B.Com. III Year Commerce

PAPER - XIII

Computer Applications in Business

Study Material : 1(1-8)



SCHOOL OF OPEN LEARNING

(Campus of Open Learning)

University of Delhi

Department of Commerce

Editor : Dr. U.S. Pandey

Graduate Courses

Computer Applications in Business

Contents

Chapter 1 : Basic Concepts

Chapter 2 : Essential Components of Computers

Chapter 3 : Introduction to Internet

Chapter 4 : Word Processing

Chapter 5 : Spreadsheet and Its Business Applications

Chapter 6 : Generally used Spreadsheet Functions

Chapter 7 : Presentation Software

Chapter 8 : Practical Applications

Edited by :
Dr. U.S. Pandey

Written by :
Dr. Harman Preet Singh

SCHOOL OF OPEN LEARNING
(Campus of Open learning)
University of Delhi
5, Cavalry Lane, Delhi - 110007

Chapter – 1

Basic Concepts

---

1. **INTRODUCTION**

1.1 Objectives
1.2 Computer : A brief History
1.3 Characteristics of computer
1.4 Advantages of Computers
1.5 Limitations of Computers
1.6 Types of Computers
    1.6.1 According to Technology
    1.6.2 According to Purpose
    1.6.3 According to Size
1.7 Applications of Computes
1.8 Data Representation
    1.8.1 Binary Number System
    1.8.2 Decimal to Binary
    1.8.3 Binary to Decimal
    1.8.4 Binary Coded Decimal number(BCD)
    1.8.5 ASCII
1.9 Summary of the chapter
1.10 Exercise

1.1 Objectives

After studying this chapter, students are able to:

- Understand the definition of the computer.
- Explain the basic characteristics of computers.
- Understand the Advantages of computers.
- Understand the limitation and characteristics.
- Understand Types of computers
- Understand the various data Representation

1.2 Computer : A brief history

There are many stages of computer evolution. From the manual system the changeover was to machine assisted manual system. The modern computer with the power and speed of today were not solitary inventions. The 'ABACUS' used by the primary section students can be called a computing aid and in turn a computer. Likewise, the slide rules being used by engineers and others, not a very long ago, definitely was a great aid in computing. In loose term all are computers. But when we talk of automatic data processing (man assisted mechanical system) and electronic data processing, the history begins with Charles Babbage's attempt to build an automatic mechanical calculator at Cambridge, England in 1830. By 1930's punched cards were in wide use in large businesses, and various type of punched card machines were available. In 1937, Howard Aiken, at Harvard, proposed to IBM that a machine could be constructed which would automatically sequence the operations and calculations performed.

The first set of machines use to process data Electro-mechanically was called unit record machine. This set consisted of six basic machines:

Computer is an electronic device capable of interpreting and executing programmed commands for input, output, computation and logic operations. There are three types of computers analog digital and hybrid computers.

1. Analog computer operates by representing the variable of a problem by physical quantities easily generated or controlled.
   These computers used as a following
   1. Electrical voltages
   2. Pressure
   3. Speed temperature

   And perform computations on these measurements. Analog computers are mainly used for scientific and engineering application.



Fig 1.1 Analog Computers

2. Digital computers is a computer that will accept data and information presented to it in its required format, carry out arithmetic and logic operations on this raw material and then supply the required results an in an acceptable form. It can recognize only two states in any of its microscopic circuits : on or off, 0 or 1 Computer speeds are measured in megahertz or millions of cycles per second. These computers are used for
   1. Commercial
   2. Educational
   3. Scientific etc type of applications.



Fig 1.2 Digital Computers

3. Hybrid computer incorporating at least one stored program digital program digital processor linked with a multiplicity of analog computing units. Hybrid computers combine the best features of analog and digital computers. They have the speed as of analog computer and accuracy that of digital computers. Hybrid computers are mainly used in medical diagnostics, artificial intelligence (robotics) and computer aided manufacturing (CAM)



Fig 1.3 Hybrid Computers

A major difference between analogy and digital computers is the accuracy attainable. Accuracy of a digital computer can be extended by simply carrying more

significant figures, whereas the accuracy of analog device is limited primarily by the accuracy of individual components and the measuring device.

Computers are capable of performing four general operations. These operations comprise the information processing cycle.

They are input, process, output and storage. The computer's power derives from its ability to perform the operations mentioned above very quickly (speed of milli, micro, nano, or pico seconds), accurately, reliably and its memory capability.

1.3 Characteristics of a Computer

Computers have unquestionably some strength, this is why, they are used to perform different kind of tasks in nearly all the fields of our life. The strengths of the computer are considered as characteristics of the computer.

Strengths of Computers

1. Speed: Computers are fast and powerful calculating machine. They perform a given task faster than human beings. If a human being performs a task in 12 hours, a computer can perform that in few minutes. The processing speed of a computer is measured in Millions of Instructions Per Seconds (IMPS). It can execute millions of instructions in one second.

2. Accuracy: Computer can perform all the calculations and comparisons with cent-percent accuracy, if provided with correct data and instructions.

3. Reliability: Like human beings, computers do not get exhausted or uninterested while working for a long time continuously. Thus they are more reliable than human beings.

4. Versatility: Computers are more versatile than human beings. They can do dangerous jobs in antagonistic environment and can even work in areas where human beings can prone errors. For instance, counting the total number of WBC (White Blood Corpuscles) in per cubic milliliter of blood. Computers can also work with different types of data and information such as characters, audio, video, graphics, etc. Microprocessor-controlled artificial limbs and legs have been developed for paralysed persons. A computer can also perform various kinds of pathological tests from a single sample of blood.

5. Storage Capacity: Computers can store a large amount of data/information in less space. For example, three CD-ROMs of 4.7-inch diameter can store a complete movie, A single DVD can store a complete movie.

1.4 **Advantages of computers**

The increasing popularity of computers has proved that it is a very powerful and useful tool. The power and usefulness of this popular tool are mainly due to its following characteristics:

1. Automatic. Computers are automatic machines because once started on a job, they carry on until the job is finished, normally without any human assistance. However, computers being machines cannot start themselves. They have to be instructed. The set of instructions is called a computer program.

2. Speed. A computer, is a very fast device. While talking about the speed of a computer, we do not talk in terms of seconds or even milliseconds (.001), microseconds (.000001), the nanoseconds and even the picoseconds A powerful computer is capable of performing several billion of arithmetic operations per second. Probably a man will take about years to complete.

3. Accuracy. The accuracy of a computer is consistently high. If the input data entering the computer are correct and if the program of instructions is reliable, then we can expect that the computer generally will produce accurate output.

4. Diligence. Unlike human beings, a computer is free from monotony, tireness, lack of concentration, etc., and hence can work for hours together without creating any error and without grumbling. Due to this property computer obviously score over human beings in doing routine type of jobs.

5. Versatility. Versatility is one of the most wonderful things about the computer. One moment, it is preparing the results of particular examination, the next moment it is busy preparing electricity bills, and in between, it may be helping an office secretary to trace an important letter in seconds. All that is required to change its talent is to slip in a new program (a sequence of instructions for the computer) into it.

6. Power of Remembering and storing. A computer can store and recall any amount of information because of its secondary storage (a type of detachable memory) capability. Every piece of information can be retained as long as desired by the user and can be recalled as and when required.

7. No I.Q. A computer is not a magical device. It can only perform tasks that a human being can. The difference is that is performs these tasks with unthinkable speed and accuracy. It possesses no intelligence of its own. Its I.Q. is zero, at least till today.

8. No Feelings. Computers are devoid of emotions. They have no feelings and no instincts because they are machines although men have succeeded in building a memory for the computer, but no computer possesses the equivalent of a human heart and soul.

9. STORAGE. On secondary storage devices, a large amount of data can be stored and retrieved. Now a days, you find, almost every thing being stored on a CD which capable of storing entire textual matter of B.Com Honors first year on one CD only.

1.5 **Limitations of Computers**

Computers have some limits that are the strengths of human beings. Following are the limitations/weaknesses of computers.

1. Lack of Making Capability: do not have decision-making power, so they cannot take decision by themselves. To enable them to take decision they have to be instructed through commands or programs.

2. Lack of IQ: Being a non-living being computers do not have their own IQ. Thus they need to be instructed each and every step, even to perform a simple task.

3. No Heuristics: Computers do not learn from their past experiences. If they commit an error once, they will commit the same error again and again, when the similar situation or even happens in future.

1.6 Types of Computers

There are various types of computers based on following categories:

(i) According to Technology
(ii) According to Purpose
(iii) According to size

1.6.1 According to technology: According to Technology

• Analog Computers

- Digital Computers
- Hydride Computers

Analog Computers: These computers recognize data as a continuous measurement of a physical property (voltage, pressure, speed and temperature). Example: Automobile speedometer

Digital Computers: These are high speed programmable electronic devices that perform mathematical calculations, compare values and store results. They recognize data by counting discrete signal representing either a high or low voltage state of electricity.

Hybrid Computers: A computer that processes both analog and digital data.

1.6.2 According to Purpose

- General purpose Computers
- Special Computers

General purpose Computers : A 'General Purpose Computer' is a machine that is capable of carrying out some general data processing under program control. Refers to computers that follow instructions, thus virtually all computers from micro to mainframe are general purpose. Even computers in toys, games and single-function devices follow instructions in their built-in program.

Special purpose Computers: A computer that is designed to operate on a restricted class of problems. Use special purpose computer equipment to obtain patient diagnostic information.

1.6.3. **According to size**

• Supercomputers

• Mainframe Computers

• Minicomputers

• Workstations

• Microcomputers, or Personal Computers

Supercomputers :are widely used in scientific applications such as aerodynamic design simulation, processing of geological data.

• Supercomputers are the most powerful computers. They are used for problems requiring complex calculations.

• Because of their size and expense, supercomputers are relatively rare.

• Supercomputers are used by universities, government agencies, and large businesses.

Mainframe Computers: are usually slower, less powerful and less expensive than supercomputers. A technique that allows many people at terminals, to access the same computer at one time is called time sharing. Mainframes are used by banks and many business to update inventory etc.

• Mainframe computers can support hundreds or thousands of users, handling massive amounts of input, output, and storage.

• Mainframe computers are used in large organizations where many users need access to shared data and programs.

• Mainframes are also used as e-commerce servers, handling transactions over the Internet.

Minicomputers:
are smaller than mainframe, general purpose computers, and give computing power without adding the prohibitive expenses associated with larger systems. It is generally easier to use.

• Minicomputers usually have multiple terminals.

• Minicomputers may be used as network servers and Internet servers.

Workstations

• Workstations are powerful single-user computers.

• Workstations are used for tasks that require a great deal of number-crunching power, such as product design and computer animation.

• Workstations are often used as network and Internet servers.

Microcomputers, or Personal Computers :is the smallest, least expensive of all the computers. Micro computers have smallest memory and less power, are physically smaller and permit fewer peripherals to be attached.

• Microcomputers are more commonly known as personal computers. The term "PC" is applied to IBM-PCs or compatible computers.

• Desktop computers are the most common type of PC.

• Notebook (laptop) computers are used by people who need the power of a desktop system, but also portability.

• Handheld PCs (such as PDAs) lack the power of a desktop or notebook PC, but offer features for users who need limited functions and small size.

Personal Computers(PC):

- Desk Top
- Lap Top
- Palm Top
- PDA

1.6 **Applications of Computers**

In 1950s, computers were very large in size and were used by institutions like governments and universities only for scientific and engineering application, which require complex and massive computations. But now a day, more than 50 per cent of work done by computers is non-computational type. It has become possible only due to the invention of Personal Computer (PC). The PC was invented in 1970s which revolutionized the world and today computers are used nearly in every field of our life. Some major applications of computers are as follows:

1. Business applications
2. Educational applications
3. Entertainment applications
4. Medicine and Healthcare applications
5. Industry Automation
6. Communication
7. Scientific
8. Remote Sensing applications
9. Multilingual applications
10. Government, Police and Military applications

Computers are something familiar to everyone as they are sued increasingly in our everyday life. Some uses to which computers are put which have made life easier are as follows.

In Science new theories are developed based on measurements and calculations that are generally very complicated and would take a lifetime to do. Computers can analyse masses of scientific data and solve long and complex problems accurately and far more quickly than people can. This has greatly helped in research in science such as astronomy, physics, chemistry, etc.

Computers assist engineers to solve complex design problems and help to ensure that all proposed parts of a design are satisfactory. The application of computers to design is called CAD (Computer Aided Design).

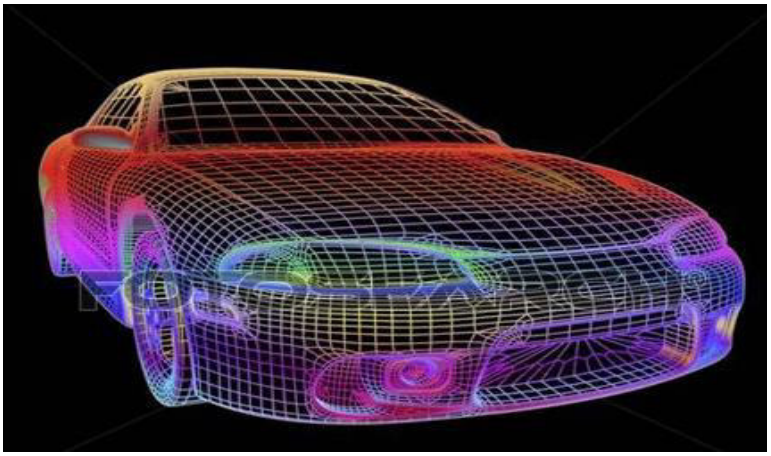


Fig 1.3 Showing Computer aided Design

Computer-aided design (**CAD**) is the use of computer systems to assist in the creation, modification, analysis, or optimization of a design.CAD software is used to increase the productivity of the designer, improve the quality of design, improve communications through documentation, and to create a database for manufacturing. CAD output is often in the form of electronic files for print, machining, or other manufacturing operations.

In factories Computer Aided Manufacturing (CAM) help increase the efficiency and quality of manufacturing operations. They are used to monitor and control the manufacturing process with great accuracy.

Computers played a very important role at every stage of landing men on the moon. They were used to design and test the Apollo spacecraft. The spacecraft itself contained several small but powerful computers. In fact it would not have been possible at all to send spacecrafts to explore the moon and the planets without the help of computers.

Long range weather forecasting is done with the help of computers. Satellites orbiting the earth send back photographs of cloud formations and other relevant data like temperature etc. See fig 1.20

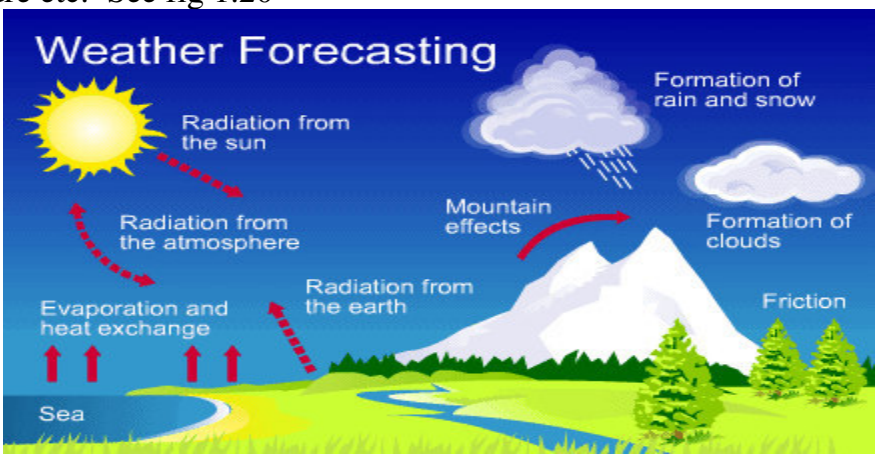


Fig 1.20 Showing Weather Forecasting

The information from the satellites and the information collected at the weather stations have to be analyzed quickly enough so that weather predictions can be made. The computer analyses the data is a few seconds and based on these results long range weather forecasts are made.

Computers are used in all areas of aviation. They are used for air traffic control which helps to organize the safe movement of the aircrafts as flying speeds are very high. Small computers installed in the aircraft help to collect data from the various instruments, analyze it and provide information to the pilot in time for decision and action. Besides in-flight uses computers are also used to train pilots at the start to 'fly' an aircraft using computerized aircraft simulators. See fig 1.21



Fig 1.21 Showing Simulator used in aircraft

Modern missiles depend totally on computers for reaching the target area whether they are launched from ground o ship or air. For instance a missile targeted to it an aircraft calculates with the help of an on-board computer the speed, direction and the evasive action of the aircraft and guides the missile both in terms of speed and direction to make a hit.

Computers are used in transport facilities like airlines and railways. They are used for efficient handling of seat reservations, maintaining time-tables, crew schedules etc. They are also used to control the movement of vehicles in underground railways.

In hospitals special purpose computers built into different pieces of equipment help to monitor the conditions of patients, record the information and warn doctors and nurses of changes that call for attention. See Fig 1.22



Fig 1.22 Showing uses of computers in hospitals (OT, ICU, CCU)

Computers analyze large volumes of data in business operations and help produce relevant information to support the decision making needs of managers. Large and medium sized companies depend on computers for administrative work like typing out standard letters, invoices, making out salaries of employees etc.

1.8 **Data Representation**

Data can be represented into various number systems namely as Decimal, Binary, Hexa, BCD and ASCII number system.

1.8.1 Binary Number System
1.8.2 Decimal to Binary
1.8.3 Binary to Decimal
1.8.4 Binary Coded Decimal Number (BCD)
1.8.5. ASCII

1.8.1 Binary Number systems.

There are many ways to represent integers: the number of days in the month of October can be represented as 31 in decimal, 11111 in binary, 1F in hexadecimal, or XXXI in Roman Numerals. It is important to remember than an integer is an integer, no matter whether it is represented in decimal or with Roman Numerals.

- *Binary numbers.* Computers are based on the *binary* (base 2) number system because each wire can be in one of two states (on or off).

BIN	DEC	HEX	BIN	DEC	HEX	BIN	DEC	HEX
0	0	0	10000	16	10	100000	32	20
1	1	1	10001	17	11	100001	33	21
10	2	2	10010	18	12	100010	34	22
11	3	3	10011	19	13	100011	35	23
100	4	4	10100	20	14	100100	36	24
101	5	5	10101	21	15	100101	37	25
110	6	6	10110	22	16	100110	38	26
111	7	7	10111	23	17	100111	39	27
1000	8	8	11000	24	18	101000	40	28
1001	9	9	11001	25	19	101001	41	29
1010	10	A	11010	26	1A	101010	42	2A
1011	11	B	11011	27	1B	101011	43	2B
1100	12	C	11100	28	1C	101100	44	2C
1101	13	D	11101	29	1D	101101	45	2D
1110	14	E	11110	30	1E	101110	46	2E
1111	15	F	11111	31	1F	101111	47	2F

1.8.2 Decimal to Binary Number conversion.

You need to know how to convert from a number represented in one system to another.

- *Converting from Binary to decimal.* To convert from an integer represented in base b to decimal, multiply the ith digit by the ith power of b, and sum up the results. For example, the binary number 101101110 is 366 in decimal.

  1 0 1 1 0 1 1 1 0 (binary)

  256 128 64 32 16 8 4 2 1 (powers of 2)
  ---
  256 + 64 + 32 + 8 + 4 + 2 (multiplied by corresponding digit)

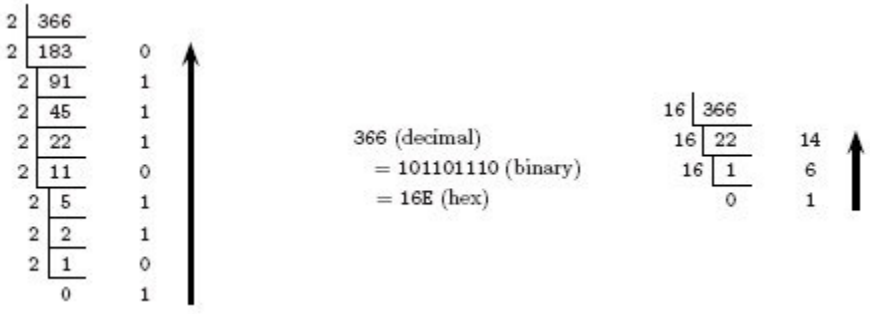
  366

  The hexadecimal number 16E is 366 in decimal.

```
  1   6   E   (hex)
256  16   1   (powers of 16)
-------------
256 + 96 + 14   (multiplied by corresponding digit)

366
```

1.8.3.Converting from decimal to binary. : It is slightly more difficult to convert an integer represented in decimal to one in base *b* because we are accustomed to performing arithmetic in base 10. The easiest way to convert from decimal to base *b* by hand is to repeatedly divide by the base *b*, and read the remainder upwards. For example, the calculations below convert from the decimal integer 366 to binary (101101110) and to hexadecimal (16E).



- *Converting between base b1 and b2.* One way is to convert the base b1 integer to decimal (using the first algorithm described above) and then to convert the resulting decimal integer to base b2 (using the second algorithm described above).
- *Converting between binary and hexadecimal.* We describe a fast and elegant way to convert directly from the binary to hexadecimal representation of an integer: First, group the digits 4 at a time starting from the right; then convert each group to a single hexadecimal digit, padding 0s to the very last group if necessary. For example, the hexadecimal representation of 1110101110011100001 is 3AE71.

  ```
  0011 1010 1110 0111 0001
   3    A    E    7    1
  ```

- *Decimal numbers.* We are most familiar with performing arithmetic with the *decimal* (base 10) number system. This number system has been widely adopted, in large part because we have 10 fingers. However, other number systems still persist in modern society.

  To convert from hexadecimal to binary: convert each hexadecimal digit individually into its corresponding 4 digit binary number, removing any leading 0's.

```
 9       F       0     3
1001  1111  0000  0011
```

This works because one base (16) is a power of the other (2). Likewise, it would be easy to convert between the base 125 and base 5 representations.

Even though many people used to think of computers as “number crunchers”, people figured out long ago that it’s just as important to handle character data. Character data isn’t just alphabetic characters, but also numeric characters, punctuation, spaces, etc. Most keys on the central part of the keyboard (except shift, caps lock) are characters.

In particular, characters need to be represented in binary. After all, computers store and manipulate 0’s and 1’s are just abstractions - the implementation is typically voltages). 1.8.5 ASCII :The most common character representation is ASCII, which stands for American Standard Code for Information Interchange.

There are two reasons to use ASCII. First, we need some way to represent character as binary numbers (or, equivalently, as bit string patterns.) There’s not much choice about this since computers represent everything in binary.
If you’ve noticed a common theme, it’s that we need representation schemes for everything. However, most importantly, we need representations for numbers and character. The other reason we use ASCII is because of the letter “S” in ASCII, which stands for “standard”. Standards are good because they allow for common formats that everyone can agree on. See ASCII table below.

Unfortunately, there’s also the letter “A”, which stands for American. ASCII is clearly biased for the English language character set. Other languages may have their own character set, even though English dominates most of the computing world (at least, programming and software).

Even though character sets don’t have mathematical properties, there are some nice aspects about ASCII. In particular, the lowercase letters are contiguous (‘a’ through ‘z’ maps to 9710 through 12210). The upper case letters are also contiguous (‘A’ through ‘Z maps to 6510 through 9010). Finally, the digits are contiguous (‘0’ through ‘9’ maps to 4810 through 5710).

ASCII Table

Character	Decimal Number	Binary Number	Character	Decimal Number	Binary Number
blank space	32	0010 0000	^	94	0101 1110
!	33	0010 0001	-	95	0101 1111
"	34	0010 0010	`	96	0110 0000
#	35	0010 0011	a	97	0110 0001
$	36	0010 0100	b	98	0110 0010
A	65	0100 0001	c	99	0110 0011
B	66	0100 0010	d	100	0110 0100
C	67	0100 0011	e	101	0110 0101
D	68	0100 0100	f	102	0110 0110
E	69	0100 0101	g	103	0110 0111
F	70	0100 0110	h	104	0110 1000
G	71	0100 0111	i	105	0110 1001
H	72	0100 1000	j	106	0110 1010
I	73	0100 1001	k	107	0110 1011
J	74	0100 1010	l	108	0110 1100
K	75	0100 1011	m	109	0110 1101
L	76	0100 1100	n	110	0110 1110
M	77	0100 1101	o	111	0110 1111
N	78	0100 1110	p	112	0111 0000
O	79	0100 1111	q	113	0111 0001
P	80	0101 0000	r	114	0111 0010
Q	81	0101 0001	s	115	0111 0011
R	82	0101 0010	t	116	0111 0100
S	83	0101 0011	u	117	0111 0101
T	84	0101 0100	v	118	0111 0110
U	85	0101 0101	w	119	0111 0111
V	86	0101 0110	x	120	0111 1000
W	87	0101 0111	y	121	0111 1001
X	88	0101 1000	z	122	0111 1010

1.9 **Summary of the chapter**

There are many stages of computer evolution. From the manual system the changeover was to machine assisted manual system. The modern computer with the power and speed of today were not solitary inventions. The 'ABACUS' used by the primary section students can be called a computing aid and in turn a computer.

The PC was invented in 1970s which revolutionized the world and today computers are used nearly in every field of our life. Some major applications of computers

The increasing popularity of computers has proved that it is a very powerful and useful tool. The power and usefulness of this popular tool are mainly due to its Reliability, Accuracy, Speed and Storage etc. characteristics

There are few limitations namely as no IQ, cannot learn by experience, No feeling, do not know about his owner etc.

There are two reasons to use ASCII. First, we need some way to represent character as binary numbers (or, equivalently, as bit string patterns.) There's not much choice about this since computers represent everything in binary.

Check your progress

1.11 **Exercise 1: Fill in the blanks**

1. There are many stages of computer evolution. From the ……was to machine assisted manual system.
2. Howard Aiken, at Harvard, proposed to IBM that a machine could be constructed which would ……..and calculations performed.
3. The PC was invented in 1970s which ……and today computers are used nearly in every field of our life.
4. The power and usefulness of this popular tool are mainly due to its Reliability, …….characteristics.
5. Computers have some limits that are the……..
6. There are two reasons to use……. First, we need some way to represent character as binary numbers (or, equivalently, as bit string patterns.) There's not much choice about this since computers represent everything in binary.

Ans 1. manual system the changeover, 2. automatically sequence the operations, 3. revolutionized the world , 4. Accuracy, Speed and Storage etc., 5. Strengths of human beings, 6. ASCII

Exercise 2: True and False
State the following statements. Please mark (T) on the correct statement and (F) on false Statement.

1. Do not have decision-making power, so they cannot take decision by themselves. To enable them to take decision they have to be instructed through commands or programs.
2. Being a non-living being computers do not have their own IQ. Thus they need to be instructed each and every step, even to perform a simple task.
3. Computers do not learn from their past experiences. If they commit an error once, they will commit the same error again and again, when the similar situation or even happens in future.
4. The first set of machines use to process data Electro-mechanically was called unit record machine.
5. Computer is an electronic device capable of interpreting and executing programmed commands for input, output, computation and logic operations. There are three types of computers analog digital and hybrid computers.

