards.com

www.hallmark.com

www.123greeting.com

- www.postcards.org
- www.bluemountain.com
- www.hallmark.com

Video Conferencing

Video Conferencing is one of the most exciting features of Internet. Two people from different places can talk as if they are sitting in front of each other, seeing each other, using video conferencing. Video conferencing is used widely in big companies, TV shows, chatting, etc. It provides a face to face conversation with different people who are at different locations. It is gaining popularity day by day.

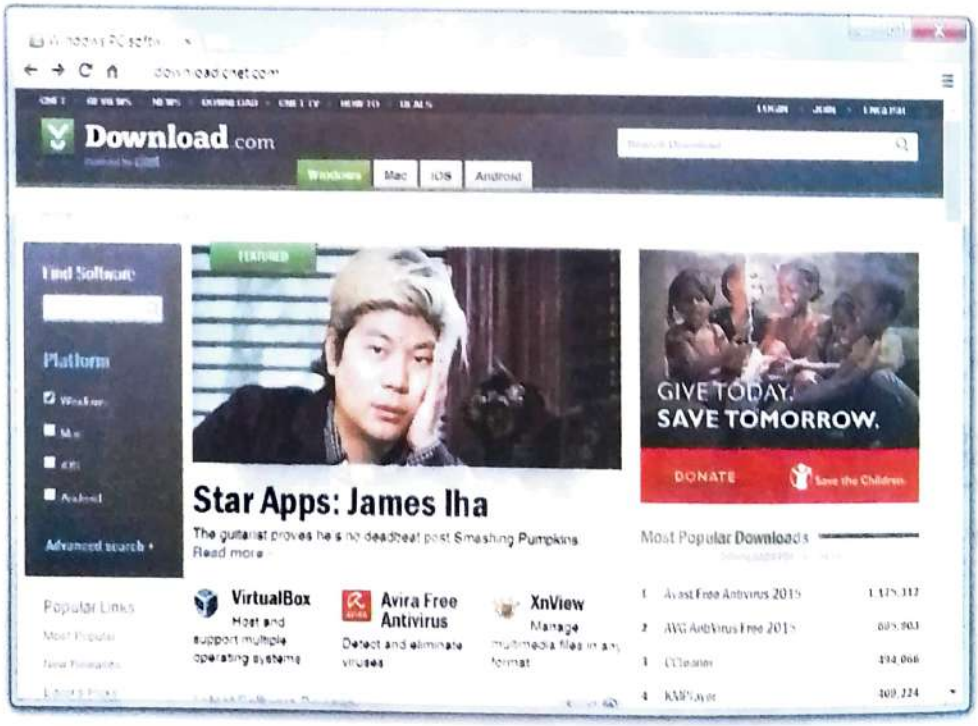
Video Conferencing

Downloading

Downloading is the method by which you access files, software, information from a remote computer using Internet. When you access a website or webpage, you actually download the text page and all the images and graphic from the main computer where all these are stored.

You can download materials from Internet. There are numerous application software which are marked for download. There are many sites that provide downloading. You can download games, movie trailors, songs, picture images, etc.

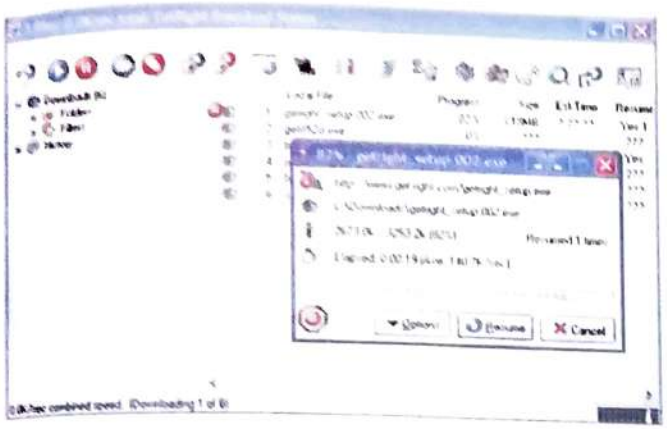
There are special software available to download files from the Internet. They are called **downloader**.