Ans 1 (T), 2(T), 3(T), 4(T), 5(T)

Exercise 3: Mix and Match
Match statement A with Statement B

S.No	Statement (A)	Statement (B)
1.	Computers are automatic machines because once started on a job, they carry on until the job is finished, normally without any human assistance. However, computers being machines cannot start themselves. They have to be instructed. The set of instructions is called a computer program.	Speed
2.	A computer, is a very fast device. While talking about the speed of a computer, we do not talk in terms of seconds or even milliseconds (.001), microseconds (.000001), the nanoseconds and even the picoseconds A powerful computer is capable of performing several billion of arithmetic operations per second. Probably a man will take about years to complete.	Automatic
3.	The accuracy of a computer is consistently high. If the input data entering the computer are correct and if the program of instructions is reliable, then we can expect that the computer generally will produce accurate output.	Diligence
4.	Unlike human beings, a computer is free from monotony, tireness, lack of concentration, etc., and hence can work for hours together without creating any error and without grumbling. Due to this property computer obviously score over human beings in doing routine type of jobs.	Accuracy
5.	Versatility is one of the most wonderful things about the computer. One moment, it is preparing the results of particular examination, the next moment it is busy preparing electricity bills, and in between, it may be helping an office secretary to trace an important letter in seconds. All that is required to change its talent is to slip in a new program (a sequence of instructions for the computer) into it.	Storage
	Power of Remembering and storing. A computer can store and recall any amount of information	Versatility

	because of its secondary storage (a type of detachable memory) capability. Every piece of information can be retained as long as desired by the user and can be recalled as and when required.	

Ans. 1. (2), 2. (1), 3. (4), 4. (3), 5. (6), 6(5)

Exercise 4: Very Short Questions

1. Distinguish between analog, digital and hybrid computers ?

---

2. What is a Super Computer?

---

3. Distinguish between Micro Computers, Mini Computers and Main Frames ? Explain.

---

4. Define 'ABACUS'?

---

5. What are Limitations of Computes

---

6. Features and Limitations of various generations of computers.

Exercise 5 : Descriptive Questions

1. What are the Various Advantages of Computers?

---
2. Explain the various applications and uses of Computers?

---
3. What is Data Representations? Explain ASCII

---
4. Explain the various types of Computers on the basis size, technology and uses?

---
5. Explain Binary, Decimal, BCD Number system?

Chapter – 2: Essentials Components of Computers

---

2. INTRODUCTION

2.1 Objectives
2.2 Hardware Components
2.3 Hardware
2.4 Types of Memory
    2.4.1 RAM
    2.4.2 ROM
2.5 Difference between Hardware, Firmware and Live-ware
2.6 Software
2.7 Overview of Operating System
2.8 Translating Programs
2.9 Application Software
2.10 Summary of the chapter
2.11 Exercise

2.1 Objectives

After studying this chapter, students are able to:

- Understand the definition of the Hardware.
- Explain the Firmware and Live-ware.
- Understand the relationship between hardware and software.
- Understand the advantages, limitation and characteristics.
- Understand Types of Software
    - System Software
    - Application Software

2.2 Hardware components

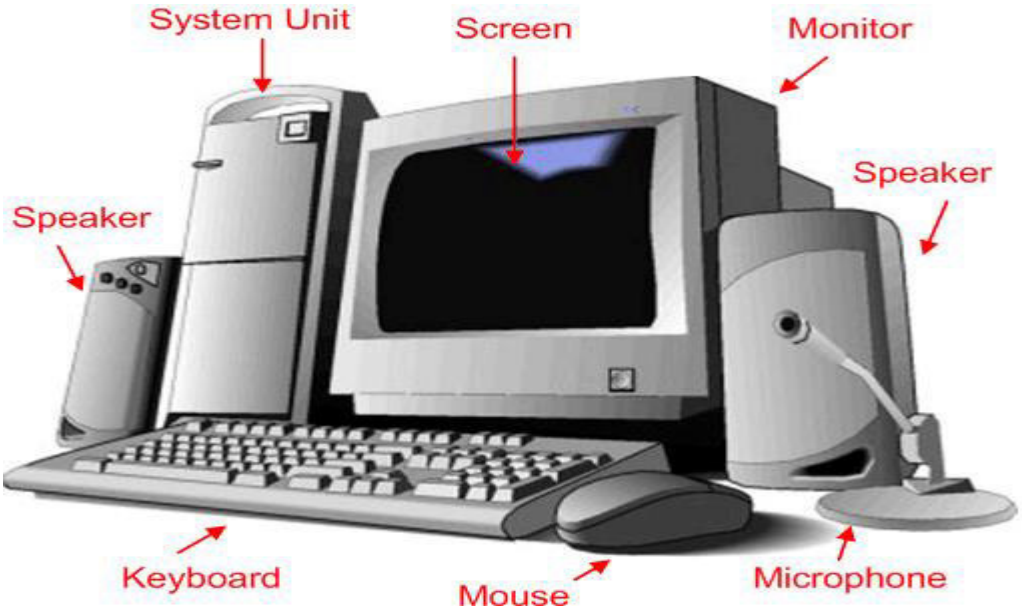
Computer is a System. A system is a group of elements that are tied together to carry out a common task and to achieve a common goal. The computer system consists of following hardware components/elements.

1. Input Unit

2. Central Processing Unit

3. Main Memory

4. Output Unit



Types of Computers — Based on size and storage capacity

According to the size and memory / storage capacity, computers are of the following four types:

1. Supercomputer : It is the biggest and fastest computer, which is mainly designed for complex scientific applications. It has many CPU's (Central Processing Units - main part of the computer) which operates in parallel to make it as fastest computer. Supercomputer is mainly used for the following application like Weather Information, Energy Management, Real — time Animation, Medicine, Nuclear Energy Research, Petroleum Exploration and Production etc. CRAY was the first supercomputer of world and PARAM 10000, ANURAG are the Supercomputers of India. Param 10000



2. Mainframes Computers : These are very large and fast computers but smaller and slower than supercomputers. They are used in a centralized location where many terminals (input! output devices) are connected with one CPU and thus, allow different users to share the single CPU. They have a very high memory and can support thousands of users. Mainframe computers are mainly used in Railway and Airline Reservation applications, Banking applications, Commercial applications of industries and companies. Examples of mainframe computers are IBM 3090, IBM 4381, IBM 4300, IBM ES-9000.



3. Minicomputers : These are medium — scale, smaller and generally slower than mainframes computers. Like mainframes, they have many terminals which are connected with one CPU and can support many users. The cost of a minicomputer

is less as compared to mainframes. Minicomputers are mainly used in applications where processing can be distributed among several minicomputers rather than using a mainframe computer. PDI1, DEC Micro VAX and IBM AS/400 are few of the examples of minicomputer.



4. Microcomputers: It is the smallest digital computer, which uses a microprocessor as its CPU. Microprocessor is a single chip (integrated circuit) CPU. Microcomputer is popularly called a Personal Computer (PC). The PC's can be used both as a stand-alone machine and a terminal in a multi-user environment for all types of application. Microcomputers are very popular now-a-days due to very high processing power and memory Examples of Microcomputers are IBM PC this is first PC manufactures by IBM, Pentium PC this model of PC uses Intel Pentium processor. There are two type of PC's



Desktop or Portable model

I. Desktop Pc's : Desktop computers fit on a desktop and are used widely in offices and home.



II. Portable Pc's : Portable computers can be carried from one place to another. Some of the models of portable computers are called laptop while others as notebook computers. Notebook computers are smaller, lighter and costlier than laptop. Notebook computers are also called palmtops.



Relationship between Hardware and Software

Computer components can be broadly divided into two categories

1. Hardware
2. Software

2.3 Hardware

Processing data on a computer is performed by specific equipment that is referred to as computer hardware. The hardware hence refers to the physical components of a computer. The four fundamental components of a computer are input devices, processor unit, output devices and auxiliary storage units.

Input Devices

With the help of input devices data is entered into the computer which can be translated into machine readable form.

Types of input devices



Punch Cards: It is a rigid piece of paper containing rows and columns of number. These cards e put into a keypunch machine which places holes in the card to represent the data. This pattern of inched holes used to represent characters on the card is called

Hollerith code. These holes are interpreted by a card reader that translates the punched information into a machine readable code, and en sends it to the CPU for processing.

Keyboard : One of the most common and familiar input devices is the standard keyboard. A typical computer keyboard contains all letters, numbers, symbol of a regular typewriter apart from special keys which are used for control movement of the cursor, function keys etc.

Floppy disk: Data recorded on a floppy disk is read and stored in a computer's memory by a device called a floppy reader. A floppy disk is inserted in a slot of the floppy input unit. The disk is C:\WJNDOWS\hinhem.scr rotated at around 30 revolutions per minute.

Video Terminals : The cathode ray television tube is scanned by an electron beam to create a raster of horizontal lines. The intensity of the electron beam is increased at certain moments creating bright spots on the face of the tube. Each character is displayed by a matrix of 5 horizontal and 7 vertical dots. A display normally has 80 characters per horizontal line and 24 such lines on the screen.

Source Data Automation

- MICR— Magnetic Ink Character Recognition: The human readable characters are printed on documents (such as cheques) using a special magnetic int. A magnetic ink character reader can recognize such characters.

- OMR— Optical Mark Reading and Recognition: Special pre printed forms are designed with boxes which can be marked with a dark pencil or ink, such a document is read by a document reader which transcribes the mark into electrical pulses which are transmitted to the computer. These documents are applicable in areas where responses are one out of a small number of alternatives and the volume of data to be processed is large.

- OCR—Optical Character Recognition : An optical scanner is a device used to read an image, convert it into 0's and l's and store this in computer memory. This representation is called the bit map of the image. Each bit in the representation of the image is called a pixel x (picture element).

- Bar Coding—Small bars of varying thickness and spacing are printed on packages, badges tags etc which are read by optical reader and converted to electrical pulses. The patters of bars are unique and standardized in some countries.

Speech input units

A unit which takes as its input spoken words and converts them to a form which can be understood by the computer is called speech input unit.

Speech units may be classified as

- Single word recognition unit: it recognizing single word commands such as stop
- Continuous speech recognition unit: a sentence spoken continuously.

Speech input unit may be further classified as

- Speaker dependent: recognises speech of a particular person
- Speaker independent : recognises speech of any person

Pointing devices

- Mouse—Mouse is a pointing device which controls the cursor movement on the screen. When the user presses one of the button, the mouse either marks a place on the screen or makes selection from data on the screen.
- Track ball—A track ball uses a hard sphere to control cursor movement. The ball can be rotated by hand in any direction. The track ball translated the sphere's direction and speed of rotation into digital signals, used to control the cursor.
- Touch pads—A touch screen registers input when a finger or other object comes in beams and ultrasonic acoustic waves. Infrared beams crisscross the surface of the screen and when a light bean is broken, the location is recorded.
- Joysticks—A Joystick is a most popular input device used to play video games. A joystick uses a level to control the position and speed with which the joystick is moved into digital signals that are sent to the computer to control the cursor movement.
- Light pen—The pen contains a photocell placed in a small tube. The light pen uses a photoelectric cell to indicate screen positions to the computer. The pen is operated by touching it to the screen. Light pen is useful for graphic work especially for Computer Aided Design(CAD) purposes.

Processing Unit: Motherboard is the most important hardware component of a microcomputer. Motherboard contains CPU and other chips of the computer system . The CPU (Central Processing Unit) is divided into three parts the ALU (Arithmetic Logical Unit) which performs all arithmetic and logical calculations. The control Unit which controls all other parts of the computer and the memory unit.

Output Devices : Output devices is a peripheral device that allows a computer to communicate information by accepting data from the computer and transforming them into a usable form.



Output can be in the form of hard copy or soft copy.

Hard copy: It is output on paper and can be read immediately or stored and read later. This is a relatively stable and permanent form of output. E.g. Printers, Plotters

Soft copy: It could be a screen displayed output or could be stored to secondary storage device.

Printers : Printer is a device that prints text or illustrations on paper. There are many different types of printers. In terms of the technology utilized printers fall into the following categories.

- Dot matrix printers use a set of closely spaced pins and a ribbon to print letter or other characters on page. Dot matrix printers vary on terms of speed and the number of pins they have. They can run at a speed anywhere between 50 and 500 CPS (Characters per second), The number of pins, which can vary between 9 to 24 determines the quality of the print job. Dot matrix printers are commonly used for printing invoices, purchase orders, shipping forms, labels and other multi-part forms. Dot matrix printers can print through multi-part forms in a single pass, allowing them to produce more pages than even high-speed laser printers.

- Daisy Wheel printers : These are similar to ball-head typewriter, this type of printer has a plastic or metal wheel on which the shape of each character stands out on relied. A hammer presses the wheel against a ribbon, which in turn makes an ink

strain in the shape of the character on the paper. Daisy — wheel printers produce letter quality print but cannot print graphics.

- Line printers: They contain a chain of characters or pins that print an entire line at one time. Line printers are very fast but produce low quality print.

- Ink Jets(Bubble-Jets) printers spray ionized tiny drops of ink onto a page to create an image. This is achieved by using magnetized plates which direct the ink's path onto the paper in the desired pattern. Almost all ink-jets offer a colour option as standards, in varying degrees of resolution. Ink-jet printers are capable of producing high quality print which almost matches the quality of the laser printer. A standard Ink-jet printer has a resolution of more than 300 dots per inch. These printers produce high quality text and graphics

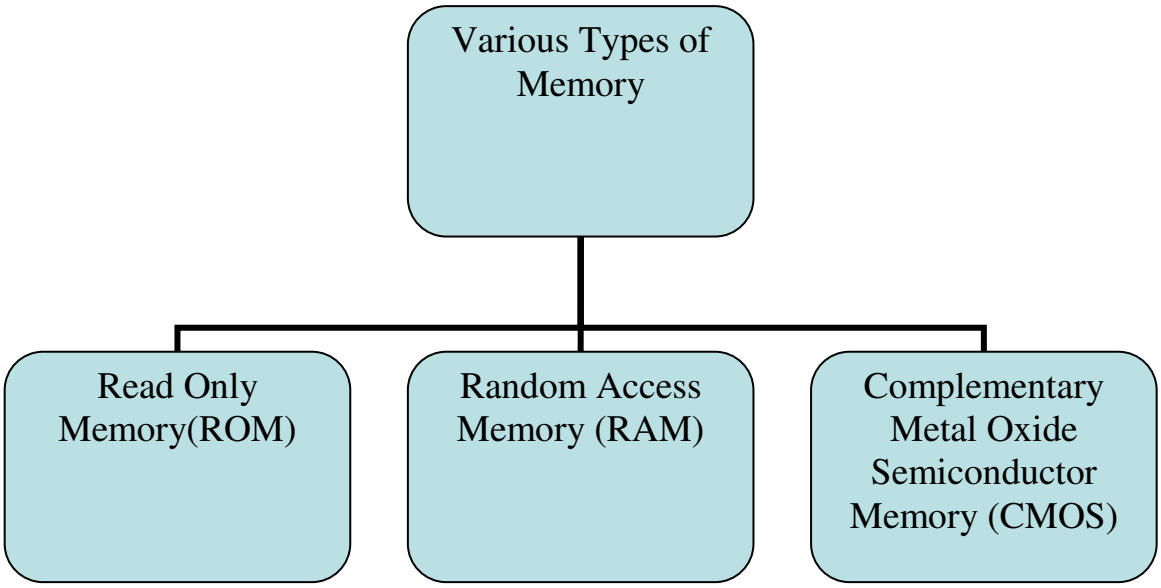
- Thermal Printers are inexpensive printers that work by pushing heated pins against heat- sensitive paper. Thermal printers are widely used in calculators and fax machines.

- Liquid-emitting diode / Liquid crystal display (LED/LCD) printers are type of electro photographic printers that are identical to laser printers in most ways. Both LCD and LED printers use a light source instead of a laser to create an image on a drum. These printers produce a very high quality text and graphic print out.

- Laser printers operate by shining a laser beam to produce an image on a drum. The drum is then rolled through a pool or reservoir or toner and the electrically charged portions of the drum pick up ink. Finally using a combination of heat and pressure, the ink on the drum is transferred onto the page. Laser printers print very fast, and produce a very high quality text and graphics.

2.4 Types of Memory

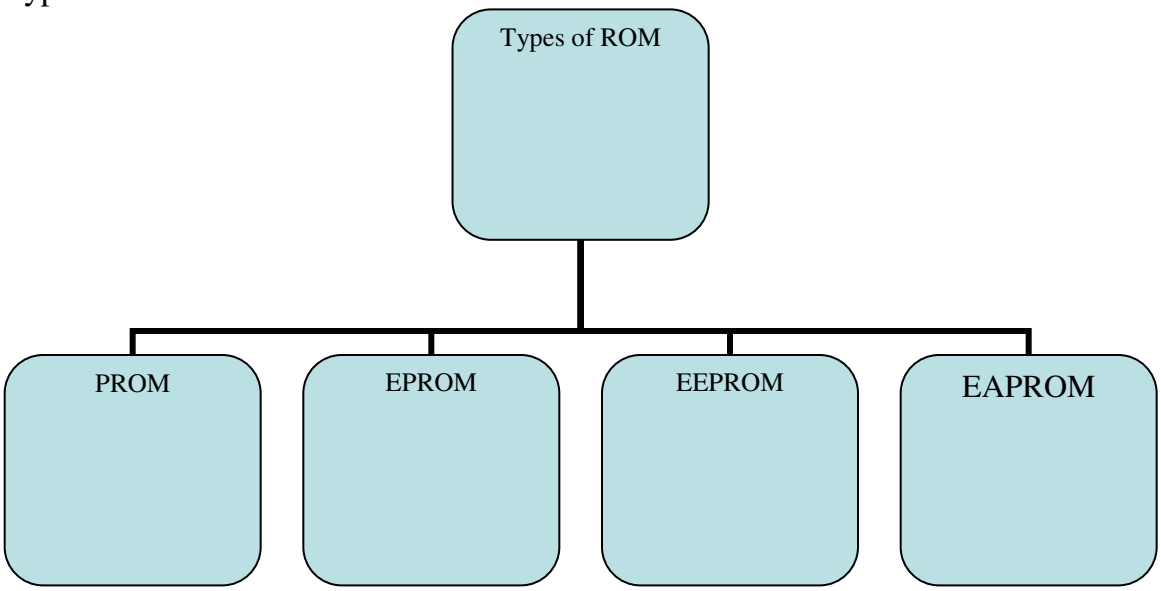
The memory is used to store the data, instructions and information before, during and after processing by ALU, It is physically a collection of integrated circuits within the computer, where the CPU stores the data and instructions. It is also known as Primary Memory. The main memory is of the following types



1. Read Only Memory (ROM)
2. Random Access Memory (RAM)
3. Complementary Metal Oxide Semiconductor Memory (CMOS)

Read Only Memory (ROM): Chip retains the stored data when the power supply is cut hence ROM chip are non-volatile. ROM chip may contain micro-program control instructions that cause the machine to perform certain operations such as starting the computer or instructions to the entire operating system. ROM chip can only be read. It does not accept any input data or instructions from the users. The actual contents of ROM are set by the manufacturers and they are unchangeable and permanent.

Types of ROM



1) PROM : Programmable Read Only Memory: In this type of ROM, the information is stored by programmers after its manufacturing. It cannot be altered or erased later on.

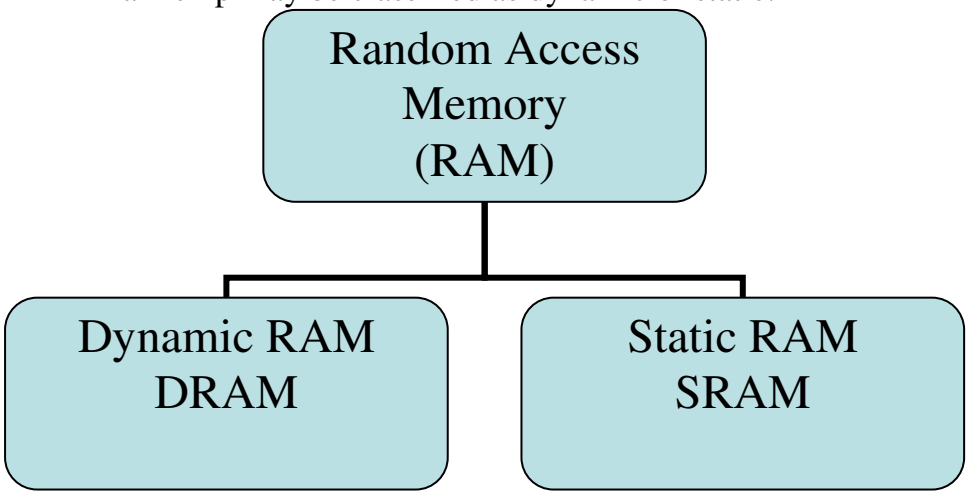
2) EPROM : Erasable Programmable Read Only Memory : Is similar to PROM, but its information can be erased later on by ultra violet light and it can be re-programmed.

3) EEPROM : Electrically Erasable Programmable Read Only Memory: Is similar to EPROM, but its information can be erased by using a high voltage current.

4) EAPROM : Electrically Alterable Read Only Memory: As compared to EPROM and EEPROM the information stored in EAPROM can be altered later.

RAM : Random Access Memory : This is that part of the primary storage where data and program instruction are held temporary while being manipulated or executed. It is called Random Access Memory because any of the location on a chip cab be randomly selected and used to directly store and retrieve data and instructions. RAIVI is volatile i.e. it depends on a steady supply of electricity and when the power is shut off, every thing stored is lost.

Ram chip may be classified as dynamic or static.



i. Dynamic RAM (DRAM) : The information stored in Dynamic RAM has to be re freshed after every few milliseconds otherwise it is erased. SGP.AM (Synchronous Graphic RAM) is a form of DRAM optimised for the high speed, high volume data transfers required by graphics / video applications.

ii. Static RAM (SRAM) : The information stored in static RAM need not be refreshed, but it remains stable as long as power supply is provided. It has lower storage capacity compared to DRAM, but has higher speed than DRAM. SRAM chips are

more complicated and take up more space than DRAM chip because they require more transistors and other devices to store a bit of data. Therefore SRAM are used in specialised applications while DRAM are used in primary storage section.

2.5 Difference between Hardware, Firmware and Liver-ware

Hardware

It refers to physical components of a computer system that you can touch as well as see. It means that all the hardware has a physical existence. Since they have physical existence they have some kind of size, weight and mass. CPU (the processor), Motherboard, Hard disk, Floppy disk, Cd, Keyboard, Mouse etc, are example of hardware.

Firmware

A sequence of instructions i.e., a software, embedded in a hardware device for its some functioning is called firmware. BIOS (Basic Input Output System), which resides in ROM is a routine (software) is an example of Firmware. Software (programs or data) that has been written onto randomly memory (ROM) are termed as firmware. Firmware is a combination of software and hardware. ROMs, PROMs and EPROMs that have data or programs recorded on them are firmware.

Live-ware

It is a slang term used to denote people using (attached to) computers, and is based on the need for a human, or liveware, to operate the system using hardware and software. Other words similar to liveware include wetware, meatware and jellyware. Meatware and jellyware are those often used by internal customer support personnel as slang terms when referencing human operating errors.

Printers are also classified by the following characteristics

- ✓ Quality of type : The output produced by printers is said to be either letter quality , near letter quality or draft quality. Only daisy wheel, ink-jet and laser printers produce letter quality type.

- ✓ Speed : Measured in characters per second (CPS) or pages per minute, the speed of printers varies widely. Daisy wheel printers tend to be slower, printing almost 30cps. Line printers are fastest up to 3000 lines per minute. Dot matrix printers can print up to 500 cps and laser printers range from 4 to 20 text pages per minute.

- ✓ Impact or non-impact printer: Impact printer is one that generally operates by using a hammer to strike a character against an inked ribbon : the impact then causes an image of the character to be printed. Impact printers functions just as typewriters do. Their main disadvantage is that they are relatively slow, noisy and subject to mechanical breakdowns. Examples of impact printer are : Dot matrix, daisy wheel, line printers.

  Non-impact printers are high speed, quiet and is used for quality prints by using some form of non impact device.

  Examples of Non-impact printers are : laser, ink-jet and thermal printers.

- ✓ Graphics: Some printers like daisy wheel and line printers can only print text while others can print both text and graphics.

- ✓ Fonts: Some printers notably like dot matrix printers are limited to one or few fonts. In contrast, Laser and ink-jet printers are capable of printing an almost unlimited variety of fonts. Daisy wheel printers can also print different fonts, but you need to change the daisy wheel, making it difficult to mix fonts in the same documents.

Visual Display Unit (Monitor) : A monitor is a television like device used to display input data or information, allowing users to view the results of processing. Quality of the monitor is often judged in terms of resolution which is a measure of number of picture elements or pixels a screen contains. A pixel is the smallest increment of a display screen that can be controlled individually. The higher the number of pixels the clearer and sharper is the image. The screens for monitor are of two types

a) Cathode Ray Tube (CRT) : On this type of screen a data image can be produced by moving an electron beam across a phosphor coated screen. By intensifying the strength of the beam, the phosphor-coating glows in certain places, forming the characters.

b) Flat Panel Display : A CRT is reliable but is bulky and consumes a lot of power and that is why it is cumbersom to use it with p4wtable computers. The Flat-panel display does not use a picture tube. The most common type of flat panel display is the Liquid Crystal Display (LCD) which produces images by aligning molecular crystals. When a voltage is applied the crystals line up in a way that blocks light from passing through them and this absence of light is seen as characters on the screen. LCD's are better than CRTS as LCD don't flicker.

Visual Display Terminal or Terminal: A monitor is a television like device to display data or information allowing users to view result of processing. The combination

of monitors with the keyboard is called a terminal. VDT is divided into three categories

a) Dumb Terminal : A dumb terminal is a standalone keyboard and display screen that can send or receive data but cannot process that data. They are simply devices that immediately transmit each keyed data character to the processor.

b) Smart Terminal : They are designed with a microprocessor chip that contains the circuits needed to perform arithmetic logic and control functions and they also have an internal storage capability. They can move the cursor in all directions to add, delete and change keyed characters. Smart terminals can store and consolidate input data prior to sending them to the processor. Smart terminals cannot be programmed by users.

c) Intelligent Terminal : It combines VDT hardware with built in microprocessor that can be programmed by the user. They can process small jobs without the need to interact with a large computer. The intelligent Video Display Terminal is designed with circuit that permit it to communicate with other terminals and large processors.

Plotters : Plotters are large scale printers that are very accurate at producing line drawings. They are commonly used for technical drawings such as engineering drawing or architectural blueprints. The two basic types of plotters are called flatbed plotters and drum plotters. Flatbed plotters are horizontal aligned a with a flat surface to which a piece of paper is attached. The paper remains stationary and the printer moves pen across the paper to draw the image. Drum Plotters, also called upright plotters are vertically positioned. They have a drum that the paper rolls on. Drum plotters usually make more noise and are more compact than flatbed plotters. Plotters are used primarily in drafting and CAD applications, where they have the advantage of working on very large paper sizes while maintaining high resolution. Another use has been found by replacing the pen with a cutter and in this form plotters can be found in many garment and sign shops.

Storage Devices : There are many storage devices used with microcomputers. The device of a computer that stores data permanently in computer is called storage device. The data stored in a storage device is not erased when we switch off the computer. The storage device can also be removed from the computer. It is also called secondary memory of the computer.

Some of the storage devices of a PC are Magnetic Tape, Magnetic Disk, Optical Technology.

Magnetic Tapes A secondary storage device that uses a long plastic strip coated with a magnetic material as a recording system.

Magnetic disk is storage device which is a high speed, high capacity rotational thin but rigid metal platters.

Winchester Disk (Hard Disk) : Consists of one or more disk platters, an access mechanism and read/write head which is sealed in a case. Hard disk size depends on the disk platter's diameter. The read/write head is used to write any information on the disk surface or to read it back. A hard disk contains two or more vertical stacked disk plotters. Each disk plotter has its own read/write head which moves across the surface of a disk coated with magnetic sensitive material. Information is stored on the disk in concentric circles called tracks. The disk revolves with speed range from 7200 revolutions per minute (rpm)to about 10000 (rpm). The read/write head read from or write into the data on the revolving disk surface.
A Floppy Disk is a portable storage device of computer. The storage capacity of the floppy disk is l.44Mb and is 31/2 inch in size. The floppy can store data on both sides

Cartridge or Zip Disk

Cartridge Disk is a removable hard disk packed inside a plastic case that can be removed from the drive that reads from and writes to it. Zip disk is a popular model of cartridge disk that can store over 100MB of Data using a Zip Drive.

Storage device		Advantages
Magnetic Tape	*	High data density
	*	Low cost and ease of handling
	*	Special backup procedures are not required for records protection.
Magnetic Disk	*	Data records can be stored for both sequential and direct accessing.
	*	High speed of access and update as no sorting of transactions.
	*	On-line disk record of several related files can be updated simultaneously by a single input transaction.

Optical Technology

Compact Disk Read Only Memory (CD-ROM) is the most popular portable storage device of computer. It is an optical read only memory made up of a resin. It has a silver appearance on both sides. It is almost opaque and acts much like a mirror. It is not completely opaque as some light is refracted and hence a rainbow is produced when you tilt it in front of a bright light. A CDROM stores information using billions of microscopic pit that resides on its surface. The data is stores on a disk using a series of ones and zeros. The CD-ROM places a pit on its surface to represent a one and no pit to represents a zero. For reading the data of CD-ROM the CD-ROM drive spins the CD-ROM by passing a

small laser beam. The laser in turn reflects a light off the CD-ROM surface. If the surface area does not have pit the light will reflect faster. A CD-Rom can store 500 MB of data.

Magneto-Optical Disk (MO Disk)

Magneto-Optical Disk uses a combination of both magnetic and optical technologies. They are removable cartridges. This drive uses both a laser and electromagnetic to record data on a removable cartridge. The surface of the cartridge contains tiny embedded magnets. The unique feature of the MO drive is that it has a very high storage capacity. Although MO drive is costlier and slower than HDD it has a long life is more reliable. It can store data ranging from 100MB to Several gigabytes (GB).

DVD ROM/RAM (Digital Video Disk ROM/RAM) (or Digital Versatile Disc)

DVD ROM and DVD RAM disks are optical disks having a storage capacity of 4.7GB and 5.2 GB respectively. These disks are becoming the next generation's new standard for higher capacity removable media. They are ideal for storage of huge amount of information required for multimedia application. Because of such tremendous storage capacity a DVD can store an entire movie — much like a VHS tape.

2.6 Software

Computer software is a set of instructions grouped into programs-that make the computer to function in the desired ways. It can be classified into two general categories

System Software Packages

Application Software Packages

System Software Packages

A system software package is a collection of programs designed to operate, control and extend processing capabilities of computers. The system software can be broadly classified further into two

1. Operating System
2. Translating Programs
3. Utilities

Application Software packages

Application Software packages are a collection of modules for solution of specific task like Tally for accounting application software package. Ms Office with includes MS word, excel, access for the use of office application etc.

1. Tally
2. Ms Office (Ms Word, Excel, Access)

2.7 Overview of Operating System

An Operating System is a set of programs that controls and supervises a computer system's hardware and provides services to computer users.

The operating system performs the following functions

- Provides the instructions to prepare user-interface i.e. way to interact with user whether through typed commands or through graphical symbols
- Loads necessary programs (into the computer memory) which are required for proper computer functioning
- Coordinates how programs work with the CPU, keyboard, mouse, printer and other hardware as well as with other software
- Manages the way information is stored on and retrieved from disks.

There is various type of Operating System

i) Single user Operating System : this supports single user
ii) Multi user Operating System : this supports multiple user
iii) Batch Processing Operating System: the batch processing operating system processes the batches (group) of jobs.
iv) Multi Processing Operating System : is capable of handling multiple CPU at the same time.
v) Time Sharing Operation System: allows multiple users to access a single computer system.
vi) Real Time Operating System: allows a computer to control tasks performed by other machines and people by responding to the input data in the required amount of time.

2.8 Translating Program

These language translator program are programs for converting programs in other language into machine language instructions so that they can be executed by the computer. The language processors given below

Assembler : This language processor converts the program written in assembly language into ichine language.

Interpreter : This language processor convert a High Level Language into machine language by converting and executing it line by line. If there is any error in any line, it reports it at the same time and program execution cannot resume until error is rectified. Interpreter must always he present in the memory every time the program is executed as every time the program is run, it is first interpreted and then executed. For error debugging, interpreter is very much useful as it reports the error(s) at the same time. But once errors are removed, unnecessary usage of memory takes place as it has to be present in the memory always.

Compiler: It also converts the High Level Language (HLL) program into machine level Language. It converts the entire HLL program in one go and reports all the errors of the program along with the line numbers. After all the errors are removed, the program is recompiled and after that the compiler is not needed in the memory as the object program is available.

Linker : A linker is a program that is used to properly combine all the object program files of a software and to convert them into a software final executable form.

Loader: The loader is responsible for loading a memory image of the executable file and starting the program.

Utility program

Utility programs are usually supplied by computer manufacturers. These are also known as service programs. They enhance the functioning by performing tasks related to the control and allocation of computer resources. Some of the utility program provided can enhance the performance of the computer such as RAM disk, virtual memory or check viruses. Some of the utility programs are

- Data recovery: is used to recover a file or information that has been deleted.
- Screen saver: is prevents a monitor's display screen from being etched by an unchanging image
- Backup : is used to make duplicated copy of the file on the hard disk in order to maintain continuity of the operation
- Data compression : means removing redundant elements, gaps and unnecessary data from a computer's storage space, so that it takes less space to store and transmit data.

- Virus protection : A virus program consists of instructions such that they usually place themselves within an application or a system program. Virus replicates themselves and cause damages to computer programs.

- Sort utilities : are those that sort data. Sorting can be performed on primary key and also secondary key. Usually the sorting packages enable the user to identify around 12 sort keys and arrange the resulted records in either ascending or descending order on each declared key.
- Text editors : are programs that allow the user to create a file, make changes to existing files. A editor usually lacks the capability that a word processor has like formatting of text etc.

2.9 Application Software

An application software is the set of programs necessary to carry out operations for a specified application. This type of software pertains to one specific application. For instance a software that can perform airlines reservation function can not be use to prepare result for a student. Application Software can further be subdivided into two categories

(1) Single function applications packages
   - Customised Application Software
   - General Application Software

(2) Integrated functions applications package

Customised Application Software: This type of software is tailor-made software according to user's requirement. The software is developed to meet all the requirements specified by a specific user.

General Application Software: this type of software is developed keeping in mind the general requirements for carrying out a specific task. Many users use it simultaneously as it fulfils the general requirement. For example Word Processing package, Data Manager, Electronic Spread Sheets, Electronic Communications

Integrated-function Application Package: These combine several of general purpose functions in a single product. They include most of the following functions. For example Microsoft Office.

Programming Languages

Programming language is a set of rules which user has to follow to instruct the computer what operations are to be performed. The various programming languages exist and are classified according to the level of abstraction.

First Generation Language : Low level Languages

The first generation language was the machine language closet to the machine interpretable form, where the op code (instructions of operation) and operands were all in their notation of binary codes, i.e. in 1's and 0's. It is a machine dependent language.

Second Generation Languages

Assembly languages : the second generation of languages assembly language a low level language was an attempt to bring the access of programming to a friendlier levels. A Assembly language used a set of mnemonic codes to represent instructions and comfort in machine usage that improved to the extend of being able to quickly read write the required instructions rather than zeros and ones. Secondly memory address references in the operands used symbolic rather than number address specified as a binary number.

Advantages of assembly over machine language

Easy to understand	Mnemonic codes(OP codes) and symbolic name s (used for storage locations) are English like thus easy to understand and write than numeric codes used in machine language
Highly efficient	Assembly language programs are very efficient in terms of executions and main memory usage
Easy to modify	An insertion and deletion of certain instruction from the program do not require any change in the address(operand) part of the instruction, where as it is a matter of concern in case of machine language
Easy to update	Programmer is not required to keep track of storage locations thus it is less prone to errors. Also assembler are developed and designed in such a way that it automatically detects an error if invalid mnemonic is entered.

Limitations of using assembly language are same as machine language such as

Machine dependent

Not portable

Knowledge of hardware required

A simple program requires large number of lines of codes

Not used for generalised business application soft wares such as inventory payroll, accounts etc.

Third generation Language (High level language)

Procedural language : the third generation language are what is formally referred to as high level procedural language or complier languages. They offer us the ability to code complex logical constructs in language closer to English than the use of primitive instructions available in assembly language The major feature of the third generation languages is their hardware independence. For a procedural language to work in a computer, it requires a language translator to translate it into machine language. The third generation of languages was built around a type definition a set of data structures, operations defined on the carious types and a set of procedural constructs that enabled the programmer to manipulate variables.

Examples of High level Programming
BASIC : Beginners All Purpose Symbolic Interchange Code
COBOL : Common Business Oriented Language (used in commercial environment)
FORTRAN : Formula Translation (is a language designed to suit programmers working on science applications)

Fourth Generation Languages (4GL)

Non-procedural Language - 4GL also known as non procedural user-oriented languages allow the user to specify the desired form of output to be obtained without describing the detailed procedure of data manipulation to produce the desired result. As the procedure oriented language of 31(generation programming enables only technical or programmer to uses the computer, the flexibility provided by 4GL's allow even non technical user to carry out specific functional tasks in quick and easy manner. It is basically a command oriented language designed primarily for end user to query data base and create information system.

Examples of 4G1 SQL (Structured Query Language), Database Management System (DBMS) etc.

Comparison between 3GL and 4GL: Third Generation Language Provides programming environment used by Professional programmers to generate application program Emphasis is given on how' to perform a task requires large number of instructions to be coded and all possible alternatives must be specified difficult to code, read and maintain proper syntax and semantics of a language have to be followed thus difficult to learn originally language developed for batch operations difficult to debug file oriented programming language fifth Generation Language :Natural programming language is used to improve the user interface with 4GLs. These languages are primarily used to represent mimic representation of human reasoning to make computer artificially intelligent. Expert

systems are developed in fifth generation language. The purpose of such software is for game. These are non-procedural and portable languages. They usually require translation program to translate them into structural machine readable form. Examples of fifth generation language are LISP and ProLog.

Object Oriented Programming Language (OOPs) The basic objective of designing OOP was to simulate real world problems. OOPs language supports the features to define, create store and manipulate objects and all different objects to communicate with each other. OOPs offer advantages like reusable code, lesser cost, reduced errors and testing, faster implementation etc. The popular OOPs language include C++ , Java etc
Check your progress

2.10 Summary of the Chapter

Computer is a System. A system is a group of elements that are tied together to carry out a common task and to achieve a common goal. The computer system consists of hardware and Software.
Types of Computers are based on size and storage capacity
Supercomputer : It is the biggest and fastest computer, which is mainly designed for complex scientific applications.
Mainframes Computers : These are very large and fast computers but smaller and slower than supercomputers.
Minicomputers : These are medium , smaller and generally slower than mainframes computers.
Microcomputers: It is the smallest digital computer, which uses a microprocessor as its CPU. Microprocessor is a single chip (integrated circuit) CPU.
Desktop Pc's : Desktop computers fit on a desktop and are used widely in offices and home.

Portable Pc's : Portable computers can be carried from one place to another. Some of the models of portable computers are called laptop while others as notebook computers..

MICR— Magnetic Ink Character Recognition: The human readable characters are printed on documents (such as cheques) using a special magnetic int.

OMR— Optical Mark Reading and Recognition: Special pre printed forms are designed with boxes which can be marked with a dark pencil or ink, such a document is read by a document reader which transcribes the mark into electrical pulses which are transmitted to the computer.

OCR—Optical Character Recognition : An optical scanner is a device used to read an image, convert it into 0's and l's and store this in computer memory. This representation is called the bit map of the image.

Bar Coding—Small bars of varying thickness and spacing are printed on packages, badges tags etc which are read by optical reader and converted to electrical pulses.

4GL also known as non procedural user-oriented languages allow the user to specify the desired form of output to be obtained without describing the detailed procedure of data manipulation to produce the desired result.

Object Oriented Programming Language (OOPs) The basic objective of designing OOP was to simulate real world problems.

2.11 Exercise 1 : Fill in the blanks

Check your progress

1. Processing data on a computer is performed by specific equipment that is referred to as…….
2. With the help of input devices data is entered into the computer which can be translated into……..
3. 4GL also known as non procedural user-oriented languages allow the user to specify the desired form of output to be obtained without describing the detailed procedure of …….to produce the desired result.
4. Object Oriented Programming Language (OOPs) The basic objective of designing OOP was to……..
5. One of the most common and familiar input devices is the…….. A typical computer keyboard contains all letters, numbers, symbol of a regular typewriter apart from special keys which are used for control movement of the cursor, function keys etc.

Ans 1. computer hardware , 2. machine readable form, 3. data manipulation, 4. simulate real world problems, , 5. standard keyboard

Exercise 2: True and False

State the following statements. Please mark (T) on the correct statement and (F) on false Statement.

1. MICR— Magnetic Ink Character Recognition: The human readable characters are printed on documents (such as cheques) using a special magnetic int.
2. OMR— Optical Mark Reading and Recognition: Special pre printed forms are designed with boxes which can be marked with a dark pencil or ink, such a document is read by a document reader which transcribes the mark into electrical pulses which are transmitted to the computer.
3. OCR—Optical Character Recognition : An optical scanner is a device used to read an image, convert it into 0's and l's and store this in computer memory. This representation is called the bit map of the image.
4. Bar Coding—Small bars of varying thickness and spacing are printed on packages, badges tags etc which are read by optical reader and converted to electrical pulses.
5. Punch Cards: It is a rigid piece of paper containing rows and columns of number. These cards e put into a keypunch machine which places holes in the card to represent the data.

Ans 1 (T), 2(T), 3(T), 4(T), 5(T)

Exercise 3: Mix and Match
Match statement A with Statement B

S.No	Statement (A)	Statement (B)
1.	It is the biggest and fastest computer, which is mainly designed for complex scientific applications.	Main Frame Computer
2.	These are very large and fast computers but smaller and slower than supercomputers.	Supercomputer :
3.	These are medium — scale, smaller and generally slower than mainframes computers.	Microcomputers:
4.	It is the smallest digital computer, which uses a microprocessor as its CPU. Microprocessor is a single chip (integrated circuit) CPU.	Minicomputers :
5.	Desktop computers fit on a desktop and are used widely in offices and home.	Portable Pc's :
6.	Portable computers can be carried from one place to another. Some of the models of portable computers are called laptop while others as notebook computers..	Desktop Pc's :

Ans. 1. (2), 2. (1), 3. (4), 4. (3), 5. (6)

Exercise 4: Very Short Questions

1. Define the term Hardware?

---

2. Differentiate between Firmware and Live-ware. Comment?

---

3. What is System Software? Explain.

---

4. Define ‘Operating System’?

---

5. Difference between Translators, Interpreter, Compiler, Assembler and Linker.

---

6. Relationship between Hardware and Software.

Exercise 5 : Descriptive Questions

6. Write Overview of Operating System ?

---

7. What are functions of Operating System?

---

8. Define General Purpose Packaged Software?

---

9. Explain Tailor Made Software.

---

10. What is memory, what is the difference between RAM and ROM?

Questions for practice

1. What is the difference between impact printers and non impact printers?
2. What is an MICR?
3. Write short notes on Source Data Automation
4. Mention the types of input devices
5. Explain the working of the processing unit
6. Write short notes on Read only memory
7. Distinguish between ROM and RAM
8. What is Dynamic RAM how is it different from Static RAM?
9. What are Plotters?
10. What is Optical Technology?
11. What are the storage devices? Distinguish between the various devices
12. What are translating software's?
13. What are the different types of operating system?
14. What is programming language?
15. What is the difference between the third Generation language and fourth generation language?
16. Write short notes on Fifth generation Language
17. Explain Operating System

Chapter – 3: Introduction to Internet

1. INTRODUCTION

3.1 Objectives
3.2 Meaning of Internet
3.3 Growth of Internet
3.4 Owner of Internet
3.5 Anatomy of Internet
3.6 Basic Internet Terminology
3.7 Net Etiquette
3.8 World Wide Web
3.9 Internet Protocols
3.10 Usage of Internet to society
3.11 Extranet
3.12 Search Engine
3.13 Summary of the chapter
3.14 Exercise

3.1 Objectives

After studying this chapter, students are able to:

- Understand the Meaning and Growth of Internet.
- Understand the Owner of Internet.
- Explain the Anatomy of Internet.
- Understand the Basic Internet Terminology
- Understand and awareness of Net Etiquette
- Features of World Wide Web
- Understand the Internet Protocols
- Usage of Internet to the Society
- Understand Extranet
- Understand Search Engines
    - Google
    - Yahoo

3.2 Meaning of Internet

The Internet is one of the greatest innovations to make its way into the world today. Almost everybody has heard of the Internet; almost everybody has used the Internet to e-mail, chat, do research, and even play games.

Basically, the Internet is an enormous network that connects computers and other networks found throughout the world. It lets you meet people living thousands of miles away; it lets you learn about new cultures, new ways of living. If you're reading this article right now, then you're connected to the Internet.

3.3 Growth of Internet

The seed of internet were planted in 1968 when US Department of defence sponsored a project name ARPANET (Advance Research Projects NETwork) . The goal of this project was to connect computers of different universities and US defence. Soon the engineers, scientists, students and researchers began exchanging data and messages on it. In mid 80's another federal agency the National Science foundation created a new high capacity network called NSFnet which was more capable than ARPANET.

NSFnet allowed only the academic research on its network and not any kind of private business on it. Many private companies built their own networks which were later interconnected along with ARPANET and NSFnet of form internet.

It was inter networking that was named Internet.

In internet most computers are not connected directly to the internet. They are connected to smaller networks, which in turn are connected through a device that connects dissimilar networks called the gateways to the internet central interconnecting structure known as the backbone.

Features of Internet

Internet is a global network of networks which either uses the TCP/IP protocol or are able to interact with TCP/IP networks via gateways and provides users with electronic mail messaging, remote login, file transfer, network news the www etc The internet offers access to data, graphics sound software text and people through a variety of services and tools for communication and data exchange.

3.4 Owner of Internet

Internet is not governed by any particular body. It is coordinated by many volunteer organizations. There is no single authority organisation. Various volunteer organisation are responsible for different types of activities namely

The Internet Architecture Board (TAB) is responsible for approving standards and allocating resources.

The Internet Engineering Task Force (IETF) is responsible for discussing and investigating the operational and technical problems of internet.

The interNiC is responsible for providing registration service to internet community.

3.5 Anatomy of Internet

The Key Components of The Internet:

TCP

TCP, or transmission-control protocol was first introduced in 1974. It was outlined in a paper written by Bob Kahn and Vint Cerf. TCP messages were messages that were encapsulated, and then de-capsulated, kind of like how a letter is placed in an envelope. It focused on the reliability of networks to make sure that the messages and information being transferred would arrive safely.

In 1978, TCP officially became called TCP/IP. IP, an acronym for Internet Protocol was developed by Vint Cerf, Jon Postel, and Danny Cohen. The idea behind the TCP/IP was that the TCP would only be responsible for breaking up messages into datagrams, the devices that messages were encapsulated in, then re-assembling the messages at the other end, as well as detecting errors. Meanwhile, the IP would be responsible for routing individual datagrams.

In 1983, the TCP/IP protocol was used in the ARPANET In addition, this protocol is still widely used today!

Modem

The modem connects your computer to an Internet service provider. It is this service provider that connects you to various other computer and other networks in the Internet!

IP Address

Every computer that is part of the Internet is given a unique IP Address. The IP Address is used to identify computers.

Packets

Information being transmitted through the Internet is broken up into small packets.

Routers

Routers are the devices that transfer packets from one computer to another. They ensure that the packets reach their destination quickly and efficiently.

Domain Names

Domain names refer to specific computers or organizations on the Internet. They specify the location of websites, etc.

World Wide Web

The World Wide Web is by far the most exciting and diverse part of the Internet. These are the web pages you can access to do research, to play games, to download music, etc. The World Wide Web was born. In 1990, Tim Bemers-Lee created HyperText Markup Language, or HTML. Using ideas like HTML, URL (Uniform Resource Locater), and HTTP (HyperText Transfer Protocol), the Internet was able to expand into the World Wide Web. Web sites could be built and hosted on servers. Links connected thousands of web sites, making them available to the public.

WWW is a set of programs standards and protocols that allow the multimedia and hypertext files to create, display and linked on the internet. From the late 1960 to early 1990. the internet was a communications and research tool used almost exclusively for academic and military purpose This changed radically with the introduction of the World Wide WEB The WEB brought in the change from textual information to intensive use of graphics in internet

HTML:

HTML is the language used by the web pages in the World Wide Web.

Java:

Java is a language that is very similar to C and C++. It can be used to create programs that can be used in the World Wide Web!

E-mail:

E-mail, which stands for electronic mail, is a fast, efficient way by which you can send letters and messages to people all around the world!

3.6 Net Etiquette

Net etiquette:

The Internet, like our everyday lives, has a code of how we should behave. This network etiquette is called Netiquette.

Web Client And Web Servers

The World Wide Web is based upon clients and servers. The WWW client is called a Web browser and the WWW server is called Web Server.

The Web Clients are usually PC's workstations . The clients request different types of services from the server and navigates through the WWW and displays web pages.

The Web Serer is usually a powerful PC and can provide services like printing files or sharing data or sending information to other computers.

Web Sites And Web Pages

A location on a net server is called web site. Each web site has a unique address called URL (Uniform Resource Locator). The internet structure of the WWW is built on a set of rules called Hypertext Transfer Protocol (HTTP) and a page description language called Hypertext Markup Language(HTML)

Web page A document that resides on the website is called web page. It uses the HTTP protocol. A web page is a single unit of information via WWW, which is created using HTML (Hypertext Markup Language) It consists of standardise code or tags that are used to define the structure of information on a web page. These codes enable web pages to have many features including bold text italic text heading paragraphs breaks numbered or bulleted lists.

Web Site A location on the net server is called Web site

Home Page: It is the top level web page of a web site. When a web site is opened its home page is displayed.

Web Portal: It is a web site which hosts other web sites. In other world a web portal has hyperlinks to many other web sites. By clicking upon these links the corresponding web sites can be opened. www.yahoo.com, www.indiatimes.com and www.khoj.com are few of the web portals

3.7 Basic Internet addressing mechanism

Web sites can be addressed by any of the following two addressing methods

Domain Name System(DNS) A domain name is a way to identify and locate computers connected to the internet. A domain name must be unique, no two organizations on the internet can have the same domain name. This is characters based addressing system that addresses the web sites through their URL's in the following format

Type://address/path

Wherein the type specifies the type of server, address is the address of the server and the path tells the location of file on the server. Eg http://www.msn.com/xyz.

3.8 Internet Protocols

Internet Protocols: Protocols are rules and regulations used for Internet services on the Internet. Popular internet protocols are FTP, Gopher, http, mail, news.

Internet Protocols

Internet Server	Protocols	Information it provides
ftp	File Transfer Protocol	Text and binary files that are organized in a hierarchical structure
Gopher	Transfer Control Protocol / Internet Protocol	Text and binary files organized in a menu structure
http	Hyperttext Transfer Protocol	Hypertext / hypermedia files
mail	Post Office Protocol (POP) and Simple mail Transfer Protocol (SMTP)	Messages send via Electronic Mail
news	Network New Transfer Protocol	Newsgroups that are organized in a hierarchical structure

Most common Domains

Domain names can refer to specific computers, organizations, companies, or other entities. There are four levels of domain names:

1. Top-Level Domains:
   The top-level domain name is the .org part of "www.abcdefg.org." The top-level domain names refer to the type of organization that is acting as the server for the website:
   .com _____ Websites for commercial purposes
   .edu _____ Educational institutes
   .net _____ internet-related websites
   .org _____ Non-profit organizations
   .gov _____ U.S. government websites
   .mil _____ U.S. military websites

2. Second-Level Domains:
   The second-level domain name would be the abcdefg.org part of "www.abcdefg.org." Second-level domains can be registered by users or other organizations. For example, Yahoo registered the domain name yahoo.com, while abc registered the domain name, abcdefg.org.

   Second-level domain names can have up to 61 characters. They must be unique to the organization that registered it. Two organizations cannot have the same second-level domain name.

3. Third-Level Domains:

   The third-level domain name would be the whole "www.abcdegf.org." It usually specifies the company hosting the domain. Usually, it is "www."

   In addition to the top level domain names listed above, every country in the world has its own unique top-level domain name. For example:

   .at _____ Austria
   .au _____ Australia
   .bm _____ Bermuda
   .br _____ Brazil
   .ca _____ Canada
   .ch _____ Chile
   .uk _____ United Kingdom
   .us _____ United States

IP Addresses

The Internet is made up of hundreds of connected computers and machines. To get all of these machines straight, there is the Internet Protocol (IP) Address.

Every computer has a unique IP Address. This is a 32-bit number that identifies the sender and receiver of each packet of information. All data in the Internet is broken up into small, uniform bits, called packets before it is sent from one computer to another. We will touch upon packets in the next section. An IP Address is made out of four numbers between 0 and 255, separated by periods: 215.43.125.8

IP Addresses are used whenever you use e-mail, whenever you connect to the World Wide Web, whenever you communicate to someone else on a different computer.

Some computers have permanent IP Addresses, while others do not. For example, computers that are permanently connected to the Internet, like servers (i.e. Yahoo, Geocities, etc.) usually have permanent IP Addresses- that is, they are given one, and only one IP Address. On the other hand, some computers (usually home computers connecting to the Internet via a modem or server) can have different IP Addresses for every time that they log in. You might get one IP Address when you connect to the Internet one day, and then a different address the next day!

When you want to communicate with another computer- whether through e-mail, chat, or just retrieving data, your computer first looks up the IP Address of the other computer. Then, it puts the other computer's IP Address on the header of the packet, and then the packet is sent to a router. After the packet is sent to the router, the router will then use the specified IP Address and ship the packet to the designated computer.

3.9 World Wide Web

One of the most important changes that internet has brought to the world of business is E-commerce. E-commerce refers to the use of computer networks for buying and selling goods, information and services. It integrates Email World Wide Web Electronic Funds transfers (EFI) Electronic Data Interchange EDI and similar techniques into a comprehensive electronic system trade. E-commerce combines information technology telecommunication technology and business process to make it feasible to do business in way s that could not be even through of earlier. It opens up new avenues of trading and improves efficiency and effectiveness of conventional business processes markets and services many companies are realising that E-commerce can help in reducing cost reducing cycle time in business process improving product quality and maintaining higher levels of customer service. Therefore E-commerce is becoming an important means of dealing in goods and services. The advantage of E-commerce makes the phenomenal growth in E-commerce inevitable.

The impact of E-commerce on business activities are

- Marketing sales and sales promotion
- Pre sales supply chain management
- Insurance
- Finance
- Commercial Transaction ordering delivery payment
- Financial accounting
- Business administration
- Product service and maintenance
- Co-operative product development
- Procurement of goods

3.10 Usage of Internet to society

It is basically the ease in use of the WWW that has contributed to the internet exponential growth rate. The reasons for the internet dramatic impact on the scope of business networking application are as follows.

- Powerful and Inexpensive Technologies : The advent of increasingly powerful and inexpensive technologies has permitted the use of IT by more and more people and provided the base for scalable system and application.

- Easy availability : The growing availability of telecommunication due to decline costs and increasing bandwidth has made internet ecommerce wide spread.

- Universality : The potential benefits could be reaped by business and consumers using internet which can be connected anywhere

- Performance : Internet can handle transmission of animated video audio of any capacity. It provides its consumers a high function window to the world. Above all it enables its users to handle everyday networking tasks such as electronic mail

- Reach : Internet can be accessed from anywhere large cities small towns throughout modem and developing world.

- flexible : Internet technology is highly robust reliable as it spreads digital information with its incredible flexible and fidelity. The extend of usage is not restricted to business but to science defence education etc.