www.download.com

These software provide a very easy-to-use way to download files. Some of the popular downloaders are:

- Getright
- Netants
- Internet Download Manager
- Nitro Downloader



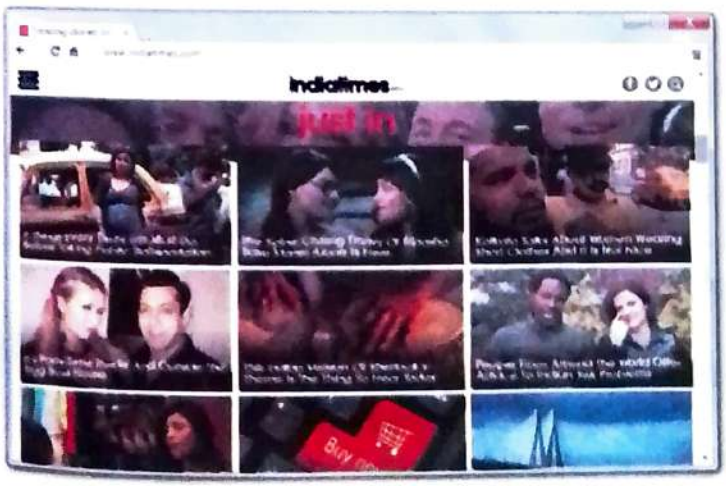
Getright

Internet Download Manager

Internet Shopping

It is the same as if buying products using mails. There are several sites, which offer shopping on Internet. You are just required to select the desired product and fill up some fields in a form. You need a credit card for this purpose. Some of the shopping sites are:

- www.walmart.com
- www.amazoon.com
- www.indiatimes.com
- www.rediff.com



www.indiatimes.com

www.walmart.com

CHATTING

Using the chat facility on the Internet, you can talk and communicate with people all around the world in no time.

There are many sites which offer chat facility. There are special software available called **Instant Messengers.** You can log on to them and chat with various other people online. The chat software is an interactive software and you can chat very easily; simply by typing on a box and pressing Enter key.

Some of the popular chat software are:

- Yahoo Messenger
- Windows Live Messenger
- Rediff Bol
- ICQ

To use these software, you must install them in your computer system with Internet connection. You must also have a **user account.**

Windows Live Messenger

ICQ

Mind Feeder

Chatting can be fun as well as waste of time. It depends upon how you use it.

Time to Drill

Circle ten terms related to Internet in the following grid.

H	T	T	P	Q	M	L	C	G	D	A	F
A	S	W	Y	D	K	P	W	E	B	Y	F
X	T	B	R	O	W	S	E	R	G	H	R
N	A	R	B	W	B	J	B	I	H	C	Z
Z	L	C	X	N	Q	O	I	S	A	H	H
O	I	C	F	L	W	I	V	E	U	J	I
E	N	D	B	O	O	K	M	A	R	K	S
N	K	M	V	A	U	E	M	R	L	K	T
P	U	D	F	D	T	N	F	C	F	E	O
L	S	Y	V	Y	J	X	L	H	K	B	R
F	A	V	O	R	I	T	E	S	Z	D	Y
O	T	G	U	W	P	H	Q	I	R	J	S

Boost Your Brain

A. Tick (✓) the right option.

1. The people involved with commerce are
   (a) 5 types ☐ (b) 4 types ☐
   (c) 3 types ☐ (d) 2 types ☐
2. People who purchase products are
   (a) sellers ☐ (b) buyers ☐
   (c) producers ☐ (d) none of these ☐
3. URL stands for
   (a) Uniform Resource Locator ☐ (b) Uniform Resource Location ☐
   (c) Unicode Resource Locator ☐ (d) None of these ☐
4. You can talk to people face to face using
   (a) E-mail ☐ (b) Downloading ☐
   (c) Video Conferencing ☐ (d) Chatting ☐
5. Internet is used to send cards called
   (a) Credit Cards ☐ (b) Visiting Cards ☐
   (c) E-Greeting Cards ☐ (d) None of these ☐

B. Fill in the blanks with the correct word.

Online free buying E-commerce paid Producers selling

1. Commerce involves ..... and ..... of a product.
2. ..... are people who produce products.
3. E-greetings are both ..... and ..... .
4. Security and trust are the key factors in ..... .
5. E-commerce is buying and selling products ..... .