- Momentum : Individuals as business get connected to internet at exceptional rate.

E-mail

Frequent Internet users often consider regular mail as “snail mail.” Why? Simple- it’s so much slower than e-mail, or electronic mail! With regular mail, it can take days for someone to receive your letter. However, with e-mail, the message gets sent instantly- well, almost instantly! Your letter will reach its destination within a very short amount of time! Best of all, e-mail doesn’t cost the 34 cents that regular mail costs!

E-mail is a great way for Internet users to communicate with each other. It lets people send messages to one another. Since communication is the essence of the Internet, e-mail is very important!

e-mail is just like a regular letter, except it’s electronic. It is an electronic message that can be sent from one computer to another. There are two parts to an e-mail message.

1. Header: The header of an e-mail message contains the name and the e-mail address of the recipient of the message, as well as the message’s subject. If you are sending the message to more than one person, the header will contain the names and addresses of all the people you are sending it to.

2. Body : The body of an e-mail message is the message itself.

A typical e-mail address might look like

abc@yahoo.com

On the left side of the axon sign (@) is the user name. It could be anything, from a first name to some cool, crazy nickname. The user name acts like a mailbox (more on this later). On the right side of the axon sign is the domain name. The domain name in an e-mail address is the name of the e-mail server the user is using. For example, if you are using an e-mail service provided by America Online, then the domain name would be aol.com. If you were using a server provided by Hotmail, then the domain name would be hotmail.com. The .com part of the domain name is called the top-level domain. Different top-level domains represent different things. For example, .com represents a server for commercial purposes, while .org is for non-profit organizations and .edu is for educational organizations, colleges, and universities.

This Domain Name System is used to cover up for the 1ntemet Protocol Address. Each domain name can he written as a series of 32-bit numbers, or as an IP Address. Howeer, it’s kind of hard to remember all these numbers. It’d be much easier to remember things like aol.coin or hotmail.com. In addition, sometimes, a server can change IP Addresses, but it usually does not change domain names.

Now, to put all of this together. Let's pretend that you are writing a letter to your friend. You type up the message, type in her e-mail address, and click the little "send" button. The e-mail gets sent from one computer to another via computers known as mail servers. The message will travel from one mail server to another, until it finally reaches its destination mail server. There, it will be stored in the recipient's "mailbox," which is determined by his or her user name, until he or she picks it up.

Client-Side Programming - Client-Side Applications/Scripting

Client-Side Programming describes any code/software/scripts that are designed to be executed by the web browser. Client-side scripting provides a broad range of functions.

Typical functions include:

- Dynamic navigational aids
- Make graphics dynamic
- Verify user's form data

Client-Side Programming types

Client-Side Scripting describes programming that is added into a web page to interact with page and browser objects. JavaScript is the most common scripting language; VBScript is also used. While client-side scripting is limited, it does provide basic functions that practically all of the 'better' web sites have integrated into their pages.

Typical functions include:

- Image/Button rollovers
- Verify user's form data
- Detect users browser type and select matching content
- Java applets

Java Applets are small compiled Java applications that can be run within a web page. Java applets allow the power of a true programming language to be executed on the client-side (note: For security reasons some Java features are not available for applets). Applet's usefulness is extended by their ability to interact with JavaScript.

Typical functions include:

Dynamic navigational drop-down and pop-up menus

Text manipulation such as scrolling text boxes

Advanced graphics animation

Plug-in scripting

Plug-in scripting is a general term to describe any programming that is contained in a embedded page object. The best example of object scripting is 'Lingo', a language to extend the abilities of Macromedia's Shockwave animations. Many of these proprietary plug-in specific languages exist, all with varying capabilities. Some of these languages, including Lingo, can interface with JavaScript.

Typical functions for multi-media plug-ins include:

- Enable buttons to change pages in multi-media presentations
- Move, rotate, and zoom objects based on users requests

Server Side Programming - Server-Side Scripting, Web Applications

Server-Side Programming describes any code/software/scripts that are executed by the web server. Since these applications reside on the server they can interface with other server-side resources such as e-mail and databases.

Typical use of server-side programming:

- Personalized page content to the user's needs
- Enable the web browser to act as a database interface
- e-Commerce shopping carts

Server-Side Programming Types

Server-side scripts

CGI Scripts, Servlets

Server-Side Scripts are small programs that reside on the web server to interact with the web environment. When browsers execute scripts that link to the code file, the script will do its designed functions and return a dynamically generated page.

Typical use of server-side programming:

- Personalized page content to the user's needs
- Enable the web browser to act as a database interface
- e-Commerce shopping carts

Server-Side Scripting Types

- CGI (Common Gateway Interface)
  Simple scripting mechanisms supported by practically all web servers. Most commonly written in Pen, C/C++, or Python.

- Java Servlets
  Ability to execute Java objects on the server. Newer, less common technology but has dramatic performance advantages over CGI.

Server Pages

Server Pages describes a technology for embedding scripts into web pages that can interact with the web environment. Server pages provide virtually the same dynamic abilities as server-side scripting. However, because they are mostly standard web pages it is usually easier for web designers to alter for non-dynamic content. Server pages typically have a performance advantage over CGI scripts (not Servlets).

Typical use of server-side programming:

- Personalized page content to the user's needs
- Enable the web browser to act as a database interface
- Alter page content based on browser/OS platform

Common Server page Types

- ColdFusion
  Popular scaleable web app. 's can be urchased for most UNIX and WinNT servers

- ASP (Active Server Pages)
  Microsoft's version of a scaleable engine. Built into Microsoft ITS

- JSP (Java Server Pages)

- Newer, very powerful platform. Built into some web servers can be purchased for others.

Today and Future Uses of Internet

Business use internet to provide access to complex databases such as financial databases.

Companies carry out electronic commerce including advertising selling buying distributing products and providing after sales services.

- Business and institutions use internet for voice and video conferencing and other forms of communications that enable people to telecommunicate or work from a distance.

- The use of email over the internet has greatly speeded communication between companies among co-workers and between other individuals

- Media and entertainment companies use internet to broadcast audio and video including live radio and television programs. They also offer online chat groups in which people carry on discussions using written text and online news and weather program.

- Scientists and scholars use the internet to communicate with colleagues to perform research to distribute lecture notes and course materials to students and to publish paper and articles.

- Individuals use internet for communication entertainment finding information buying and selling goods and services

- On line reservations for railways and airlines tickets, Share trading etc

- Blogs: On the Internet, a blog is a personal journal that is frequently updated and intended for general public consumption. Blogs generally represent the personality of the author or reflect the purpose of the Web site that hosts the blog. Topics sometimes include brief philosophical musings, commentary on Internet and other social issues, and links to other sites the author favors. The essential characteristics of the blog are its journal form, typically a new entry each day, and its informal style.

Intranet

Intranet is a system for using the internet utilities on a local network. For example, a company might put scheduling information, employees manuals and even electronic forms on an internal web server, This would allow employees to browse and use this information using a common web browser Intranets may be access outside the building by people in the organization who have usernames and passwords to access the network. The Intranet is just Internet technology used in-house. Intranets use popular and low-cost Internet tools, such as browsers, to give them a cost advantage over other network strategies, and they do this while they improve a network's effectiveness.

Internet/Intranet: What's the Difference?

So what is the difference between the Internet and Intranet? Mainly the location of the information and who has access to it.

- Internet is public, global and wide open to anyone who has an Internet connection.

- Intranets are restricted to people who are connected to the private organization network. Other than that, they work essentially the same way.

Advantages of Intranet Over Internet

A well designed Intranet can offer advantages not found on the Internet. For example, consider the following:

(1) Access Speed

The local Intranet will operate on the high speed (100 Mbps), Local Area Network (LAN) which is much faster than similar requests on the Internet (Ethernet using coaxial or twisted pair cabling is faster than even T- 1 connections to an Internet server). Since the hardware, software, and connectivity are owned and operated within the organization, charges for Internet service and high speed connectivity are relatively small.

(2) Security of Sensitive Data and Integrity of Information Resources

The Intranet is a self-contained, private internal network, and, as such, it can easily be protected from Internet users by a firewall or authentication processes. Access out to the Internet and in from the Internet can be denied or both controlled and monitored.

(3) Control and Protection

Some common concerns are

- limiting user access to objectionable or irrelevant material on the Internet.

- the amount of time it can take to find reliable information.

- the ever present temptation to be lured into net surfing.

An Intranet allows

- control of what users can access

- selection of what is placed on the Intranet
- a focus on information resources to support the curriculum or mission of the organization.
- development of the same skill set as the Internet.
- reduction of the time wading through vast resources to find the useful information.

3.11 Extranet

A buzzword that refers to an intranet that is partially accessible to authorized outsiders. Whereas an intranet resides behind a firewall and is accessible only to people who are members of the same company or organization, an extranet provides various levels of accessibility to outsiders. You can access an extranet only if you have a valid username and password, and your identity determines which parts of the extranet you can view.

Extranets are becoming a very popular means for business partners to exchange information.

Firewall

A system designed to prevent unauthorized access to or from a private network. Firewalls can be implemented in both hardware and software, or a combination of both. Firewalls are frequently used to prevent unauthorized Internet users from accessing private networks connected to the Internet, especially *intranets*. All messages entering or leaving the intranet pass through the firewall, which examines each message and blocks those that do not meet the specified security criteria.

There are several types of firewall techniques:

- Packet filter : Looks at each packet entering or leaving the network and accepts or rejects it based on user-defined rules. Packet filtering is fairly effective and transparent to users, but it is difficult to configure.
- Application gateway: Applies security mechanisms to specific applications, such as FTP and Telnet servers. This is very effective, but can impose a performance degradation.

- Circuit-level gateway : Applies security mechanisms when a TCP or IJDP connection is established. Once the connection has been made, packets can flow between the hosts without further checking.

- Proxy server: Intercepts all messages entering and leaving the network. The proxy server effectively hides the true network addresses.

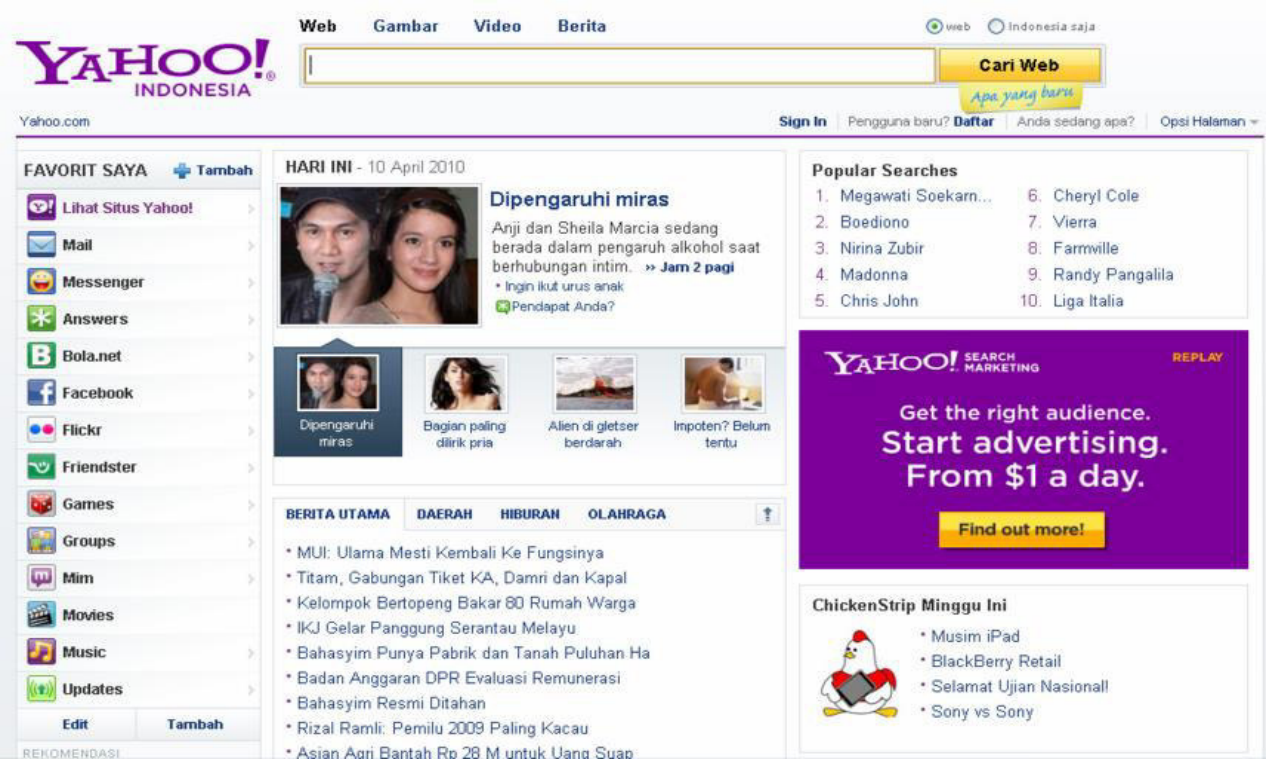
In practice, many firewalls use two or more of these techniques in concert.

A firewall is considered a first line of defense in protecting private information. For greater security, data can be encrypted.

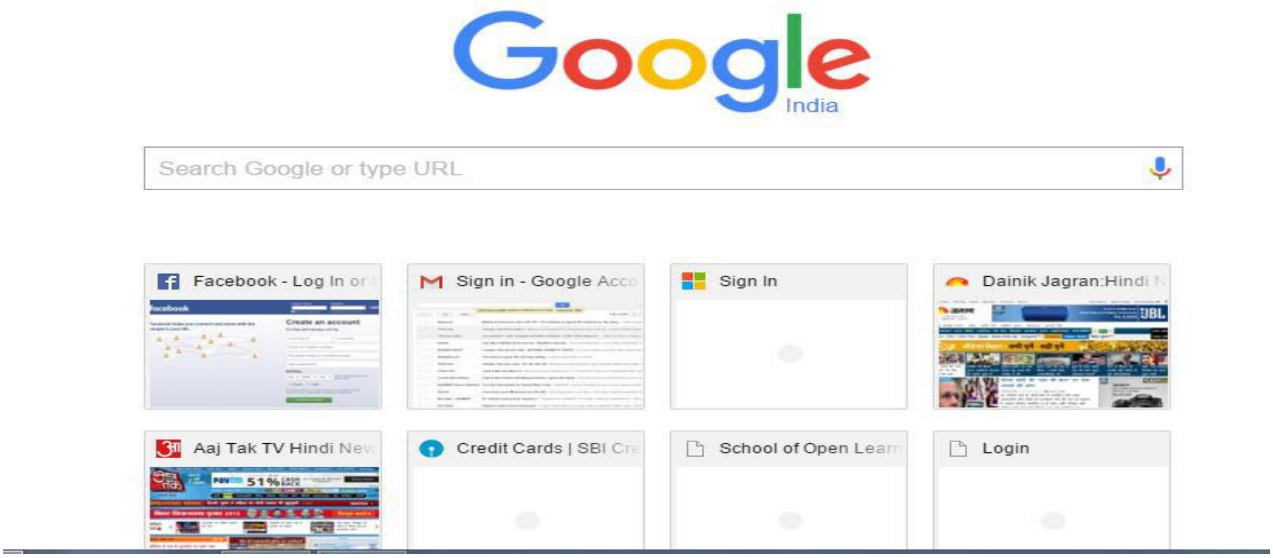
3.12 Search Engine

Search Engines: Used to Search Web Pages, Web site and information on the specific website on the Internet. Following are the best and popular Search Engines in the World namely as 1. Yahoo 2. Google 3. Scour :

1. Yahoo



2. Google



3. Scour



3.13 Summary of the Chapter

The Internet is one of the greatest innovations to make its way into the world today. Almost everybody has heard of the Internet; almost everybody has used the Internet to e-mail, chat, do research, and even play games.

The seed of internet were planted in 1968 when US Department of defence sponsored a project name ARPANET (Advance Research Projects NETwork) . The goal of this project was to connect computers of different universities and US defence. Soon the engineers, scientists, students and researchers began exchanging data and messages on it. In mid 80's another federal agency the National Science foundation created a new high capacity network called NSFnet which was more capable than ARPANET.In internet most computers are not connected directly to the internet. They are connected to smaller networks, which in turn are connected through a device that connects dissimilar networks called the gateways to the internet central interconnecting structure known as the backbone.

The Internet Architecture Board (TAB) is responsible for approving standards and allocating resources.

The Internet Engineering Task Force (IETF) is responsible for discussing and investigating the operational and technical problems of internet.

IP Address

Every computer that is part of the Internet is given a unique IP Address. The IP address is used to identify computers.

Packets : Information being transmitted through the Internet is broken up into small packets.

Routers : Routers are the devices that transfer packets from one computer to another. They ensure that the packets reach their destination quickly and efficiently.

Domain Names : Domain names refer to specific computers or organizations on the Internet. They specify the location of websites, etc.

World Wide Web : The World Wide Web is by far the most exciting and diverse part of the Internet. These are the web pages you can access to do research, to play games, to download music, etc. The World Wide Web was born. In 1990, Tim Bemers-Lee created HyperText Markup Language, or HTML. Using ideas like HTML, URL (Uniform Resource Locater), and HTTP (HyperText Transfer Protocol), the Internet was able to expand into the World Wide Web. Web sites could be built and hosted on servers. Links connected thousands of web sites, making them available to the public.

HTML : HTML is the language used by the web pages in the World Wide Web.

Java : Java is a language that is very similar to C and C++. It can be used to create programs that can be used in the World Wide Web!

E-mail : E-mail, which stands for electronic mail, is a fast, efficient way by which you can send letters and messages to people all around the world!

Net etiquette : The Internet, like our everyday lives, has a code of how we should behave. This network etiquette is called Netiquette.

Web Client And Web Servers : The World Wide Web is based upon clients and servers. The WWW client is called a Web browser and the WWW server is called Web Server.

Web Site : A location on the net server is called Web site

Home Page: It is the top level web page of a web site. When a web site is opened its home page is displayed.

Web Portal: It is a web site which hosts other web sites. In other world a web portal has hyperlinks to many other web sites.

Domain Name System(DNS) : A domain name is a way to identify and locate computers connected to the internet.

Easy availability : The growing availability of telecommunication due to decline costs and increasing bandwidth has made internet ecommerce wide spread.

- Universality : The potential benefits could be reaped by business and consumers using internet which can be connected anywhere
- Performance : Internet can handle transmission of animated video audio of any capacity. It provides its consumers a high function window to the world. Above all it enables its users to handle everyday networking tasks such as electronic mail
- Reach : Internet can be accessed from anywhere large cities small towns throughout modem and developing world.
- flexible : Internet technology is highly robust reliable as it spreads digital information with its incredible flexible and fidelity. The extend of usage is not restricted to business but to science defence education etc.
- Momentum : Individuals as business get connected to internet at exceptional rate.

Packet filter : Looks at each packet entering or leaving the network and accepts or rejects it based on user-defined rules. Packet filtering is fairly effective and transparent to users, but it is difficult to configure.

- Application gateway: Applies security mechanisms to specific applications, such as FTP and Telnet servers. This is very effective, but can impose a performance degradation.
- Circuit-level gateway : Applies security mechanisms when a TCP or IJDP connection is established. Once the connection has been made, packets can flow between the hosts without further checking.
- Proxy server: Intercepts all messages entering and leaving the network. The proxy server effectively hides the true network addresses.

Search Engines: Used to Search Web Pages and Web site on the Internet. Following are the Best Search Engines in the World, Yahoo, Google

Check your progress

1.11 Exercise 1: Fill in the blanks

---

1. The Internet is one of the …….to make its way into the world today. Almost everybody has heard of the Internet; almost everybody has used the Internet to e-mail, chat, do research, and even play games.
2. The seed of internet were planted in 1968 when US Department of defence sponsored a project name…….
3. The goal of this project was to ……and US defense.
4. Engineers, scientists, students and researchers began exchanging data and messages on it. In mid 80's another federal agency the National Science foundation created a new high capacity network called …….which was more capable than ARPANET.
5. In internet most computers are ……to the internet.
6. They are connected to smaller networks, which in turn are connected through a device that connects ……to the internet central interconnecting structure known as the backbone.

Ans 1. greatest innovations , 2. ARPANET (Advance Research Projects NETwork) ,
3. connect computers of different universities , 4. NSFnet , 5. not connected directly ,
6. dissimilar networks called the gateways

Exercise 2: True and False
State the following statements. Please mark (T) on the correct statement and (F) on false Statement.

1. HTML is the language used by the web pages in the World Wide Web.
2. Java is a language that is very similar to C and C++. It can be used to create programs that can be used in the World Wide Web.
3. E-mail, which stands for electronic mail, is a fast, efficient way by which you can send letters and messages to people all around the world.
4. Net etiquette : The Internet, like our everyday lives, has a code of how we should behave. This network etiquette is called Netiquette.
5. Web Client And Web Servers : The World Wide Web is based upon clients and servers. The WWW client is called a Web browser and the WWW server is called Web Server.
6. Web Site : A location on the net server is called Web site

Ans 1 (T), 2(T), 3(T), 4(F), 5(T), 6(T)

Exercise 3: Mix and Match
Match statement A with Statement B

S.No	Statement (A)	Statement (B)
1.	is responsible for approving standards and allocating resources.	The Internet Engineering Task Force (IETF)
2.	is responsible for discussing and investigating the operational and technical problems of internet.	The Internet Architecture Board (TAB)
3.	Every computer that is part of the Internet is given a unique IP Address. The IP address is used to identify computers.	Packets :
4.	Information being transmitted through the Internet is broken up into small packets.	IP Address
5.	are the devices that transfer packets from one computer to another. They ensure that the packets reach their destination quickly and efficiently.	Domain names
6.	refer to specific computers or organizations on the Internet. They specify the location of websites, etc.	Routers

Ans. 1. (2), 2. (1), 3. (4), 4. (3), 5. (6), 6(5)

Exercise 4: Very Short Questions

1. What is Internet? Give a brief history of Internet

---

2. Who is the owner of Internet?

---

3. What is Internet Architecture Board(IAB)? Explain.

---

4. What is Internet Service Provider (ISP)?

---

5. Explain Internet Protocol?

---

6. What is WWW? Explain its Features and Limitations.

Exercise 5 : Descriptive Questions

1. Explain any five Internet Protocols

---

2. Difference between Internet and Intranet?

---

3. Explain the Addressing Mechanism?

---

4. What is Search Engine? Explain any three popular search Engines ?

---

5. Explain Binary, Decimal, BCD & ASCII Number system?

Questions

1.Define the following terms
   i. Client and Server
   ii. Host and Terminal
   iii. TCP/IP
   iv World Wide Web
   v. Email
   vi. Web page and Web portal
2.Write short notes on the IP Address
3. What are Blogs?

4. How is the Internet useful?

5.What is Server side programming?

6.Write short notes on the client side programming

7.What is Intranet? What are the advantages of Intranet

Chapter – 4: 1. Word Processing

---

1. INTRODUCTION

4.1 Objectives
4.2 Introduction to Word Processing
4.3 Word Processing Concepts
4.4 Use of Templates
4.5 Working with Word Documents
    4.5.1 Opening / creating new document
    4.5.2 Saving a file
    4.5.3 Printing of text
    4.5.4 Emailing text
    4.5.5 Closing
    4.5.6 Font selection
4.6 Bullets and Numbering
4.7 Text Formatting
4.8 Paragraph and Page Formatting
4.9 Finding text and Find and Replace text
4.10 Customize quick access tool bar
4.11 Insert menu
    4.11.1 Page Break
    4.11.2 Tables
    4.11.3 Pictures and Shapes
    4.11.4 Charts
    4.11.5 Insert Hyper Links
    4.11.6 Header and footer
    4.11.7 Symbols
4.12 Page formatting Page Layout, Themes, Page Setup, Page Background, Paragraph, Arrange
4.13 Summary of the chapter
4.14 Exercise

4.1 Objectives

After studying this chapter, students are able to:

- Understand the use of templates.
- Understand the use of bullets and numbering
- Explain the Tabs.

- Understand the Basics of Paragraph formatting
- Understand and awareness Page Formatting
- Features of Header and Footer

4.2 Introduction to Word Processing

The concept of word processing was introduced in 1972. The change in title from "typist" to "word processor" has improved morale and encouraged Word Processors to use computers. Word processors used this software to create, edit, and print, running text in a form of documents which can be stored into computer for a long time and there is no need to retype the same information again and again as it was on typewriter. Information can be edited any time and any number of times.

4.3 Word Processing concepts

For all computer applications, word processing is the most common. To perform simple typing or word processing, you need a computer and a special software/ program called a Word Processor. A word processor enables you to create a document, store it electronically on a Hard Disk or any other storage media of a computer, display it on a screen, modify it by entering commands and characters from the keyboard, and print it on a printer.

The great advantage of word processing over using a typewriter is that you can make changes (editing) without retyping the entire document. If you make a typing mistake, you simply use the arrow keys to replace the cursor and correct your mistake. If you want to delete a paragraph, you simply remove it, without leaving a trace. It is equally easy to insert a word, sentence, or paragraph in the middle of a document. Word processors also make it easy to move sections of text from one place to another within a document, or between documents. When you have made all the changes you want, you can send the file to a printer to get a hardcopy.

Some commonly used word processors are:

— Word Perfect
— Perfect Writer
— Word Star
— Lotus Notes

4.4 Use of Templates

Templates have some features in all documents that are being sent. For example, the letter pads head or the end of the letters. They may be pre-defined and stored in Boiler plate text called as Templates. With this example you can easily understand the uses of Templates.

Example1: Letter head of School of Open Learning

School of Open Learning
(Campus of Open Learning)
5, Cavalry Lanes
University of Delhi, Delhi-7

No…….. Dated……..

Or

Example 2: Letter head of National Institute of Open Schooling(NIOS)

National Institute of Open Schooling
Regional Centre, Delhi

Dated……..

How to create Templates using following steps:

You can start with a blank document and save it as a template, or you can create a template that is based on an existing document or template.

Start with a blank template

1. Click the **Microsoft Office Button** , and then click **New**.
2. Click **Blank document**, and then click **Create**.
3. Make the changes that you want to the margin settings, page size and orientation, styles, and other formats.

   You can also add instructional text, content controls such as a date picker, and graphics that you want to appear in all new documents that you base on the template.

4. Click the **Microsoft Office Button** , and then click **Save As**.
5. In the **Save As** dialog box, do one of the following:

- On a computer that is running Windows Vista, under **Favourite Links**, click **Templates**.
- On a computer that is running Windows XP, under **Save in**, click **Trusted Templates**.

6. Give the new template a file name, select **Word Template** in the **Save as type** list, and then click **Save**.

   NOTE You can also save the template as a **Word Macro-Enabled Template** (.dotm file) or a **Word 97-2003 Template** (.dot file).

7. Close the template.

Create a template based on an existing document

1. Click the **Microsoft Office Button** , and then click **Open**.
2. Open the document that you want.
3. Make the changes that you want to appear in all new documents that you base on the template.

4. Click the **Microsoft Office Button** , and then click **Save As**.
5. In the **Save As** dialog box, do one of the following:

- On a computer that is running Windows Vista, under **Favourite Links**, click **Templates**.
- On a computer that is running Windows XP, under **Save in**, click **Trusted Templates**.

6. Give the new template a file name, select **Word Template** in the **Save as type** list, and then click **Save**.

   NOTE You can also save the template as a **Word Macro-Enabled Template** (.dotm file) or a **Word 97-2003 Template** (.dot file).

7. Close the template.

Create a new template based on an existing template

1. Click the **Microsoft Office Button** , and then click **New**.
2. Under **Templates**, click **New from existing**.
3. Click a template that is similar to the one that you want to create, and then click **Create New**.
4. Make the changes you want to the margin settings, page size and orientation, styles, and other formats.

   You can also add instructional text, content controls such as a date picker, and graphics you want to appear in all new documents that you base on the template.

5. Click the **Microsoft Office Button** , and then click **Save As**.
6. In the **Save As** dialog box, do one of the following:

- On a computer that is running Windows Vista, under **Favorite Links**, click **Templates**.
- On a computer that is running Windows XP, under **Save in**, click **Trusted Templates**.

7. Give the new template a file name, click **Word Template** in the **Save as type** box, and then click **Save**.

   NOTE You can also save the template as a **Word Macro-Enabled Template** (.dotm file) or a **Word 97-2003 Template** (.dot file).

8. Close the template.

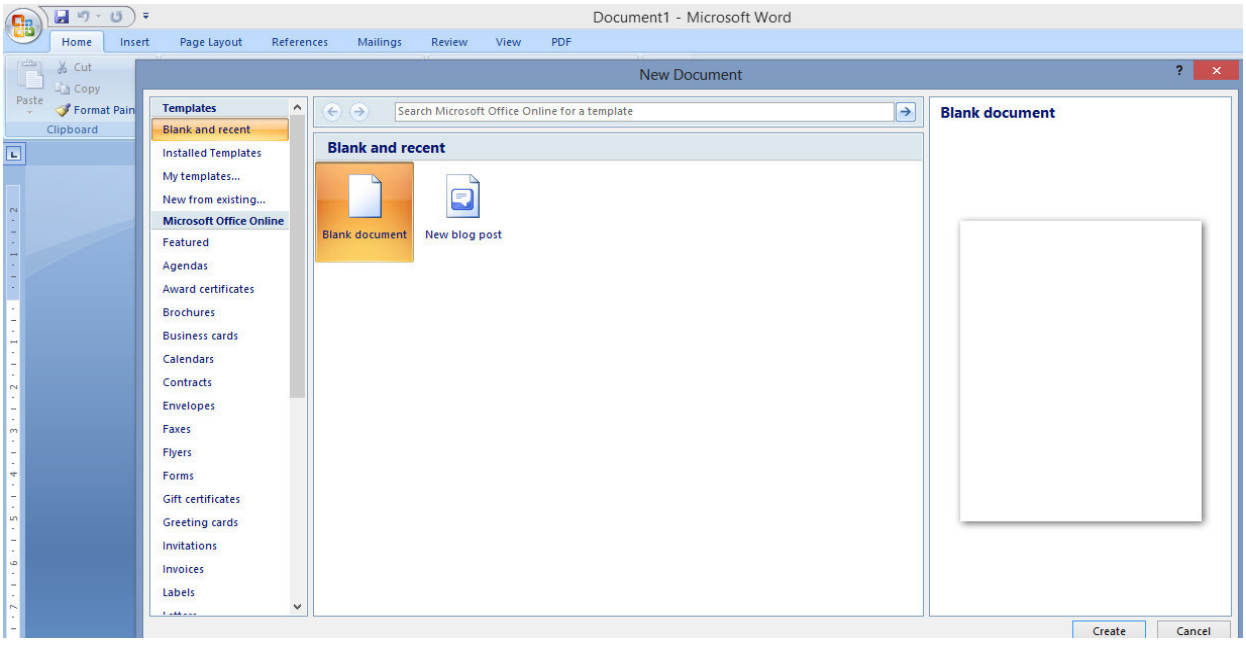


Fig 4.1 Opening of a Template

Advantages:

Word processors vary considerably, but all word processors have following advantages and features

Insert text : Allows you to insert text anywhere in the document.

Delete text : Allows you to erase characters, words, lines, or pages as easily as you can cross them out on paper.

Cut and Paste : Allows you to remove (cut) a section of text from one place in a document and insert (paste) it somewhere else.

Copy : Allows you to duplicate a section of text.

Margins : page size and margins: Allows you to define various page sizes and margins, and the word processor will automatically readjust the text so that it fits.

Search and replace : Allows you to direct the word processor to search for a particular word or phrase. You can also direct the word processor to replace one group of characters with another everywhere that the first group appears.

Word Wrap : The word processor automatically moves to the next line when you have filled one line with text, and it will readjust text if you change the margins.

Page Numbers : The Word Processor allows page numbering, with a single command all the pages can be numbered.

Print Preview : Allows view of a document, how the document would be, how much space is given on the top of the document or the bottom of the document. All we can see before taking printout.

Print : Allows you to send a document to a printer to get hardcopy. Word processors that support only these features (and maybe a few others) are called text editor. Most word processors, however, support additional features that enable you to manipulate and format documents in more sophisticated ways. These more advanced word processors are sometimes called full-featured word processors. Full-featured word processors usually support the following features:

File Management : Many word processors contain file management capabilities that allow you to create, delete, move, and search for files.

Footnotes and cross-references : Automates the numbering and placement of footnotes and enables you to easily cross-reference other sections of the document.
Graphics : Allows you to embed illustrations and graphs into a document. Some word processors let you create the illustrations within the word processor; others let you insert an illustration produced by a different program.

Header, Footer, and page numbering : Allows you to specify customized headers and footers that the word processor will put at the top and bottom of every page. The word processor automatically keeps track of page numbers so that the correct number appears on each page.

layout : Allows you to specify different margins within a single document and to specify various methods for indenting paragraphs.

Macro : A macro is a character or word that represents a series of keystrokes. The keystrokes can represent text or commands. The ability to define macros allows you to save yourself a lot of time by replacing common combinations of keystrokes.

Mail Merge : Same text can be sent to more than one person by adding common text with data.

Merges : Allows you to merge text from one file into another file. This is particularly useful for generating many files that have the same format but different data. Generating mailing labels is the classic example of using merges.

Spell checker : A utility that allows you to check the spelling of words. It will highlight any words that it does not recognize.

Tables of contents and indexes : Allows you to automatically create a table of contents and index based on special codes that you insert in the document.

Windows : Allows you to edit two or more documents at the same time. Each document appears in a separate Window. This is particularly valuable when working on a large project that consists of several different files.

Print Preview: A document appears on the display screen exactly as it will look when printed.
The line dividing word processors from desktop publishing systems is constantly shifting. In general, though, desktop publishing applications support finer control over layout, and more support for full-color documents.

4.5 Working with Word Documents

Microsoft word is part and parcel of Microsoft office. Fig 1.1 shows one of the way to open the Microsoft Word i.e. press Start Button Select Programs Select Microsoft Office Microsoft office Word 2007or whatever word your computer has

4.5.1 Opening / creating new document

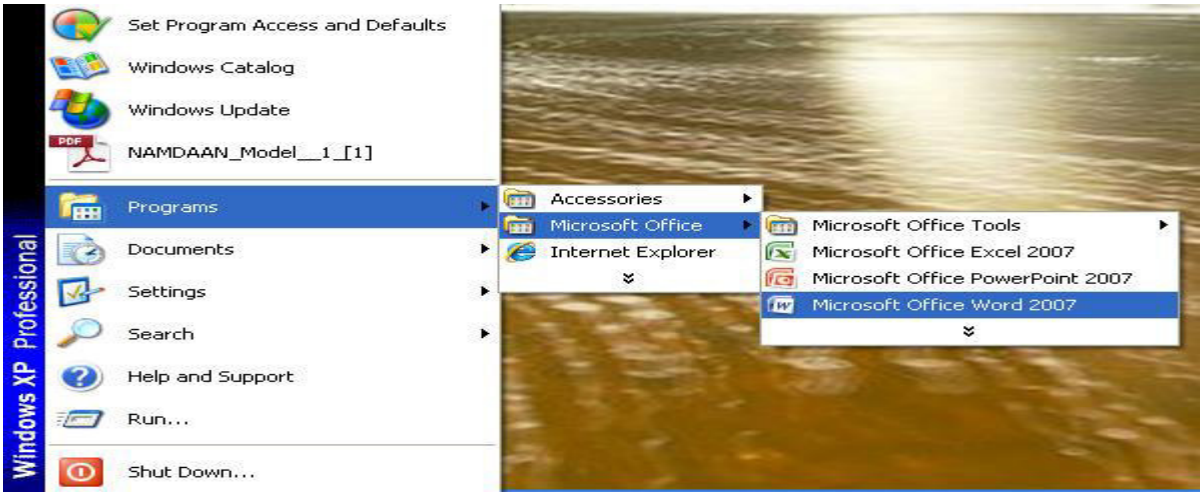


Fig. 4.2 Shows how to open Microsoft word

The word window contains various components they are

1. Home
2. Insert
3. Page Layout
4. References
5. Mailing
6. Review
7. View
8. PDF(if installed)

Some of the default tool bars are shown in the Figure No 1.2

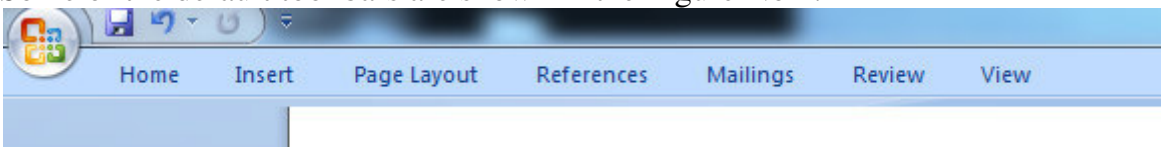


Fig. 4.3 Menus of Microsoft word

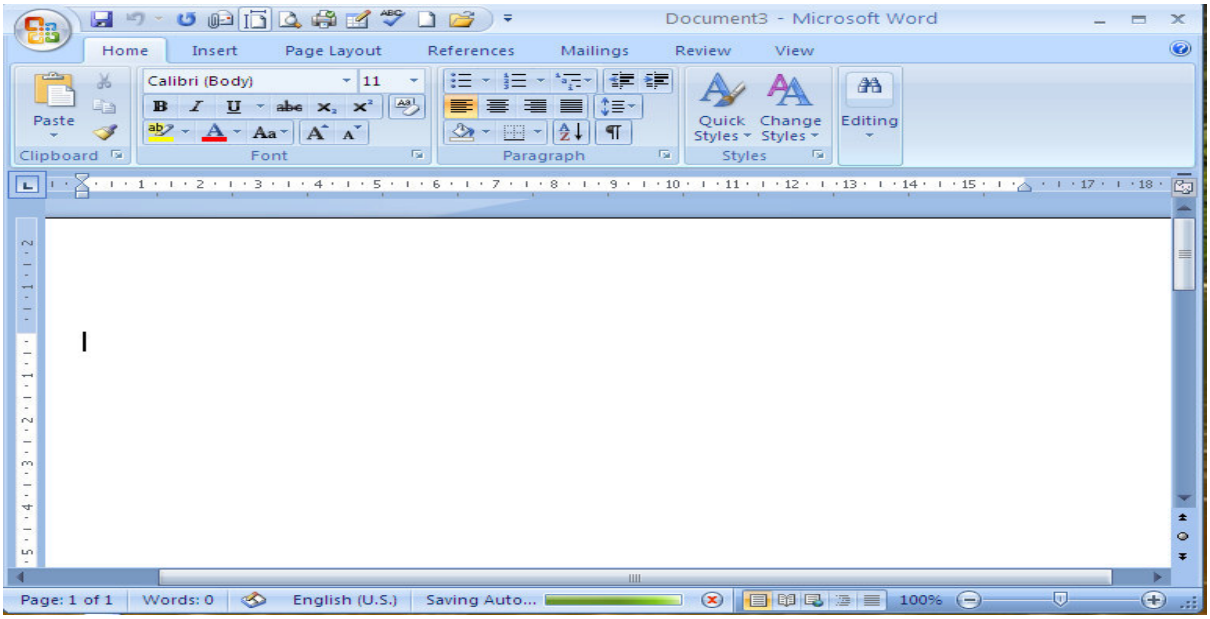


Fig. 4.4. View of Microsoft word

When we open document in MS-Word it looks like the same Working with word document :

Office Button:

Office Button is used like File Menu to open an existing document / creating a new document. Which is part of Menu Bar can be used for Creating a new document or Opening of previously stored document in a given below Figure. No. 1.4

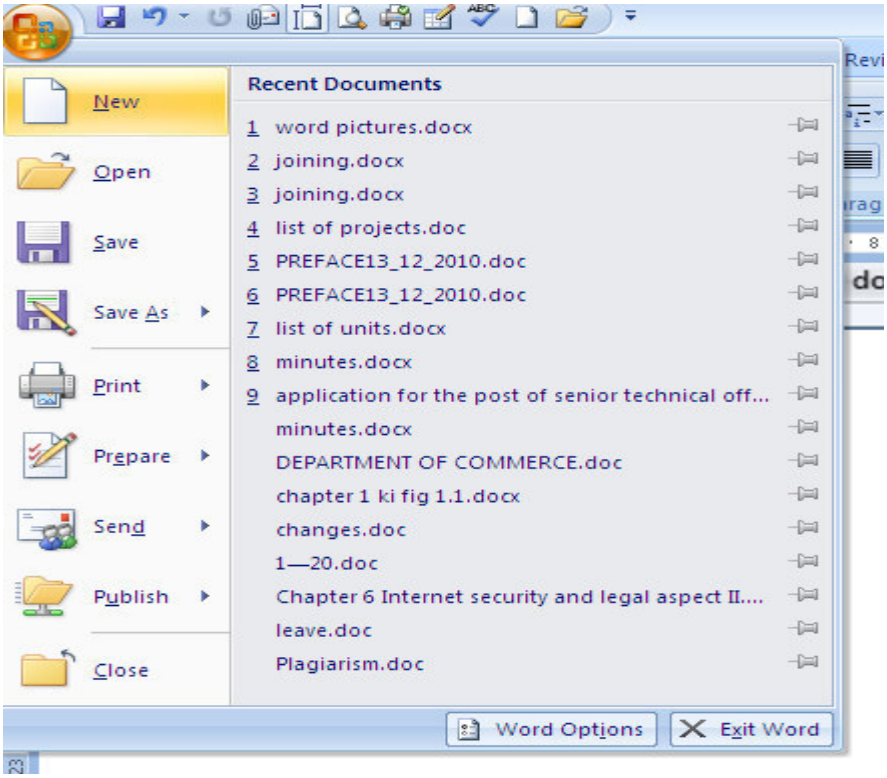


Fig 4.5 Opening of a New Document

New Option is used to open the new blank document and short cut key Ctrl +N (Control key and N both keys to be pressed simultaneously).

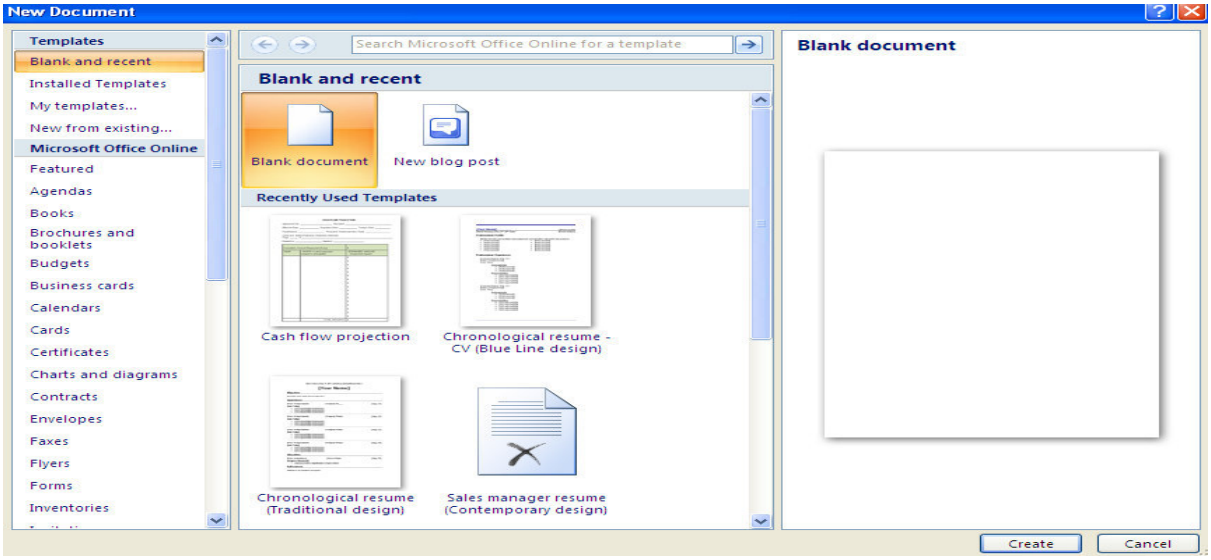


Fig 4.5 Opening of a Template

Open Option is used to open already/previously stored file short cut key is Ctrl + O see fig

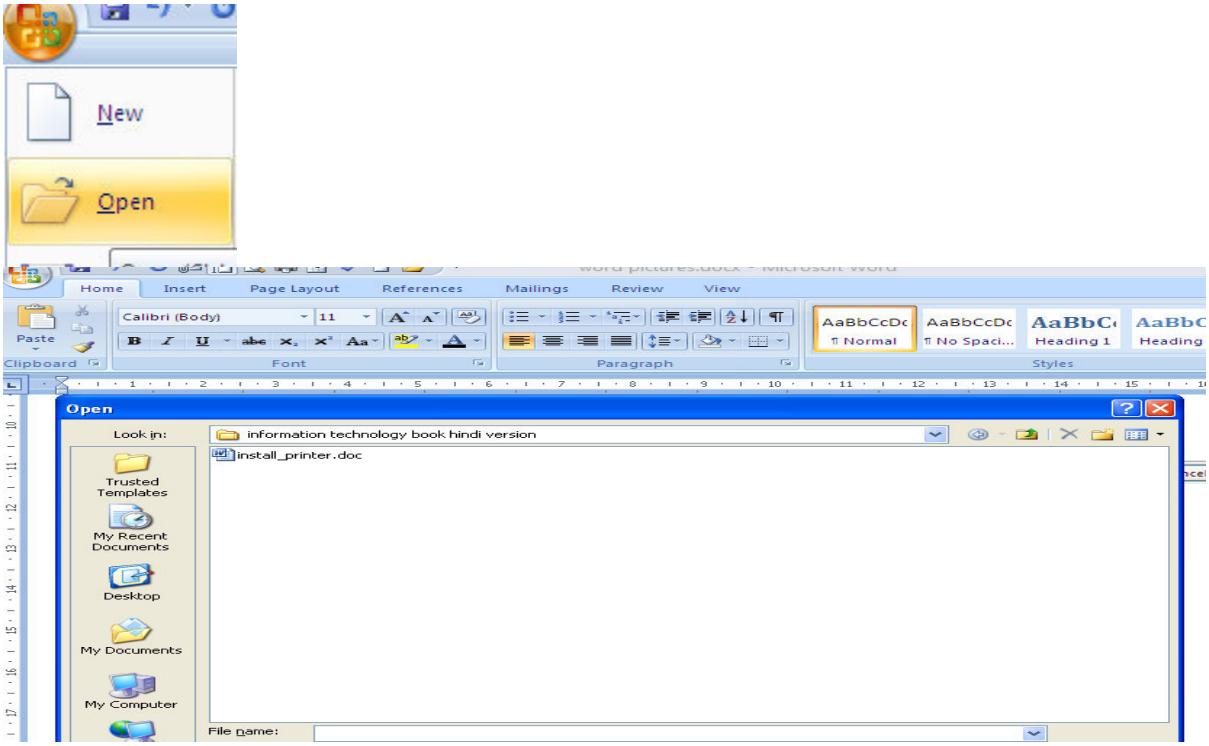


Fig 4.6 Opening of a file from list of files

4.5.2 Saving a file

Save Option is used to store the contents of a document short key for doing this is Ctrl+S. see fig

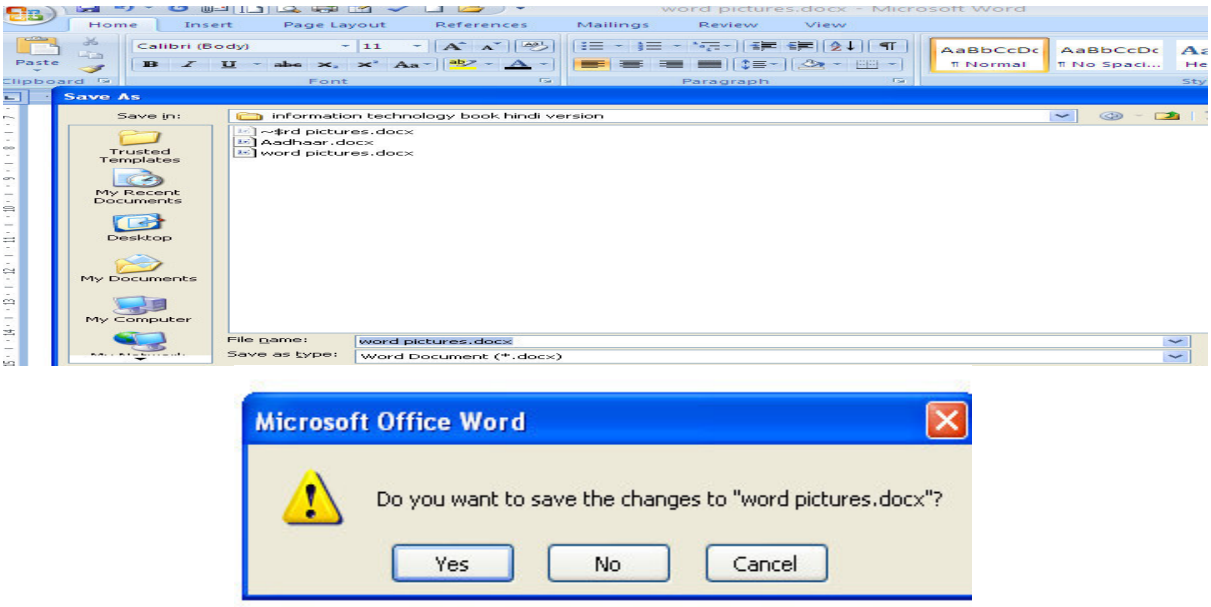


Fig 4.7 Saving of the file

Save As Option is used to save contents with a different file name. This option also used to save multiple copies of the same file with different name. see fig

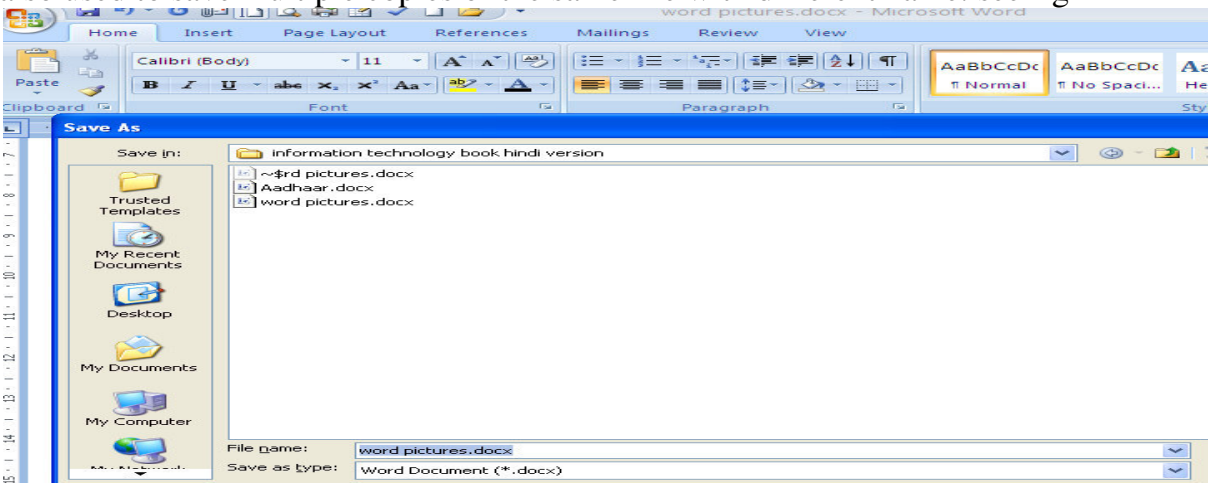


Fig 4.8 saving of a file

Save As Option is used to save contents with a different file name. This option also used to save multiple copies of the same file with different name and different formats shown in the formats. see fig

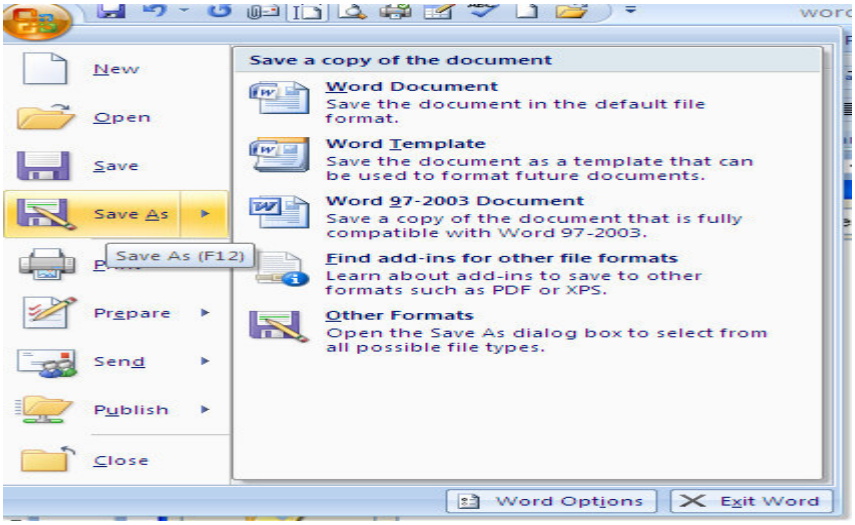


Fig 4.9 save as file

These formats are namely as word document, Word Template, word 97-2003 document, find add-ins for other file formats and other formats

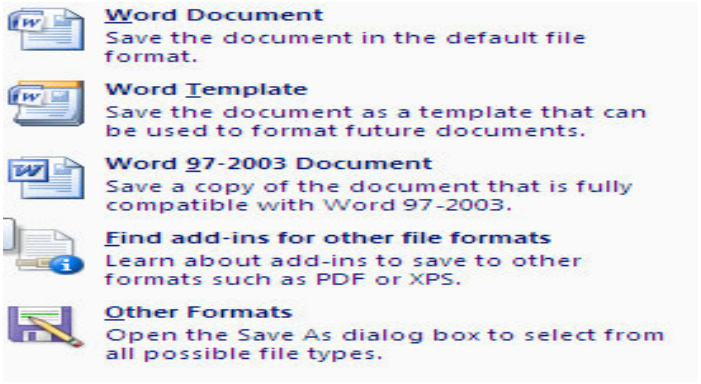


Fig 4.10 Save in different formats / version of the MS word Documents

4.5.3 Printing of Text

Print This option is used to take printout of the document. Print, quick print and print preview. There are many options in this option like how many copies you want to print, On which printer you print, Printing pages from .... to …. etc. the Short key is Ctrl+P.

Print Preview Option comes under print options which is used to provide view before printing of the document.

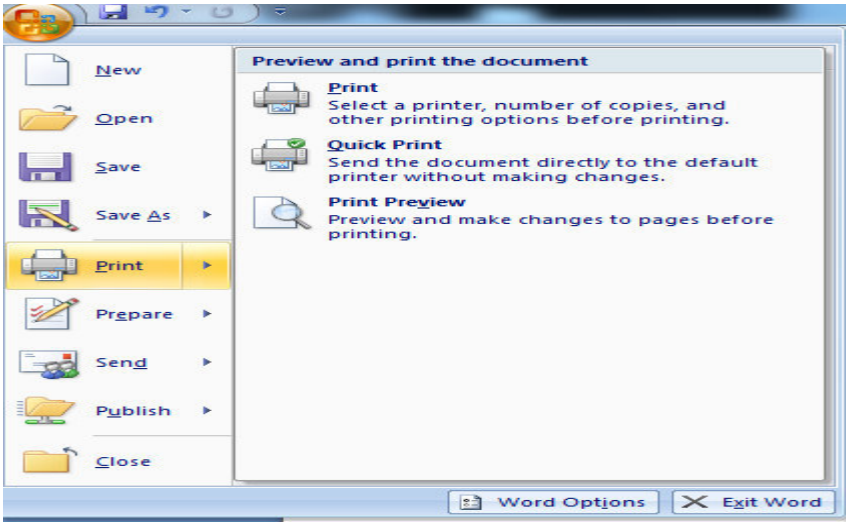


Fig 4.11 Print of the file option

Prepare option is used to view and edit document properties, check the document for hidden metadata, increase the security of the document and check for features not supported by earlier versions of word.