C. State whether the following statements are true or false.

1. The web address is also called a URL. ☐
2. Video Conferencing is one of the most boring features of Internet. ☐
3. Special software available to download files from the Internet are called uploader. ☐
4. You can find people on the Internet. ☐
5. Distance education becomes harder and unafforadable with the use of Internet. ☐

D. Answer the following questions.

1. What do you mean by E-commerce? Write some advantages of E-commerce.

.....

2. Define Producers, Sellers and Buyers.

.....

3. What are online newspapers?

.....

4. Mention some E-commerce sites.

.....

5. How is Internet helpful in education?

.....

- Prepare a list of various websites according to their usefulness. Also categorised the websites into various types according to the information they provide to the users.

Lab Visit

- Visit some E-commerce sites and prepare a list of products available there.
- Purchase some items online with the help of your elders. [**Note :** Never try it yourself alone].
- Visit a site which offers free download for games.
- Visit some websites which offers online learning facility.
- Download some of the songs using downloader software. Note down the time taken for downloading.
- Visit a Internet cafe with your friends along with some elders. Chat with each other using Yahoo Messenger or Rediff Bol or any other chatting software.

PROJECT WORK

Project 1

- Create an Excel sheet to calculate the sales of Swift and Celerio of Raj-Sneh Auto India Pvt. Ltd.
- Format the spreadsheet and design it as given below.
- To calculate the revenue of Swift for the month of January, enter the formula as given below. The formula will multiply the number of units sold with the price per unit using Absolute referencing.
- Copy the formula to rest of the cells.

A	B	C	D	E	F	G	H	I
S.No.	Months' Name	Units of Maruti Swift Sold	Units of Maruti Celerio Sold	Revenue of Swift	Revenue of Celerio	Total Revenue	Maruti Swift Price	Maruti Celerio Price
1	January	2	4	=C4*H4		0	575000	423000
2	February	3	6			0		
3	March	5	3			0		
4	April	6	4			0		
5	May	8	6			0		
6	June	4	7			0		
7	July	8	0			0		
8	August	2	5			0		
9	September	6	1			0		
10	October	0	7			0		
11	November	2	6			0		
12	December	9	3			0		
TOTAL NO. OF UNITS								
TOTAL ANNUAL TURNOVER								

- Similarly, enter the formula to calculate the Revenue of Maruti Celerio.
- Calculate the Total Revenue by adding the Revenue of Swift and Celerio using formula.
- Now copy the formula to calculate revenue for all the months.
- In the 'Total Annual Turnover' section, enter the formulae to calculate the total turnover of the year by adding the turnover of all the months.
- Calculate the total number of units sold in the whole year.
- Create a Pivot Table for the given worksheet.
- Now create a chart to compare the sales of both cars.

Project 2

Make a beautiful project on **Save Endangered Species** in MS PowerPoint. Apart from the given guidelines, add more slides that reflect what steps should be taken to save these endangered species.

1

An endangered species is one that is getting close to extinction. This is the endangered black rhinoceros that lives in Africa.

2

Endangered means There's Still Time

Endangered species are like fire alarms. They tell us about problems in our home we call Earth. If we listen to their alarm calls, they could help us improve our lives and the health of our planet.

3

The African elephant, the largest land animal on Earth, is also a threatened species. Thousands of these majestic animals have been slaughtered by poachers, who cut off their ivory tusks to make carvings and sell them for money.

4

The spotted owl is our fire alarm to the problem of over-cutting of forest. To resolve this problem, agencies are working on plans to manage spotted owl habitat better by monitoring timber harvest levels more closely.

5

Ways That species Become Endangered

1. Habitat loss
2. Unregulated or illegal killing or collection
3. Pesticides, pollution
4. Competition with other species
5. Disease
6. Predation

REASONS why *PLANTS* and *ANIMALS* become endangered or threatened. The biggest reason is loss of their homes or habitats. Endangered species are in trouble, because of pesticides and pollution, competition with other non-native species in their habitat, diseases and predation.

6

Let us Know more

DEFINITIONS

Extinct

A species of plant or animal that is no longer living.

Endangered

A species that is in immediate danger of becoming extinct and needs protection to survive.

Threatened

A species that is likely to become endangered if it is not protected.

WORD INDEX

1. **ANIMATION:** It refers to the special effects added to the objects and text in a presentation.
2. **CLIENT:** It is a computer connected to the server in a network.
3. **CHART:** It is a graphical representation of information.
4. **CELL REFERENCE:** It identifies the location of a cell or group of cells in the spreadsheet.
5. **E-COMMERCE:** It is the online trading or exchanging of goods.
6. **FILE SERVER:** It is a computer that manages the storage and retrieval of files.
7. **FORMULA:** It is written with operands and operators.
8. **FUNCTION:** It is a pre-defined formula of MS-Excel.
9. **HUB:** It is the central connection point in a network.
10. **HORIZONTAL SCROLL BAR:** It helps to scroll either to the left or the right of the screen.
11. **LOOP OR ITERATION:** It is repetition of statements in a program.
12. **MENU BAR:** It is the bar present just below the Tittle Bar.
13. **QBASIC:** It stands for Quick Beginner's All-Purpose symbolic Instruction Code.
14. **SERVER:** It is a computer that manages the other computers, database and printers required in a network.
15. **STATUS BAR:** It displays the status of the current position of the cursor and the short-cut keys for frequently used commands.
16. **TITLE BAR:** It displays the name of the program running and the file name.
17. **TOPOLOGY:** It is the physical arrangement of computers in a network.
18. **VERTICAL SCROLL BAR:** It helps to scroll either to the beginning or to the end of the screen.
19. **WORKSTATION:** It is a computer intended for individual use in a network.

GENERAL KNOWLEDGE

The first **PC Virus** was a Boot Sector Virus called **BRAIN**, developed in 1987 by two Pakistani brothers **Basit** and **Amjad Farooq**.

IBM's 701 EDPM was the first commercially successful general purpose computer developed in the year 1953. It could be rented for $ 15,000 pm.

Microsoft **Windows 8** is the latest upcoming version of Windows.

The fifth generation of computers will be able to provide knowledge and will be known as XPRESS.

August 12, 1981 marks the birth of the **IBM-PC**, the computer that changed the world.

Blu-ray Disc is a next-generation, optical disc format that enables the ultimate high-definition entertainment experience.

The first version of Windows was **Windows 3.1**. It worked under DOS environment and was introduced in the year 1990.

The most popular digital music player in the world—**iPod** was introduced by Apple in 2001.

In 1953, the first high-speed printer was developed by **Remington-Rand** for use on the UNIVAC computer.

SPACEWAR was the first interactive computer game.

CDMA (Code Division Multiple Access) is a type of 3G cellular network. CDMA is the higher speed transmission protocol used in the Japanese FOMA system.

The **Global System for Mobile Communications** (GSM) is the most popular standard for **Mobile Phones** in the world. GSM service is used by over 2 billion people across more than 212 countries and territories.

The CHIP-4004 was the world's first universal microprocessor.

Apple was founded on April 1, 1976 by **Steve Jobs** along with **Steve Wozniak** and **Ronald Wayne**. Apple introduced **Macintosh**—the first user friendly GUI.

The first **LAPTOP** was released by the **Osborne Computer Corporation** in 1981.

The biggest software company in India is **Tata Consultancy Services** (TCS).