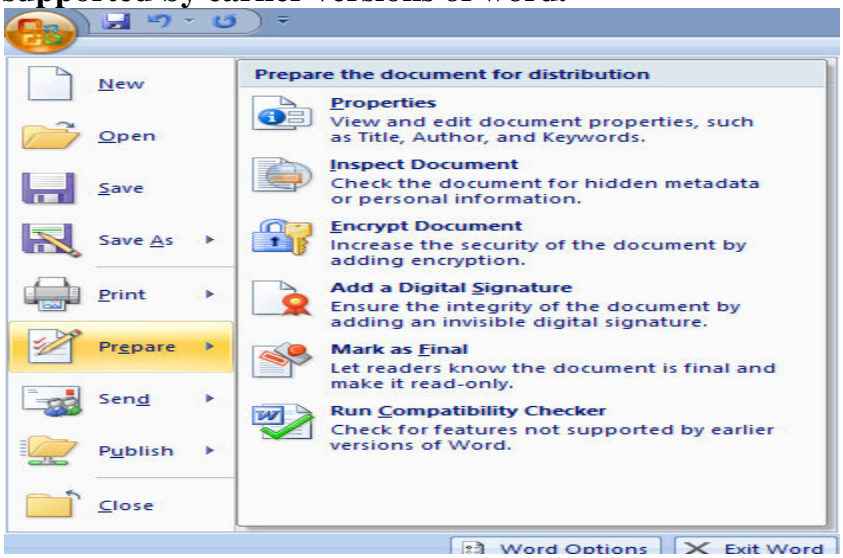


Fig 4.12 Opening of a Prepare

Properties is used to view and document properties such as Authors , title, subjects, keywords, category, status and comments. See fig for properties.

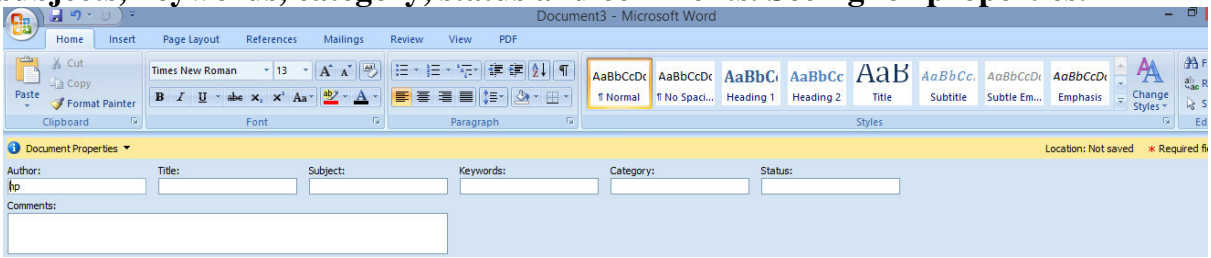


Fig 4.13 Opening of a Properties under prepare command

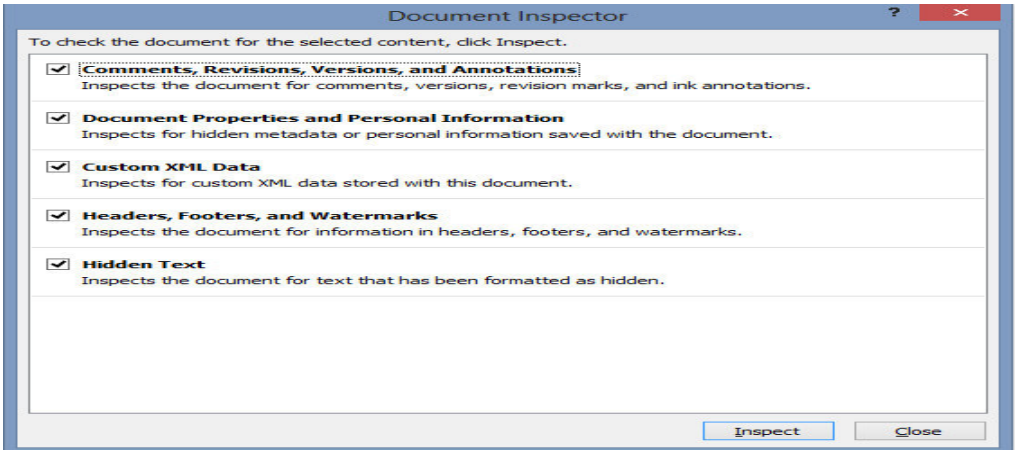
Check the document for hidden meta data and personal information. You can find and remove hidden data and personal information from the document. see fig

You can use the Document Inspector to find and remove hidden data and personal information in Word documents that were created in Office Word 2007 and earlier versions. It is a good idea to use the Document Inspector before you share an electronic copy of your Word document, such as in an e-mail attachment.

1. Open the Word document that you want to inspect for hidden data and personal information.
2. Click the **Microsoft Office Button** , click **Save As**, and then type a name in the **File name** box to save a copy of your original document.

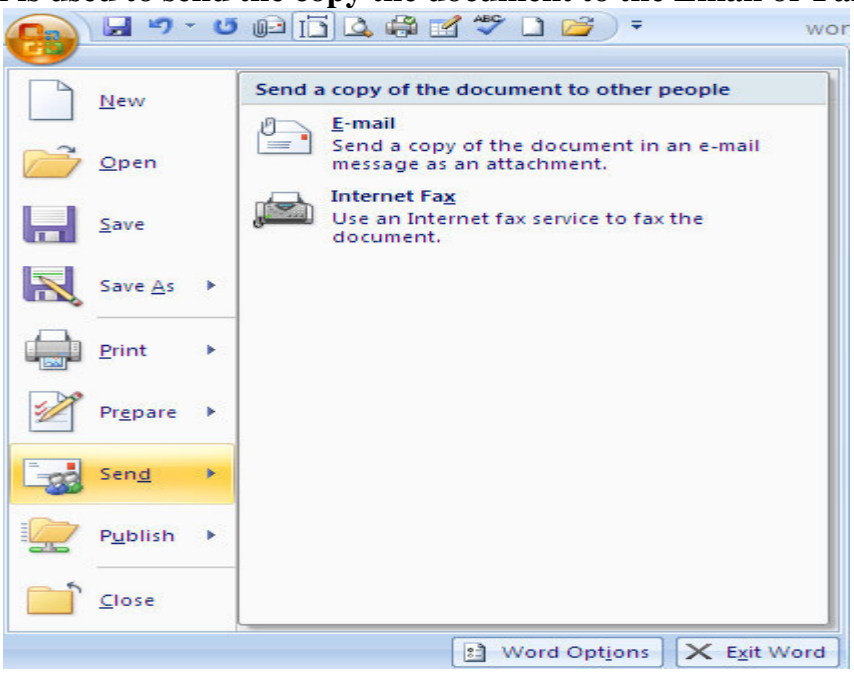
   IMPORTANT It is a good idea to use the Document Inspector on a copy of your original document because it is not always possible to restore the data that the Document Inspector removes.

3. In the copy of your original document, click the **Microsoft Office Button** , point to **Prepare**, and then click **Inspect Document**.
4. In the **Document Inspector** dialog box, select the check boxes to choose the types of hidden content that you want to be inspected. For more information about the individual Inspectors, see What information can the Document Inspector find and remove from Word documents?
5. Click **Inspect**.
6. Review the results of the inspection in the **Document Inspector** dialog box.
7. Click **Remove All** next to the inspection results for the types of hidden content that you want to remove from your document.



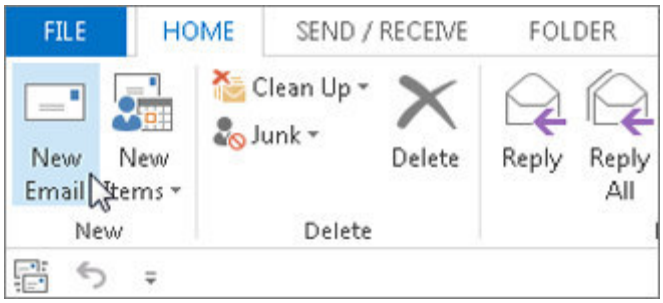
4.5.4 Emailing of Text

Send Option is used to send the copy the document to the Email or Fax.



Create an email message

1. Click **New Email, or press Ctrl + N**.



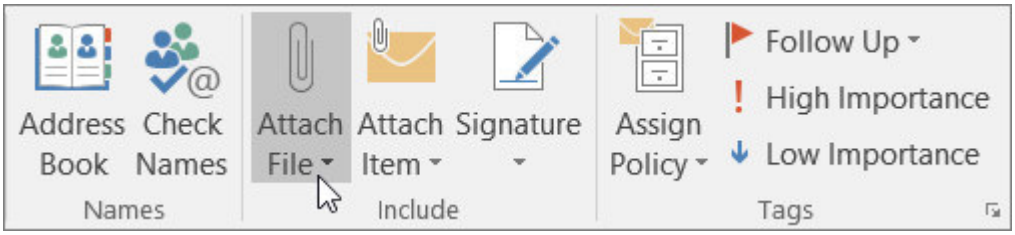
2. If multiple email accounts are configured in Microsoft Outlook, the **From** button appears and the account that will send the message is shown. To change the account, click **From**.
3. In the **Subject** box, type the subject of the message.
4. Enter the recipients' email addresses or names in the **To**, **Cc**, or **Bcc** box. Separate multiple recipients with a semicolon.

   To select recipients' names from a list in the Address Book, click **To**, **Cc**, or **Bcc**, and then click the names that you want.

   I don't see the Bcc box. How do I turn it on?

   To display the **Bcc** box for this and all future messages, click **Options**, and then in the **Show Fields** group, click **Bcc**.

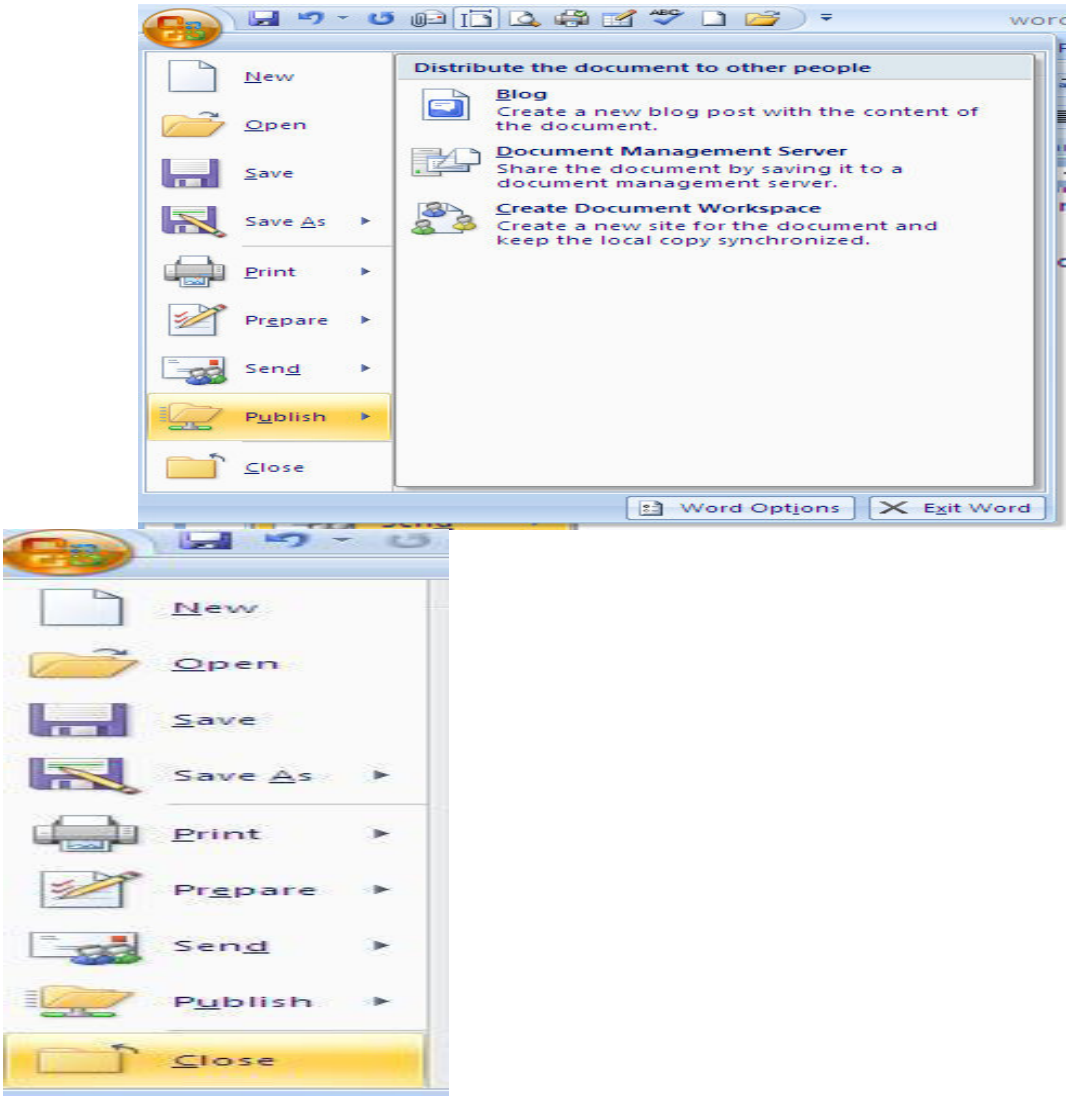
5. Click **Attach File** to add an attachment. Or click **Attach Item** to attach Outlook items, such as email messages, tasks, contacts, or calendar items.



TIP If you don't like the font or style of your mail, you can change the way it looks. It's also a good idea to check the spelling in your message before sending.

6. After you finish composing your message, click **Send**.

Please Note : If you can't find the Send button, you may need to configure an email account.



4.5.5 closing

Close Option is used to close the existing files open for use.

Following Short cut keys can be used to open various options of Menu Bar
> Alt + F Key or with the help of mouse file menu can be activated
> Alt + E key or by click mouse on Edit menu, edit menu can be activated
> Alt + V key or by clicking mouse on View Menu be activated
> Alt + I Key or clicking mouse on Insert menu can be activated
> Alt + O key or clicking mouse on format menu can be activated
> Alt + T key or clicking mouse on Tools menu can be activated
> Alt + A key or clicking mouse on Table menu can be activated
> Alt + W key or clicking mouse on Window menu can be activated
> Alt + H key or clicking mouse on Help menu can be activated

Fig. 1.4

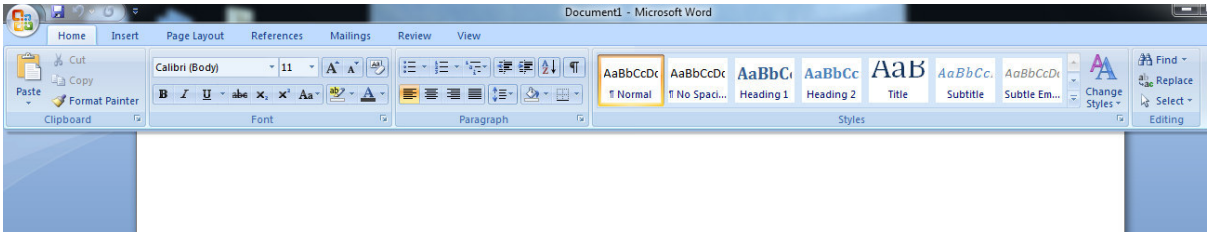


Fig 3.25 Home Menu Option is used for Cut, paste, formatting of text and type of text alignment of the text

1. Clipboard
2. Font
3. Paragraph
4. Styles
5. Editing

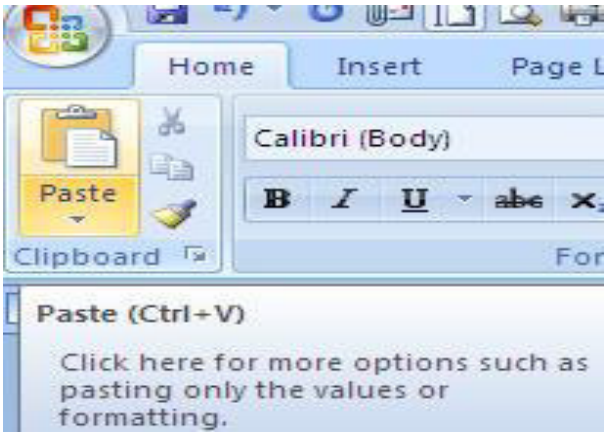


Fig 3.26

4.5.6 Font selection

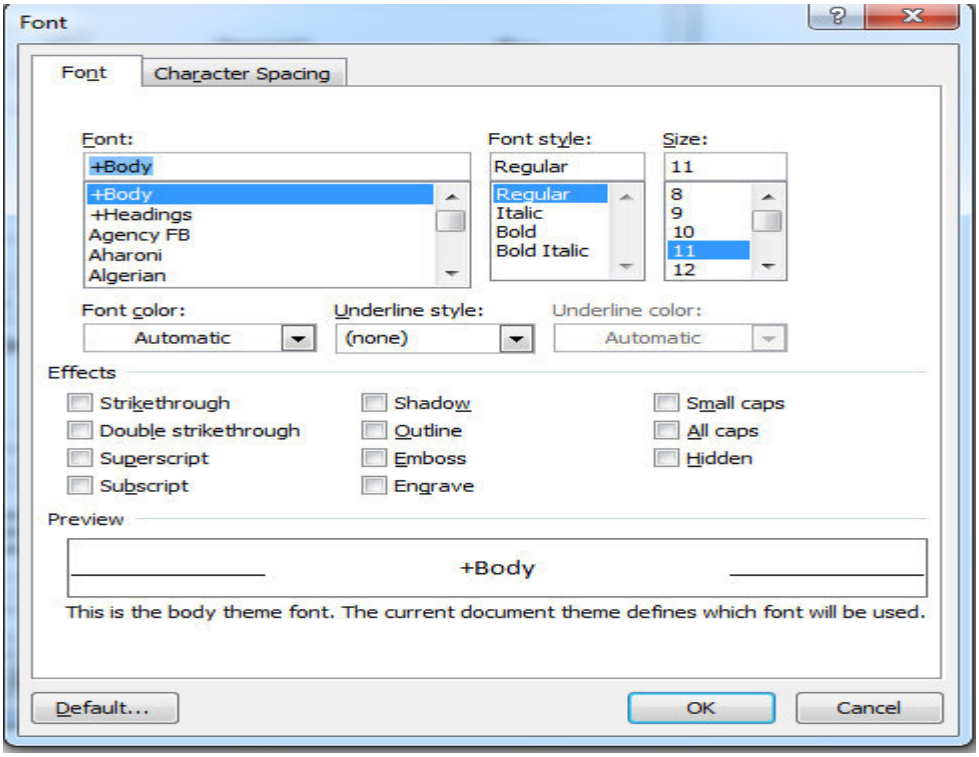


Fig 3.27 font option under HOME MENU

4.6 Bullets and numbering

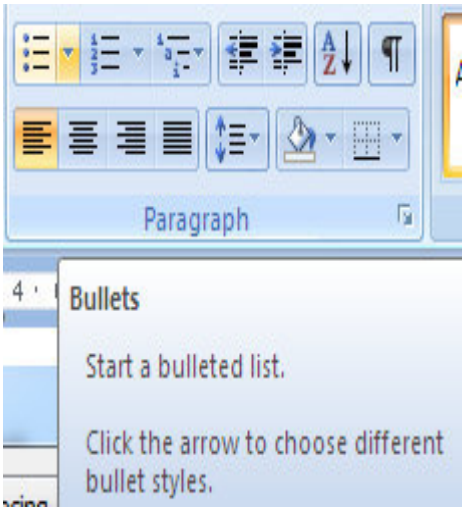


Fig 3.28 use of bullet and numbers for main point and numbering of the text.

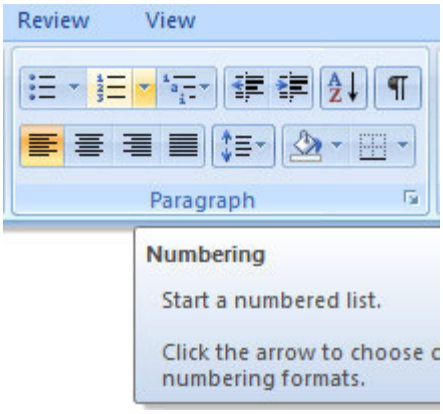


Fig 3.29 for numbering of points in the text

4.7 Text Formatting

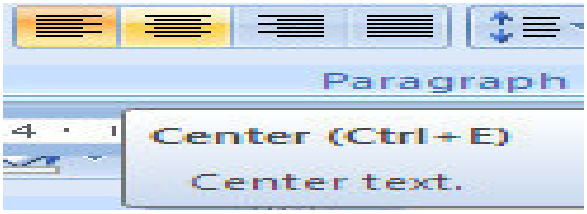


Fig 3.30Test Alignment

There are four types of text alignments

1. Left Alignment
   In case of left alignment text starts from left side of the page and blank spaces comes on the right side of the page.
2. Centre Alignment
   In case of Centre alignment text starts from centre of the page and blank spaces comes on the right side and left side of the page.
3. Right Alignment
   In case of Right alignment text starts from Right side of the page and blank spaces comes on the left side of the page.
4. Justified Alignment
   In case of left alignment text starts from left side of the page and touches on the right side of the page and blank spaces comes between the text.

4.8 Paragraph Formatting

There are various methods of paragraph formatting. Here are some of the methods mentioned below. You have to use and practice and see the impact of these commands.

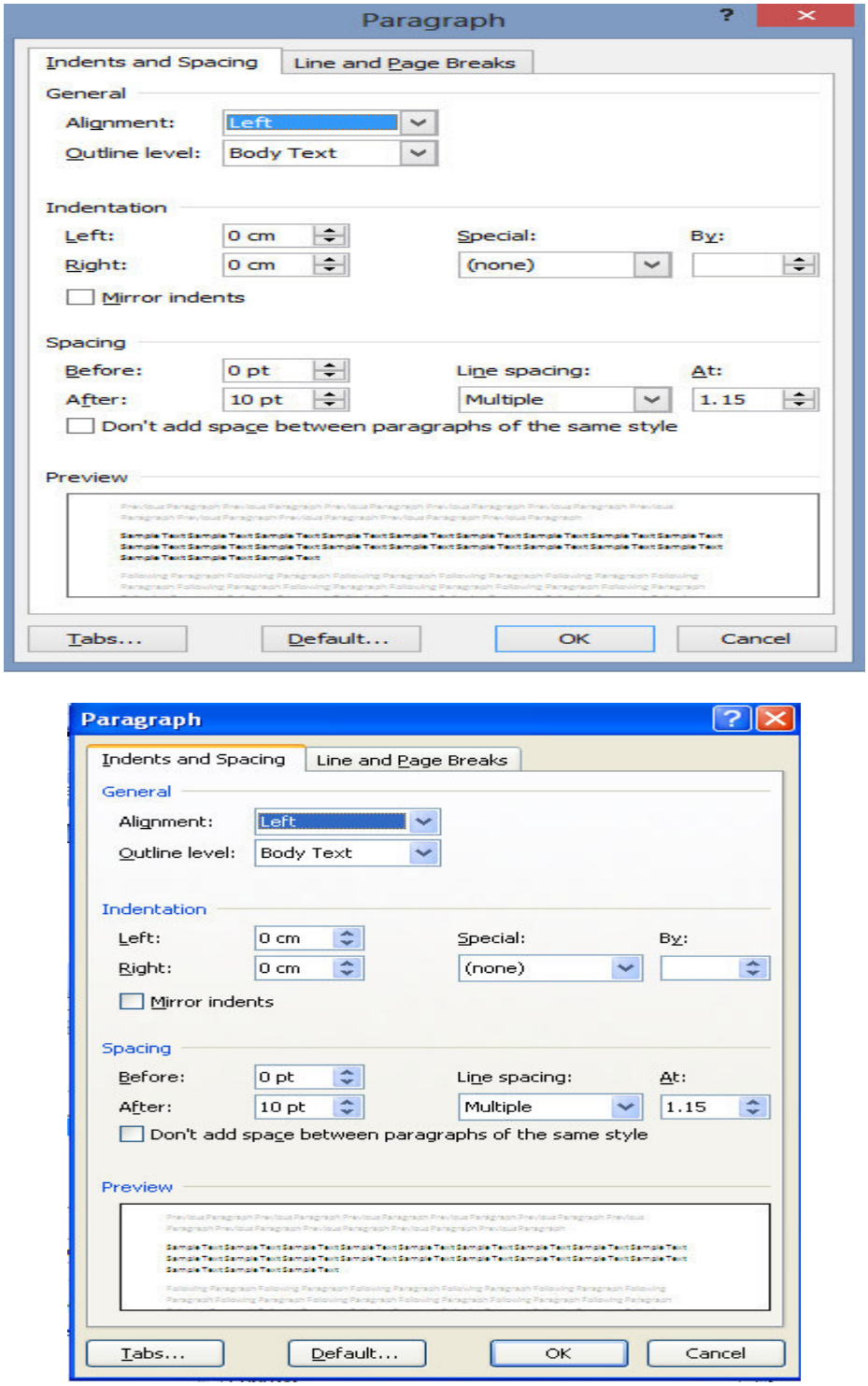


Fig 3.31 paragraph settings : Includes Line spacing, indentation, and alignment



Fig 3.31 for shading

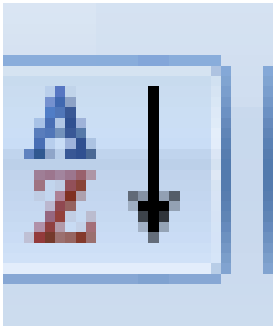


Fig 3.32 for sorting

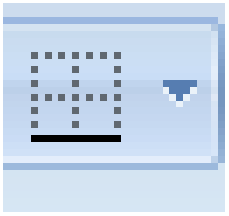


Fig 3.33 border

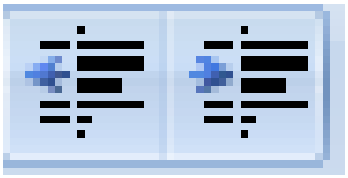


Fig 3.34 Increase an decrease indent

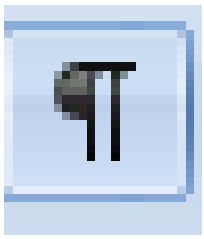


Fig 3.36 show / hide paragraph spaces only

4.9 Finding text and find and replace text

Find command is used to find the specific text / number from the file. After finding the text or number you can also replace the text/ number with some other text / number. For example if you typed Vaneeta in the text but that is Navneeta. So with the

help of find with replace command you can change this particular word with navneeta in the entire text. You can try using this example.

Example 1: find and replace command

Vaneeta and sunita are good friends and they used to visit gym every day in the morning. Vaneeta used to call Sunita every day but one day sunita did not come for calling vaneeta. That day vaneeta did not wake up and missed the gym.