PERIODIC TEST Term 1

(Based on chapters 1 to 3)

Time : ..... *Marks :* .....

Note : *All questions are compulsory.*

A. Tick (✓) the right option.

1. With a network, it is possible to share

   (a) Printers ☐ (b) Modems ☐ (c) Softwares ☐ (d) All of these ☐

2. No graphics be created in ..... mode.

   (a) Screen 2 ☐ (b) Screen 5 ☐ (c) Screen 0 ☐ (d) Screen 1 ☐

3. To perform division of Binary numbers, divide the number by

   (a) 2 ☐ (b) 4 ☐ (c) 8 ☐ (d) None of these ☐

B. Fill in the blanks with the correct words.

1. Octal number system consists of ..... digits.
2. Basic was designed by professor ..... and ..... in 1964.
3. In ..... topology, all the workstations are connected to the central hub.
4. ..... number system is understood by the computer system.

C. State whether the following statements are true or false.

1. In Client-Server network, there is no central server. ☐
2. The numbers used in Octal number system are 1 to 7. ☐
3. The Circle statement is used to draw a circle. ☐
4. A computer network is a collection of computers and other devices. ☐

D. Answer the following questions.

1. What do you understand by the term screen modes?
2. List some advantages of networking.

E. Solve the following Binary numbers.

1. 1 0 0 1 0 – 0 1 0 0 0
2. 1 0 1 0 1 + 0 0 1 1 1
3. 1 0 1 1 × 1 0 1
4. 1 1 1 1 ÷ 11
5. 111 001 ÷ 101

HALF-YEARLY Test Paper

(Based on chapters 1 to 6)

Time : ..... *Marks :* .....

Note : *All questions are compulsory.*

A. Tick (✓) the right option.

1. On a ....., all of the computers and devices on the network connect to a central device.
   (a) bus network ☐ (b) ring network ☐ (c) star network ☐ (d) none of these ☐
2. In Binary, subtraction 1-1 equals
   (a) 10 ☐ (b) 0 ☐ (c) 8 ☐ (d) 1 ☐
3. The ..... statement displays message or output of a program.
   (a) CLS ☐ (b) PRINT ☐ (c) GOTO ☐ (d) ENTER ☐
4. A statement shifts the control back to the WHILE statement.
   (a) WHILE ☐ (b) WEND ☐ (c) DO ☐ (d) NEXT ☐
5. The main area of the MS-Access Interface is divided into ..... sections.
   (a) two ☐ (b) three ☐ (c) five ☐ (d) four ☐

B. Fill in the blanks with the correct words.

1. ..... technology is a form of wireless communication.
2. Binary means ..... .
3. ..... command allows us to enter information when the program is being executed.
4. The ..... statement is used to draw a straight line.
5. RDBMS stands for ..... .

C. State whether the following statements are true or false.

1. Tables, queries, reports and forms can be created in MS Access. ☐
2. We can delete a field in Design View. ☐
3. WEND clause is used with FOR statement. ☐
4. Integer constants are only positive numbers. ☐
5. Decimal number system has base 10. ☐

D. Match the following.

1. Number	(a) creates unique values automatically.
2. Text	(b) can store numeric data only.
3. AutoNumber	(c) stores values in a monetary formats.
4. Yes/No	(d) can contain values that are text, numbers or both.
5. Currency	(e) logical data used when only one of two options is valid.

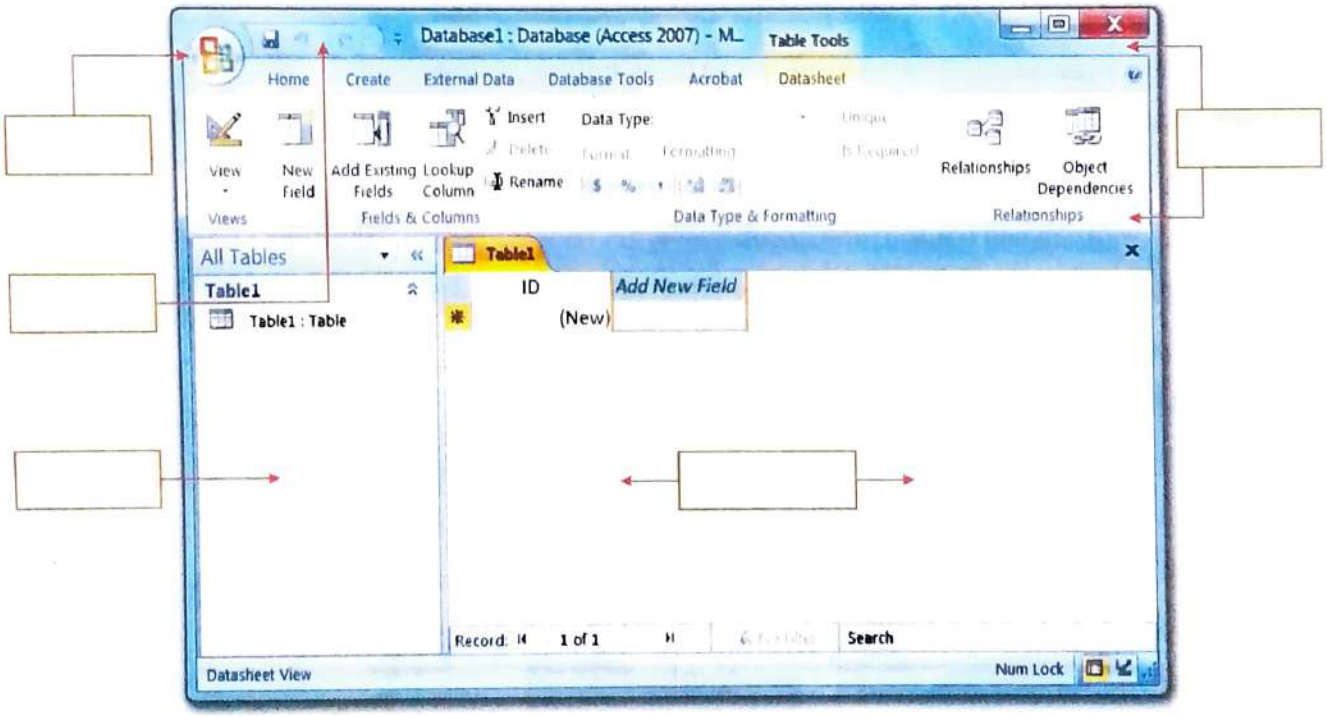
E. Answer the following questions.

1. What is a topology? Give example.
2. Why do we use Binary Number System in computers?
3. What is the use of PSET statement?
4. What is nested loop?
5. Give the difference between
   (a) Number and AutoNumber data type
   (b) Datasheet View and Design View

F. Give full forms of the following.

1. HTTP	.....	2. SMTP	.....
3. FTP	.....	4. LAN	.....
5. WAN	.....	6. MAN	.....
7. Wi-Fi	.....	8. TCP	.....

G. Look at the picture shown below and label the different parts of MS-Access Database Interface window.



PERIODIC TEST : Term 2

(Based on chapters 1 to 9)

Time : ..... Marks : .....

Note : *All questions are compulsory.*

A. Tick (✓) the right option.

1. The horizontal axis of a chart is also known as

   (a) Catagory axis ☐ (b) Value axis ☐ (c) Legend ☐ (d) Y-axis ☐

2. ..... tab allows you to format the pictures and graphics.

   (a) Home ☐ (b) Insert ☐ (c) Format ☐ (d) View ☐

3. A ..... key is a field that contains unique values.

   (a) Main ☐ (b) Primary ☐ (c) Secondary ☐ (d) Junior ☐

B. Fill in the blanks with the correct words.

1. ..... button is used to record narration for the slides.
2. ..... button is located at the top left corner of the Access screen.
3. Pressing the ..... key opens the Save As dialog box.
4. The ..... statement is used to draw a straight line.