(You have to use find and replace command and replace Vaneeta with Navneeta)

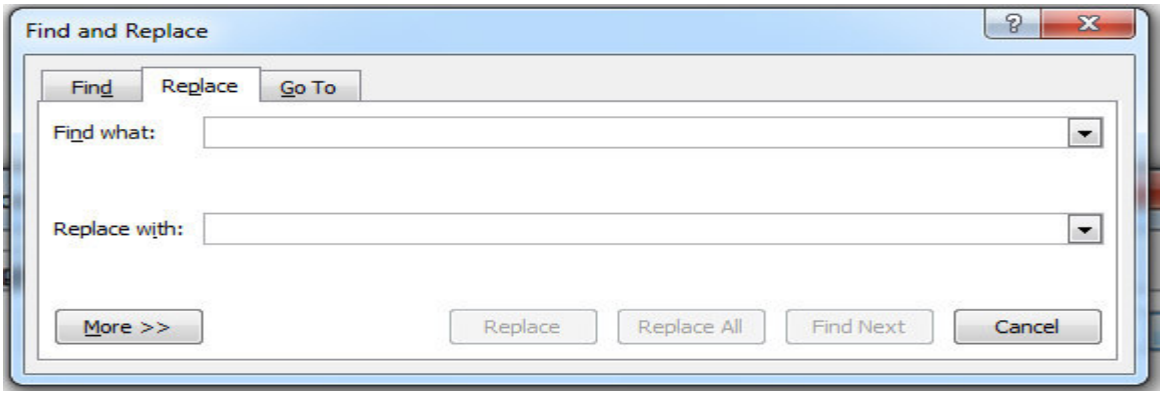


Fig. 3.37 find and replace command

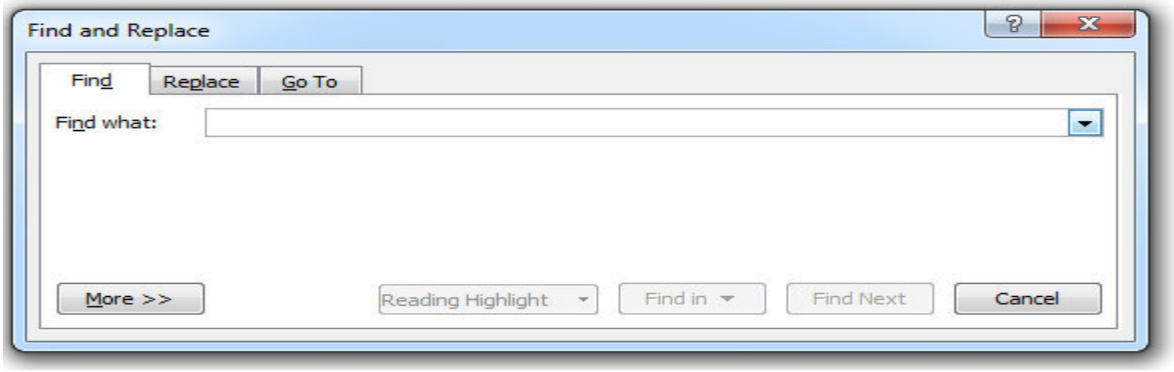


Fig 3.38 find command in MS Word

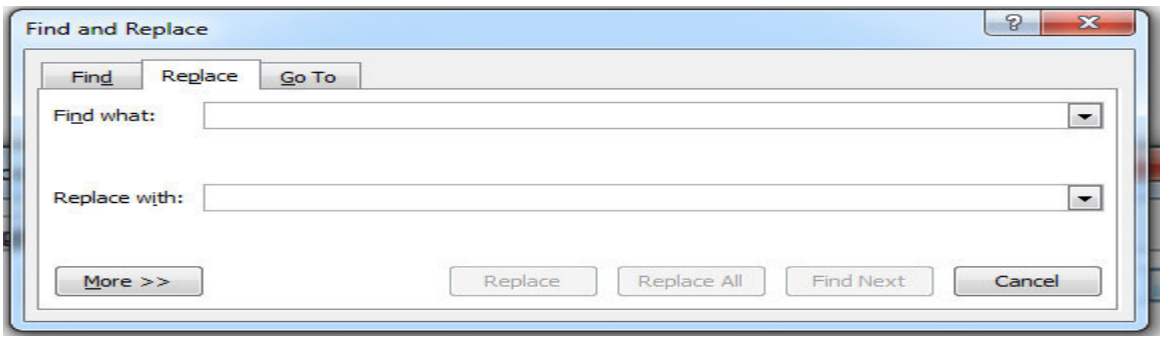


Fig 3.39 Replace all command will replace all the words according to the example

4.10 Customize quick access toolbar

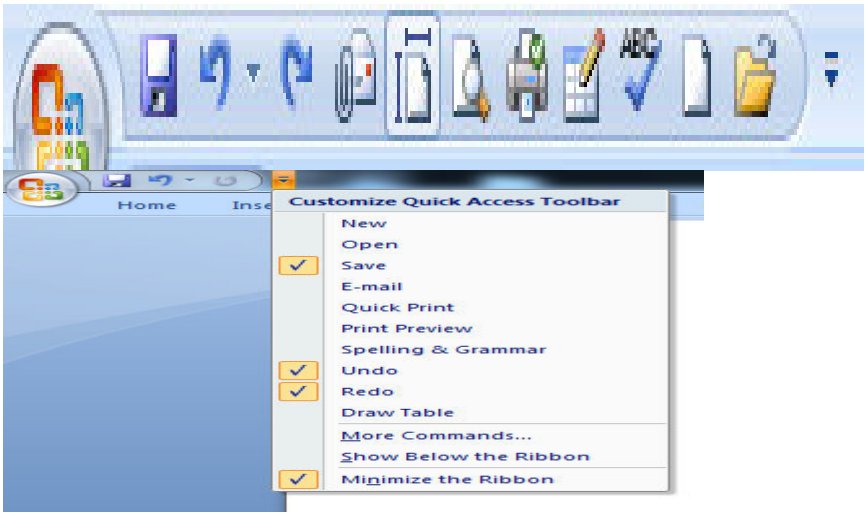


Fig 3.40 short cut commands including UNDO,REDO ,PRINT, OPEN can be use

4.110 Insert Menu

Insert menu comprise following commands

- Pages
- Tables
- Illustrations
- Links
- Header and footer
- Text
- Symbols

Here are some of the Insert menu commands for the use of the students. Students are advise to use these command.

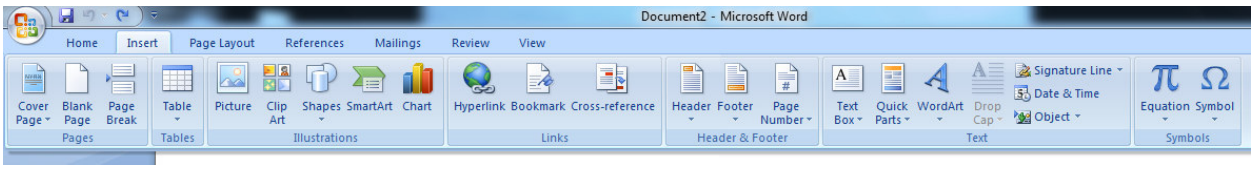


Fig 3.41 for insert menu option



Fig 3.41a shows page command

Cover page: this command is used for design cover page of the word document file. There are many cover pages given in this command. These in built cover pages helps in may cover page for a document file.

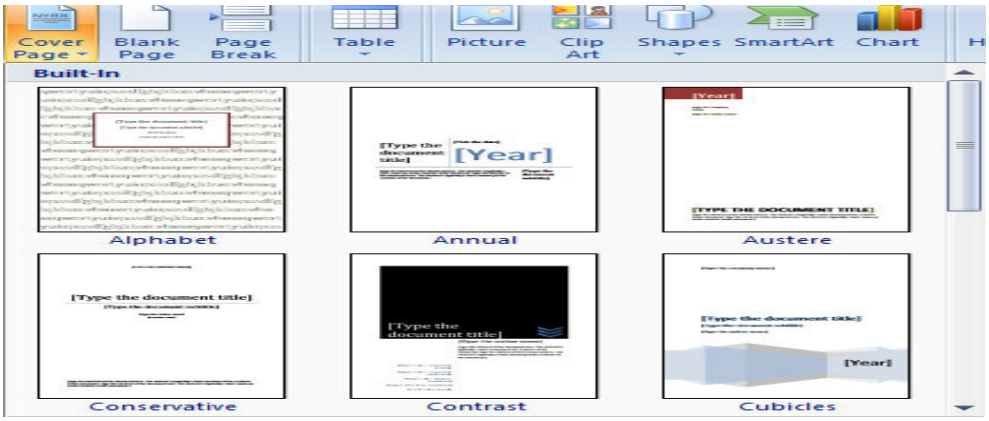
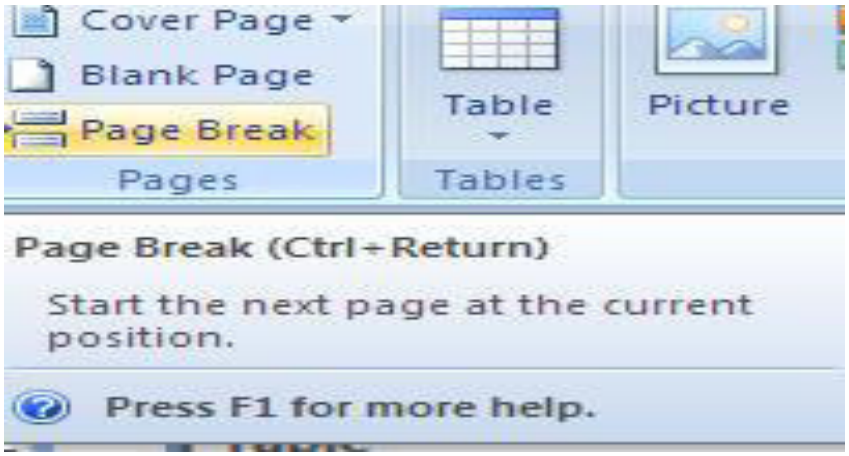


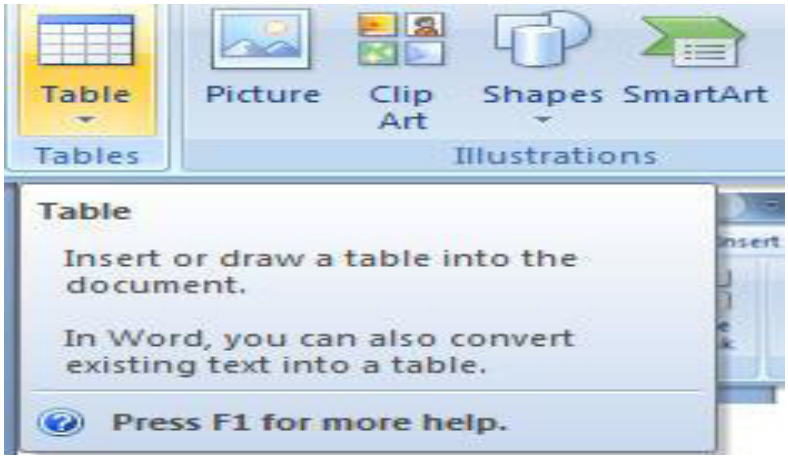
Fig 3.42 shows various types of cover pages

Blank Page : this command is used to create blank page in the document file

Page Break : This command is used to creating a blank page in the document file. If you want to start some text from next page then this page break command is used for creating page break.



4.11.1 Page Break



4.11.2 Tables

Fig.3.43 Inserting Table. 8 Rows and 10 columns can insert according the given table option

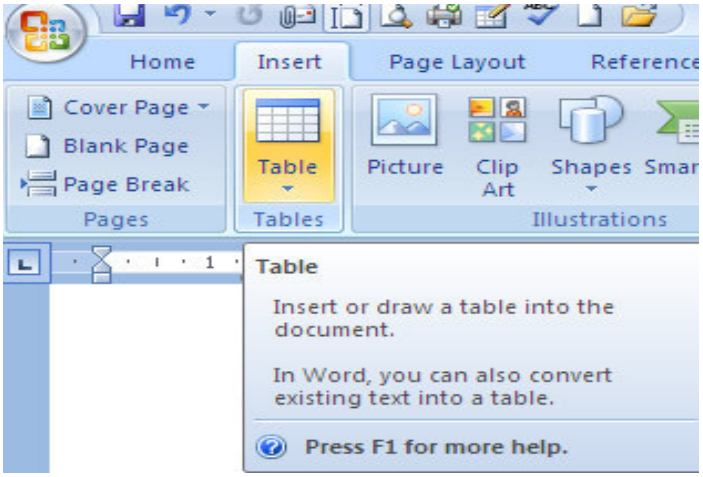


Fig.3.45 Insert Table

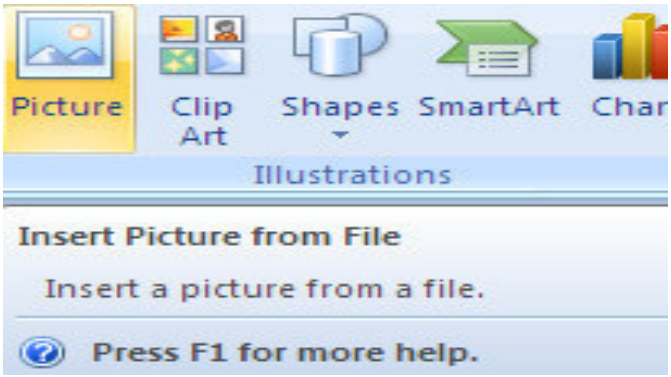


Fig. 3.46 Insert Picture (from illustration) from File

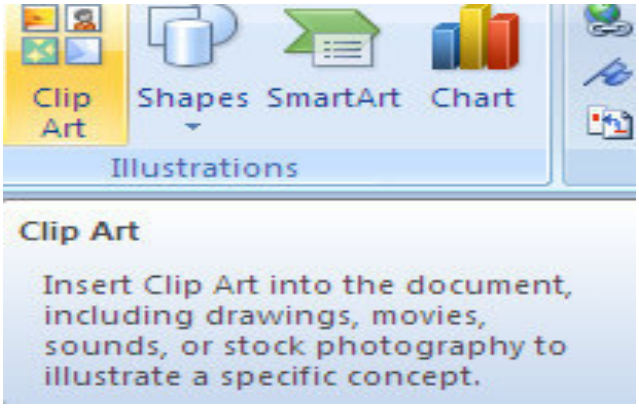


Fig 3.47 Insert Clip Art

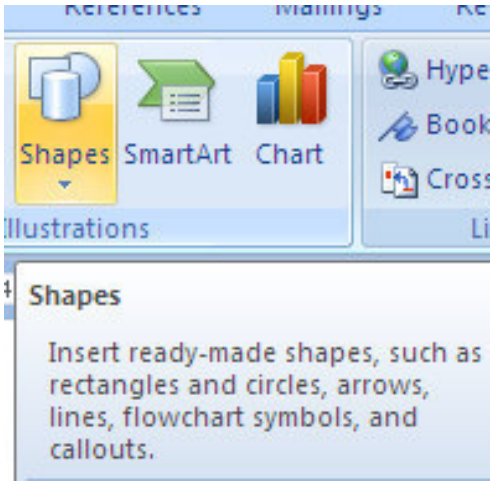


Fig 3.48 Insert Shapes

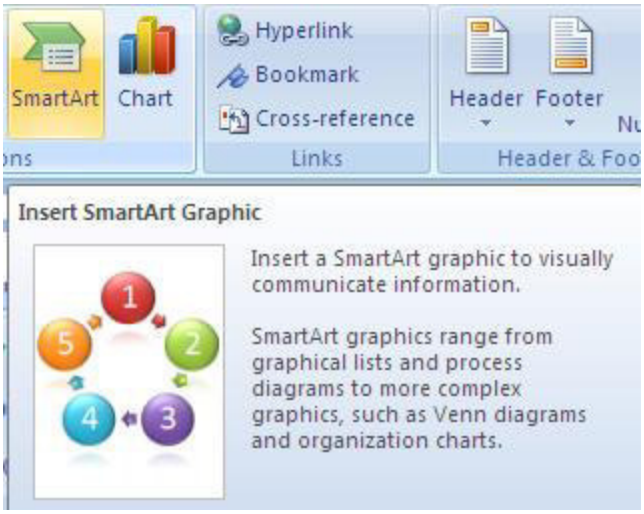


Fig 3.49 Insert Smart Art

4.11.4 Insert Charts



Fig 3.50 Insert Chart

4.11.5 Insert Hyper Links

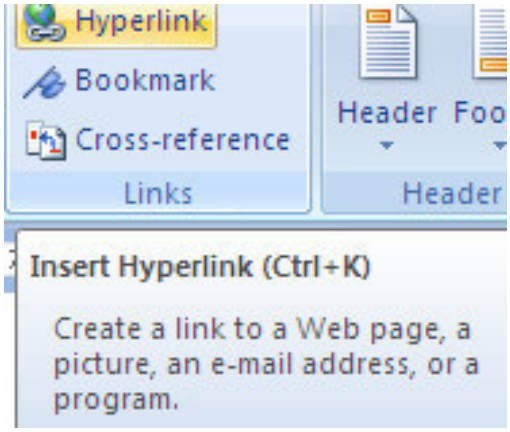
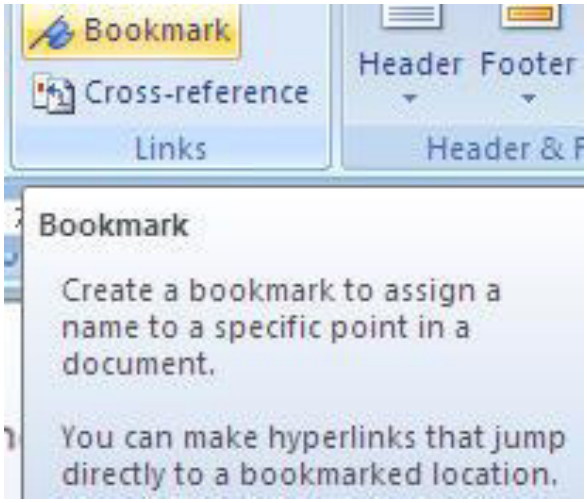


Fig 3.51 Hyper Link



3.52 book mark

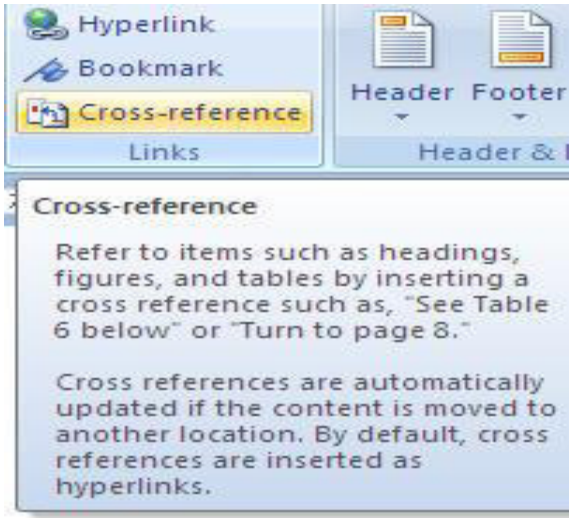


Fig 3.53 cross reference

4.11.6 Header and Footer

Header and footers are used for common text / page numbers on every page of the text documents. The content in the header will appear at the top of each printed page

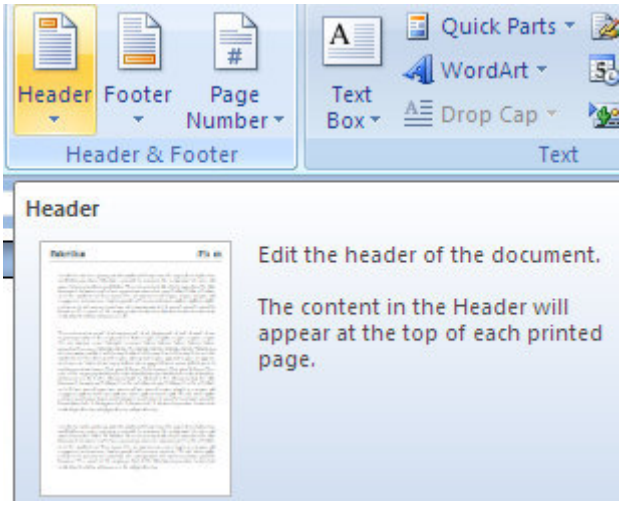


Fig 3.54 how to edit Header of the document

The content in the footer will appear at the bottom of each printed page for example page numbering on every page of the text.

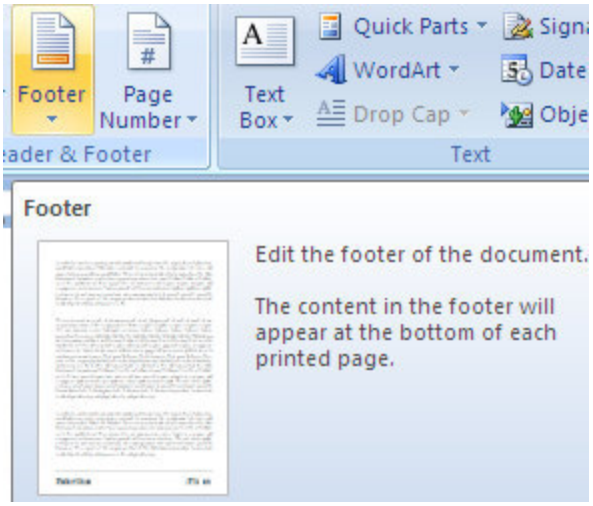


Fig 3.55 how to edit footer of the document

4.11.7 Insert Symbols

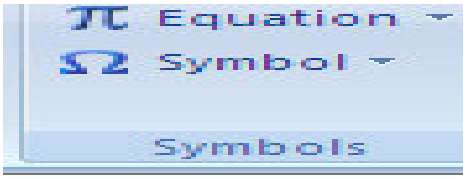


Fig 3.60 symbols like Equation and Symbol

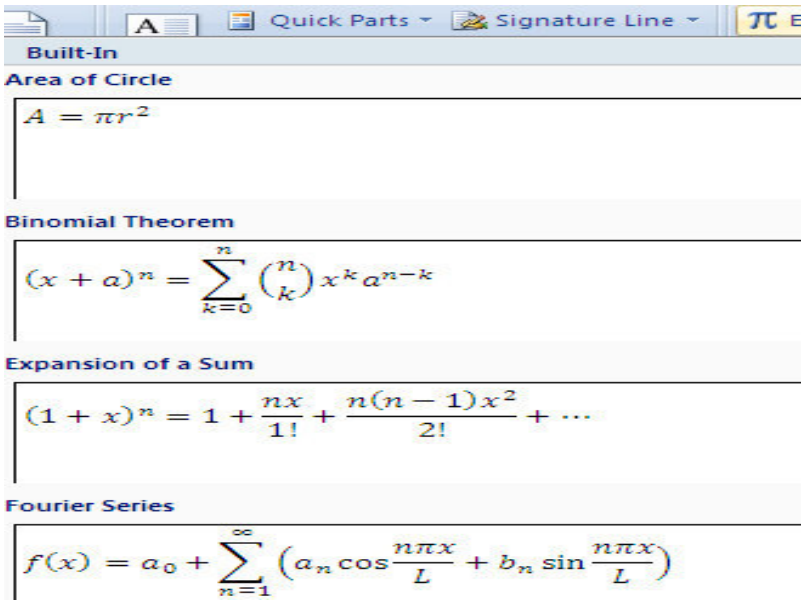


Fig . 3.61 Equation

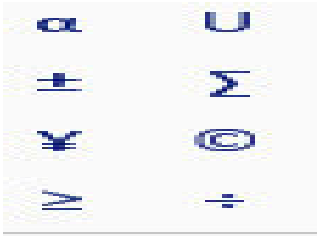


Fig 3.62 shows various types of Symbols

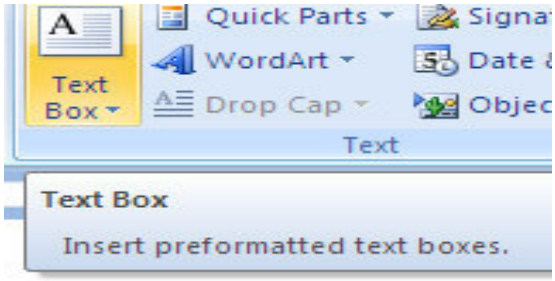


Fig 3.56

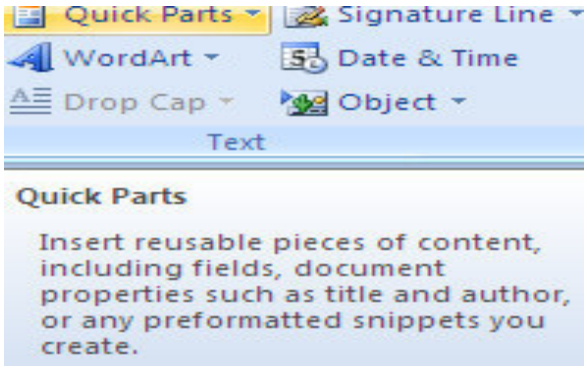


Fig 3.57

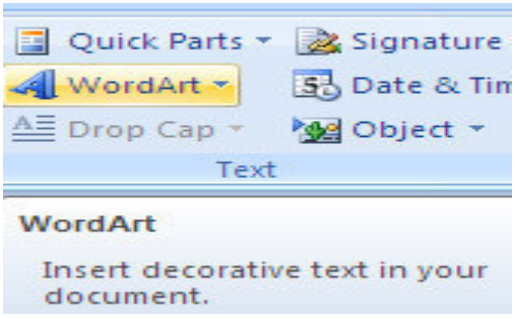


Fig 3.58

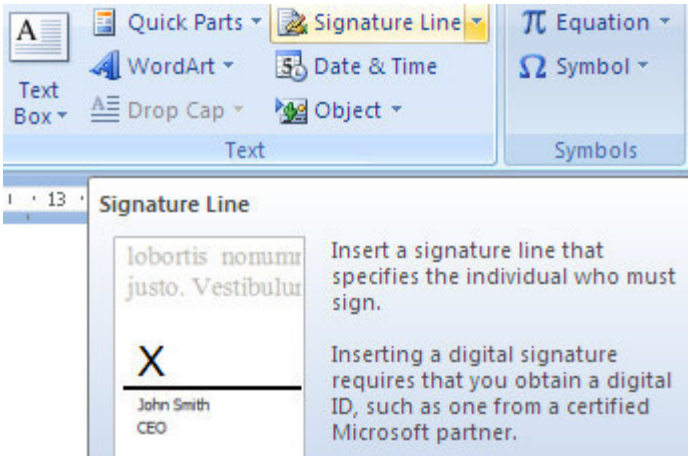


Fig 3.59

page formatting Page Layout, Themes, Page Setup, Page Background, Paragraph, Arrange