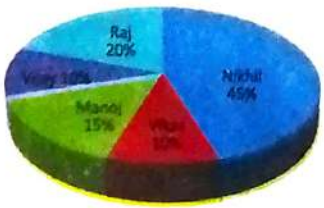
C. State whether the following statements are true or false.

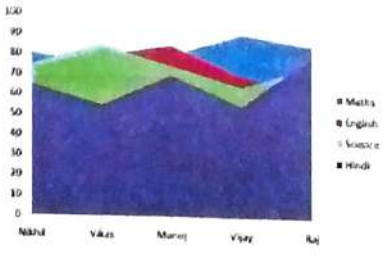
1. The Bar Chart shows columns with a conical shape. ☐
2. A workbook can contain any number of worksheets according to user's need. ☐
3. A database locates information with the help of a simple query. ☐
4. 1 multiplied by 0 equals to 1. ☐

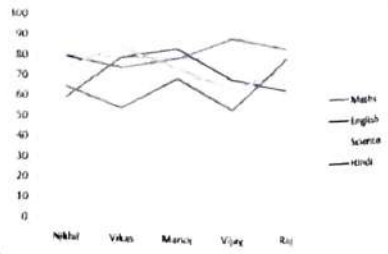
D. Answer the following questions.

1. What are the steps involved in modifying the labels and titles of a chart?
2. How is MS-Access different from MS-Excel?

E. Identify the types of chart and name it.







1. ..... 2. ..... 3. .....

ANNUAL Test Paper

Time : ..... Marks : .....

Note : *All questions are compulsory.*

A. Tick (✓) the right option.

1. Slide Show option is there in the ..... tab.
   (a) View ☐ (b) Home ☐ (c) Insert ☐ (d) None of these ☐
2. The ..... statement displays message or output of a program.
   (a) CLS ☐ (b) PRINT ☐ (c) GOTO ☐ (d) ENTER ☐
3. Clip Art is a ..... file that can be inserted in a worksheet.
   (a) shape ☐ (b) picture ☐ (c) figure ☐ (d) text ☐
4. Vertical Axis of the chart is also known as
   (a) Category axis ☐ (b) Value axis ☐ (c) Legend ☐ (d) X-axis ☐
5. Which panel acts as a store house in Flash?
   (a) Library ☐ (b) Tools ☐ (c) Properties ☐ (d) None of these ☐

B. Fill in the blanks with the correct words.

1. The ..... field type is used to store web address.
2. By default, a worksheet contains ..... worksheets in MS-Excel.
3. In Binary addition, 1 + 1 equals to ..... .
4. A formula always begins with an ..... sign.
5. E-commerce is buying and selling products ..... .

C. State whether the following statements are true or false.

1. The background color code for Gray color is 7. ☐
2. Formula can be entered in the Tool bar. ☐
3. The function library is a small group of functions. ☐
4. Looping technique reduces the number of instructions. ☐
5. Special software available to download files from the Internet are called uploader. ☐

D. Match the following.

1. Show type	(a) Select number of slides
2. Show options	(b) Full screen/Window view
3. Show slides	(c) With or without a narration or animation
4. Advance slides	(d) Graphics acceleration
5. Performance	(e) Manual or automatic change of slides

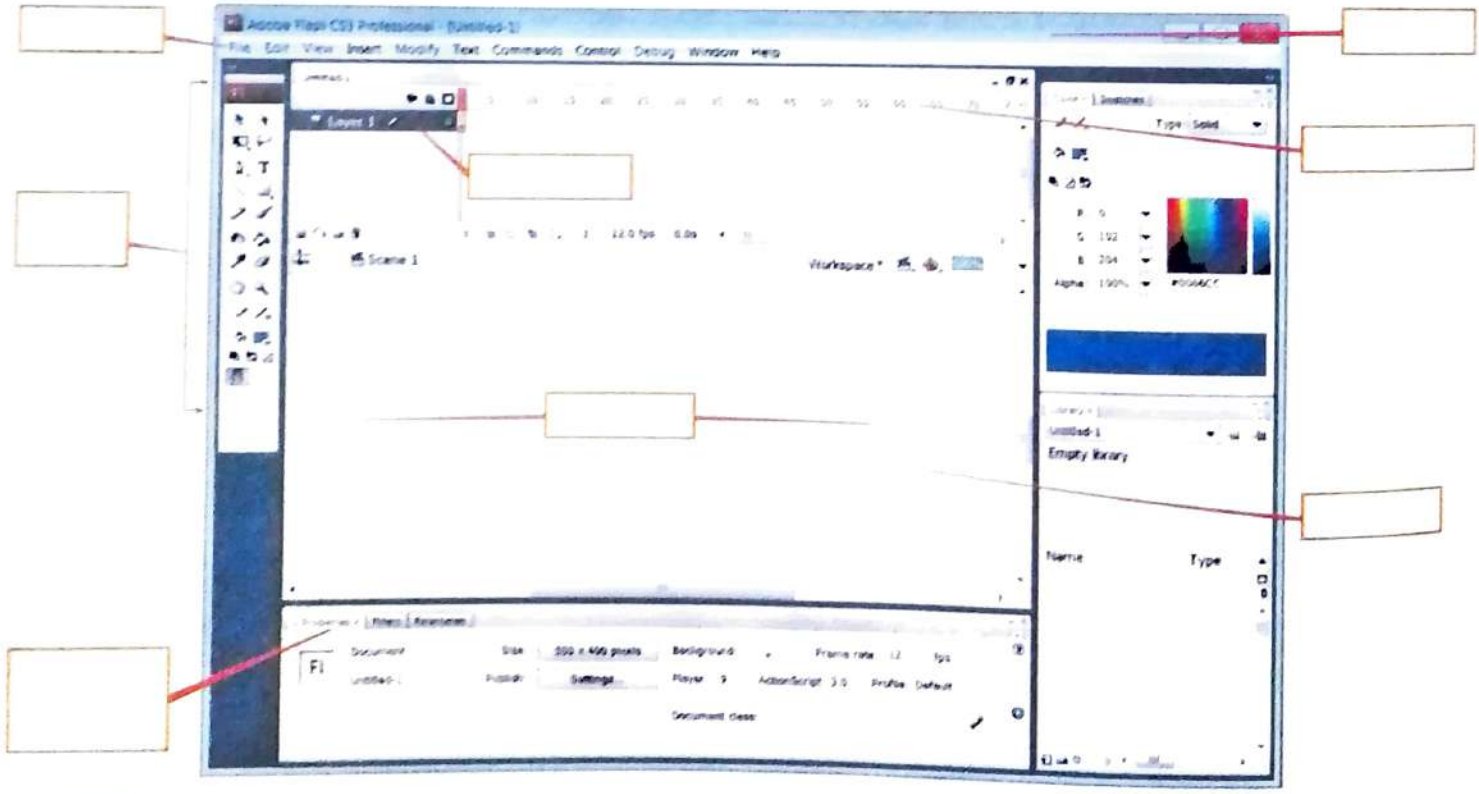
E. Answer the following questions.

1. What is the use of PSET statement?
2. Differentiate between a workbook and a worksheet.
3. What is a chart? Why are charts useful?
4. Write any four advantages of a database.
5. How is Internet helpful in education?

F. Circle any ten terms related with databases in the following grid.

C	B	T	A	B	L	E	S	Z	A
A	D	A	T	E	T	U	B	A	U
P	C	K	L	V	R	W	X	Y	T
T	C	U	R	R	E	N	C	Y	O
I	F	A	J	D	Q	I	H	C	N
O	E	G	O	E	U	P	I	F	U
N	M	D	N	F	I	G	T	I	M
N	U	M	B	E	R	H	E	E	B
M	E	M	O	L	E	Q	X	L	E
R	E	C	O	R	D	R	T	D	R

G. Label the components of the Flash Window shown below.



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