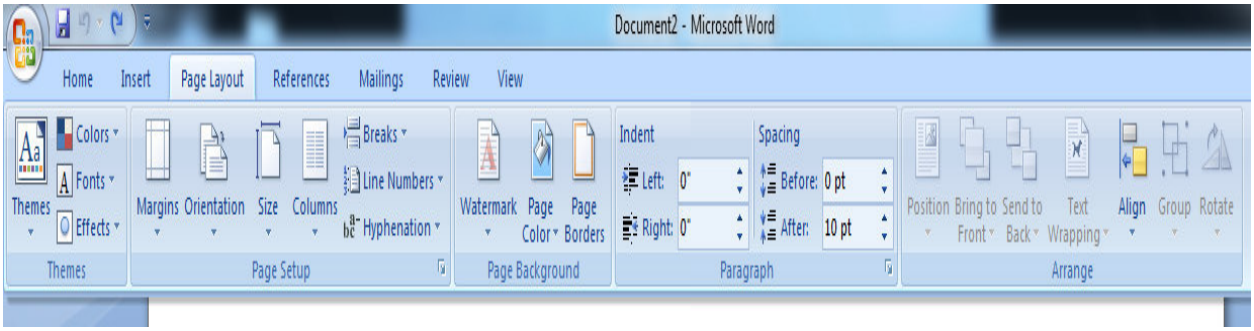
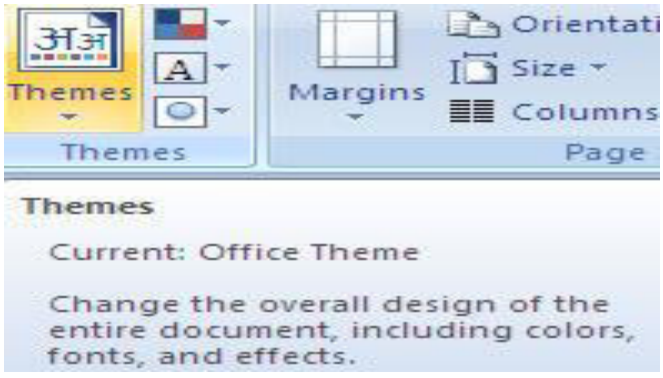
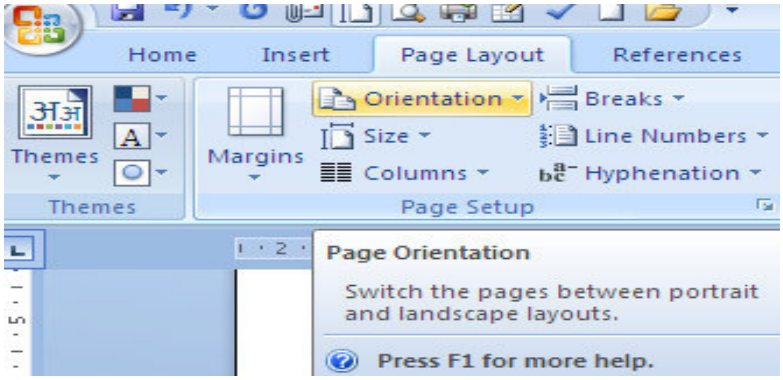


Fig 3.63 page formatting Page Layout, Themes, Page Setup, Page Background, Paragraph, Arrange



3.64 themes



3.65 orientation

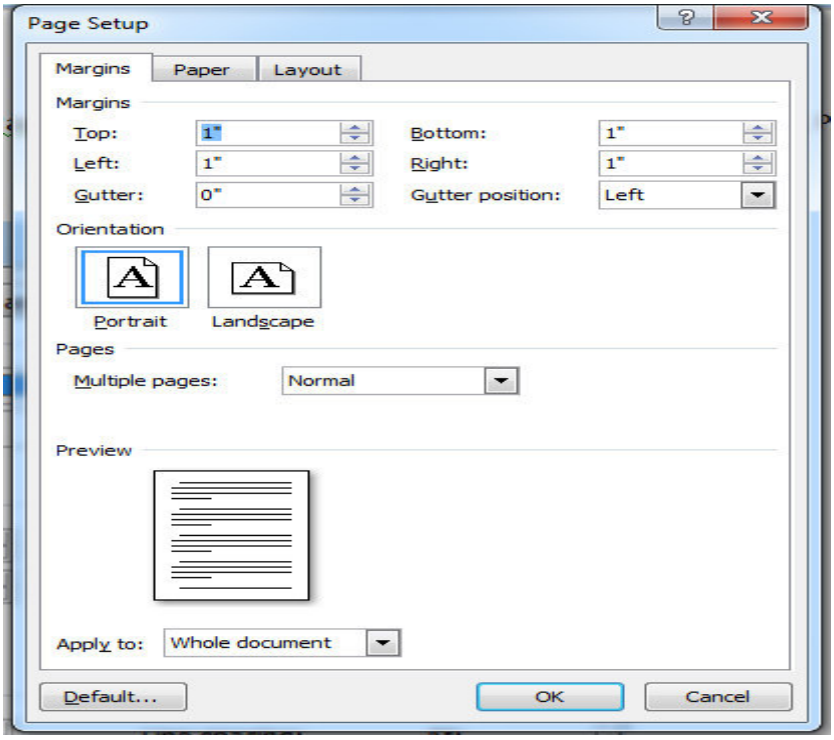


Fig 3.66 page setup

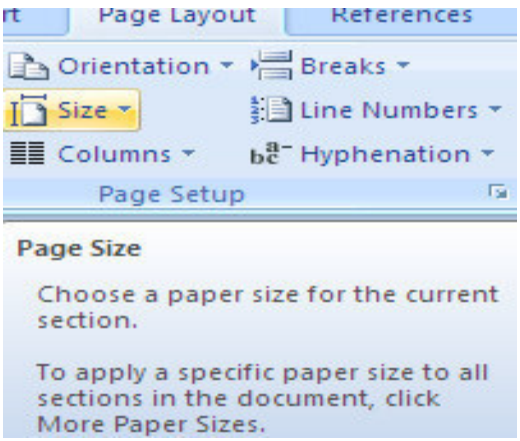
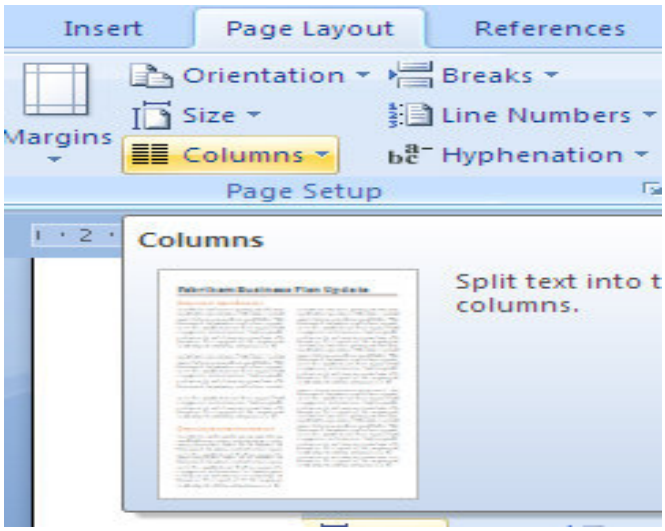


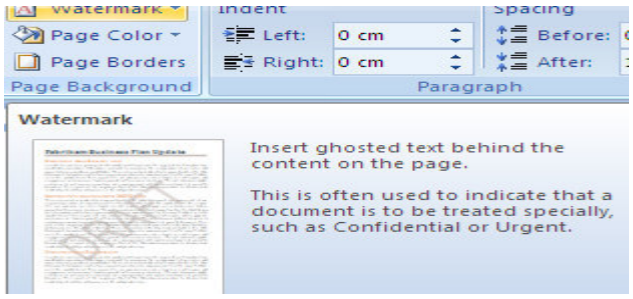
Fig 3.67 see command for page size

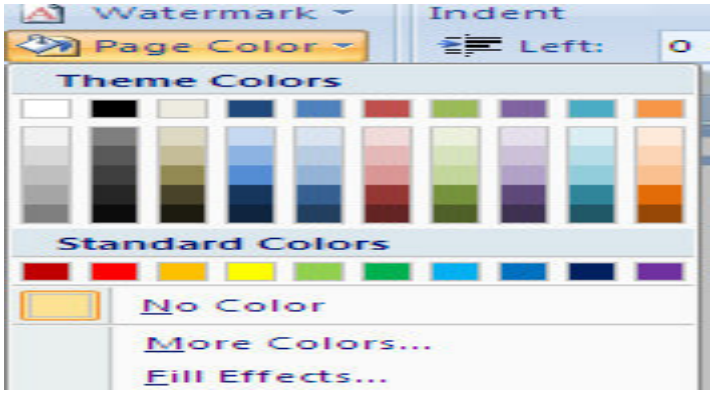


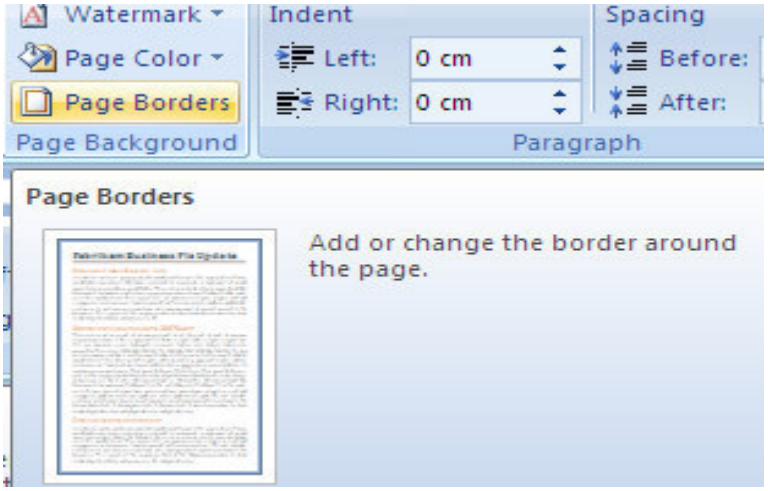
3.68 type of page sizes

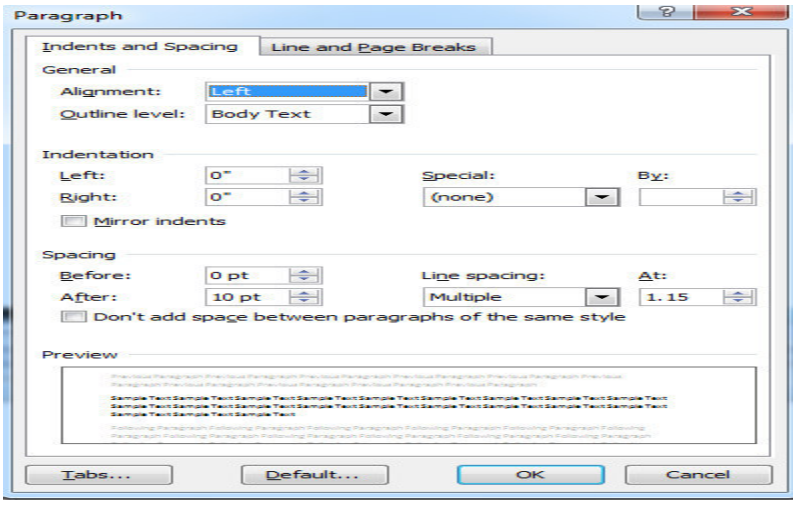


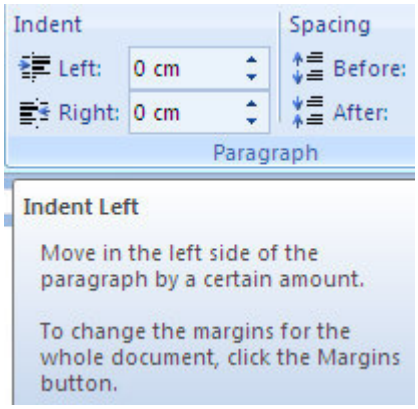
3.69 multiple columns can be created

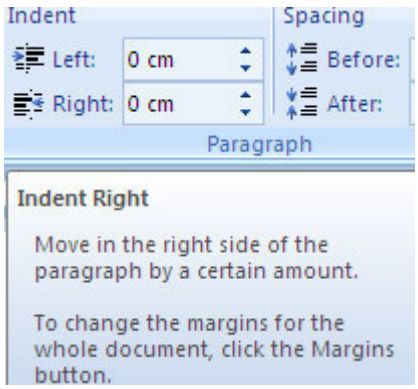


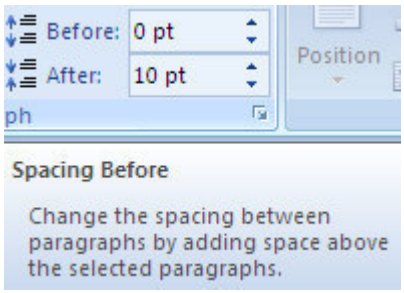

Watermark
Page Color
Indent
Left:
Theme Colors
Standard Colors
No Color
More Colors...
Fill Effects...

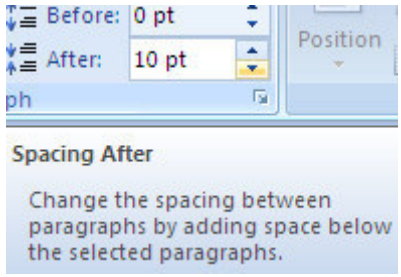

Watermark
Page Color
Page Borders
Page Background
Indent
Left: 0 cm
Right: 0 cm
Spacing
Before:
After:
Paragraph
Page Borders
Add or change the border around the page.

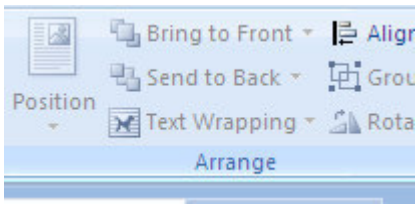

Paragraph
Indents and Spacing
Line and Page Breaks
General
Alignment: Left
Outline level: Body Text
Indentation
Left: 0"
Right: 0"
Special: (none)
By:
Mirror indents
Spacing
Before: 0 pt
After: 10 pt
Line spacing: Multiple
At: 1.15
Don't add space between paragraphs of the same style
Preview
Tabs...
Default...
OK
Cancel

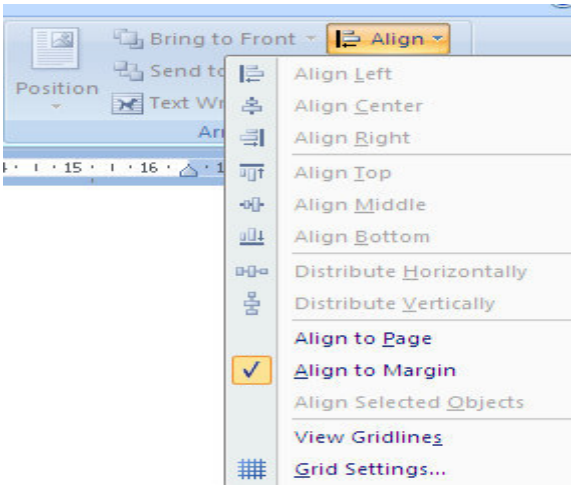

Indent
Left:
0 cm
Right:
0 cm
Spacing
Before:
After:
Paragraph
Indent Left
Move in the left side of the paragraph by a certain amount.
To change the margins for the whole document, click the Margins button.


Indent
Left:
0 cm
Right:
0 cm
Spacing
Before:
After:
Paragraph
Indent Right
Move in the right side of the paragraph by a certain amount.
To change the margins for the whole document, click the Margins button.


Before:
0 pt
After:
10 pt
Position
ph
Spacing Before
Change the spacing between paragraphs by adding space above the selected paragraphs.


Before:
0 pt
After:
10 pt
Position
ph
Spacing After
Change the spacing between paragraphs by adding space below the selected paragraphs.


Position
Bring to Front
Send to Back
Text Wrapping
Arrange



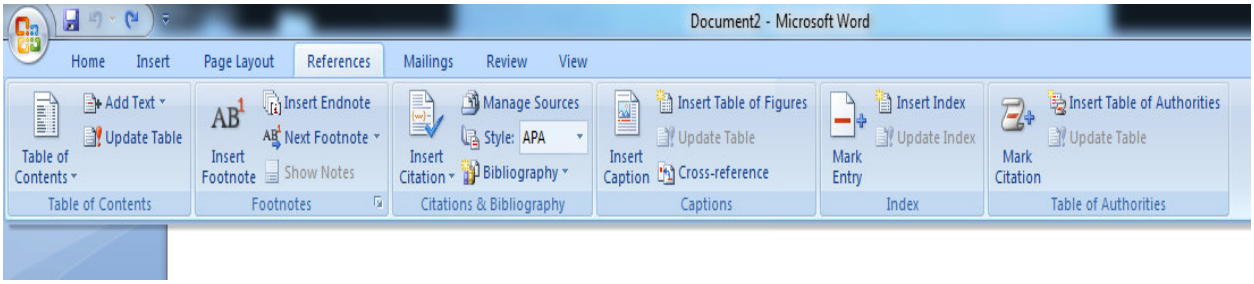
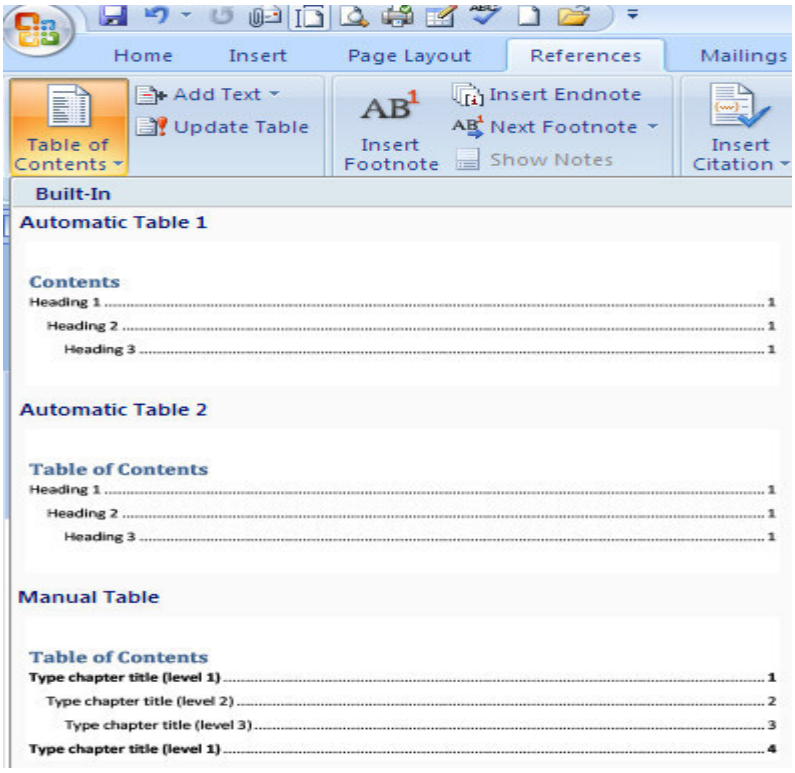


Fig 4.18 REFERENCES MENU includes Table of Contents, Footnotes, Citations & Bibliography, Captions, Index , Table of Authorities



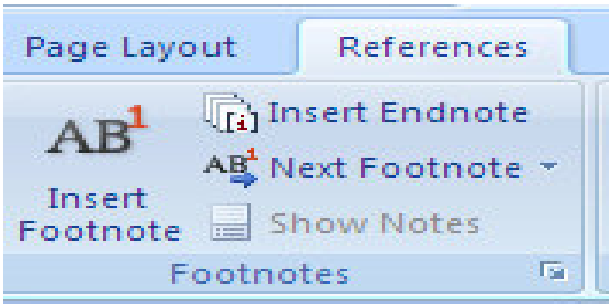
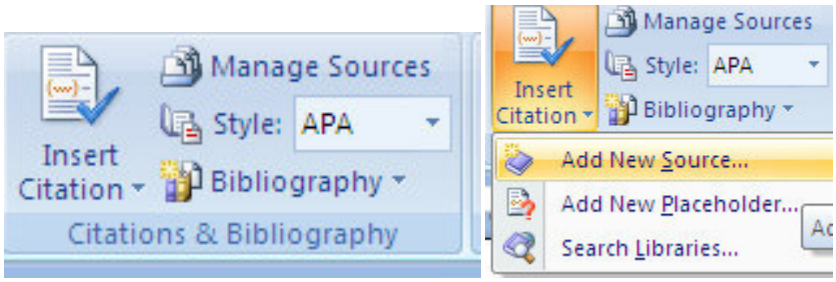
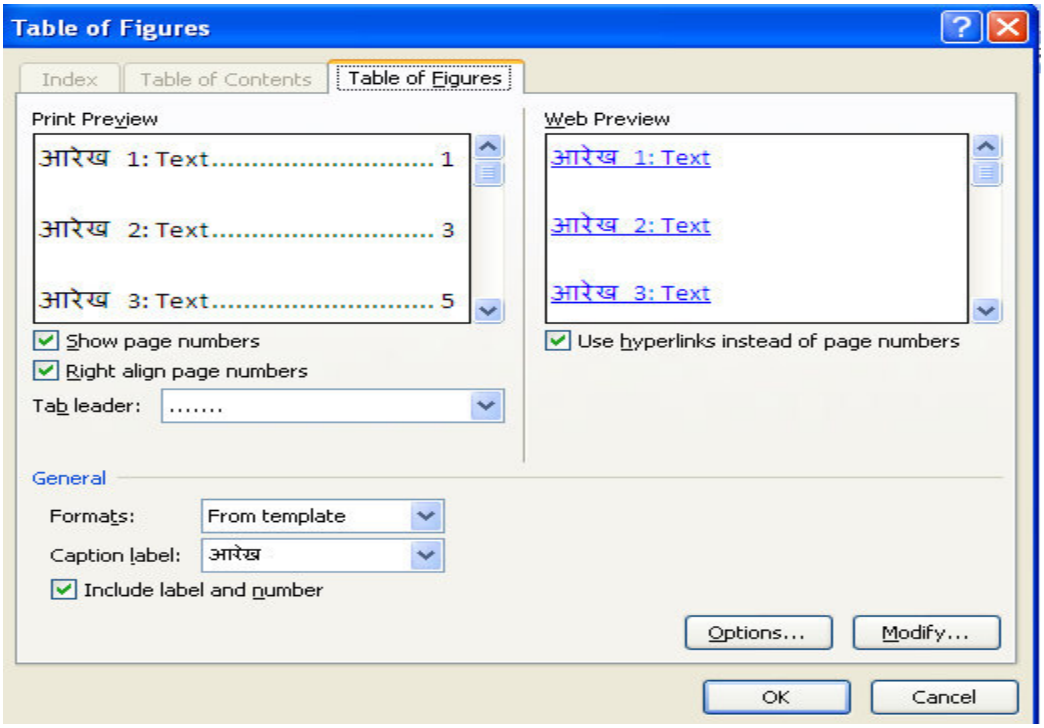
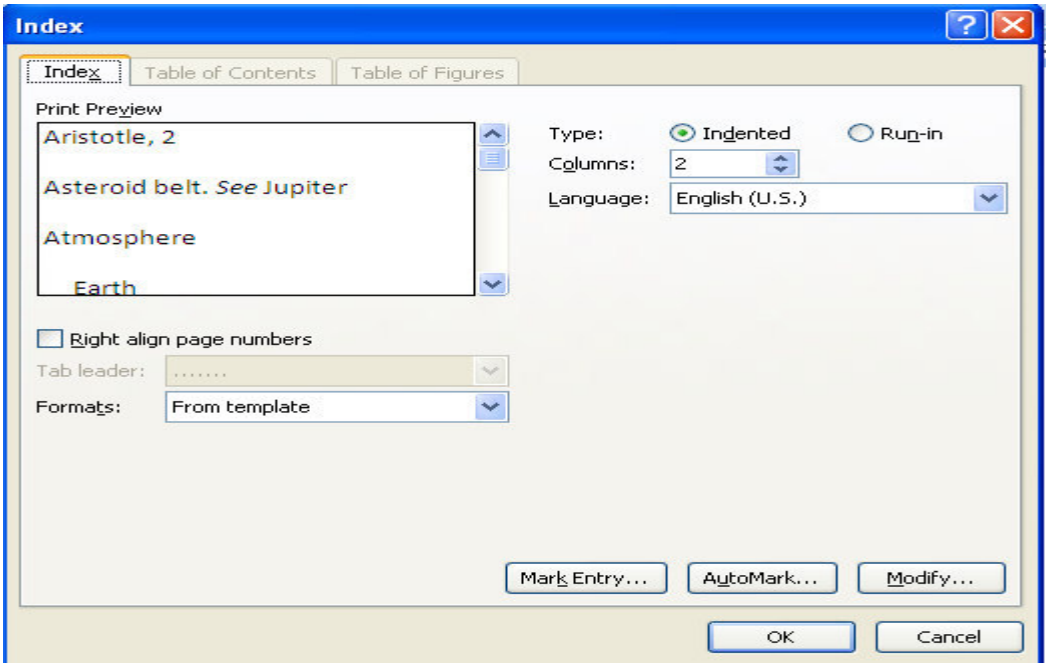


Fig Foot note









Mail Merge: Use mail merge to create mass mailings that you individualize for each recipient. You can add individual elements to any part of a label, letter, envelope, or email, from the greeting to the entire document, even images. Word automatically fills in the fields with recipient information and generates all the individual documents. In this course we'll start with email, and then move on to letters and envelopes. See fig ……..

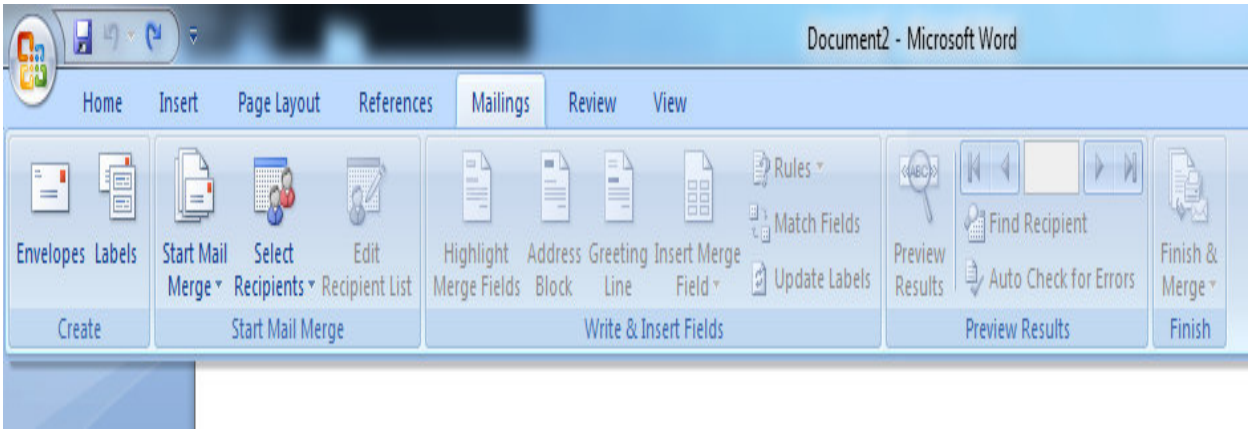
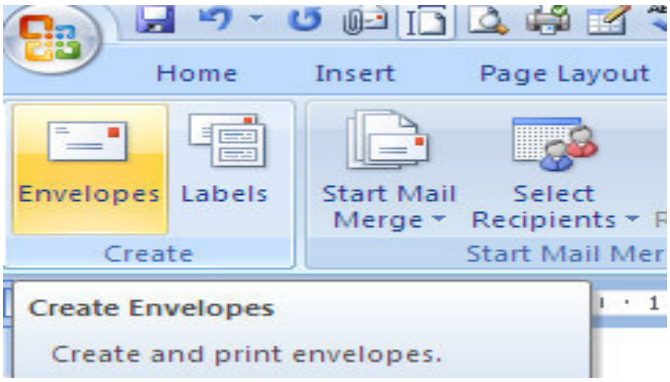
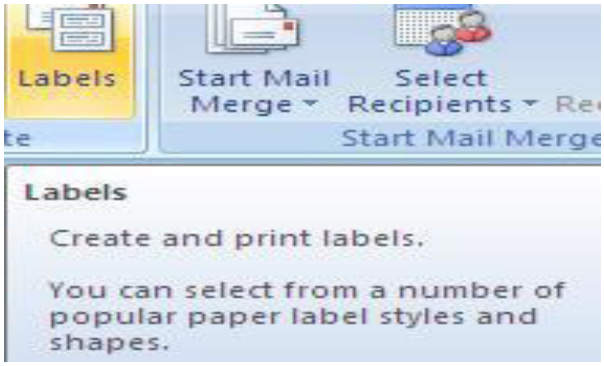
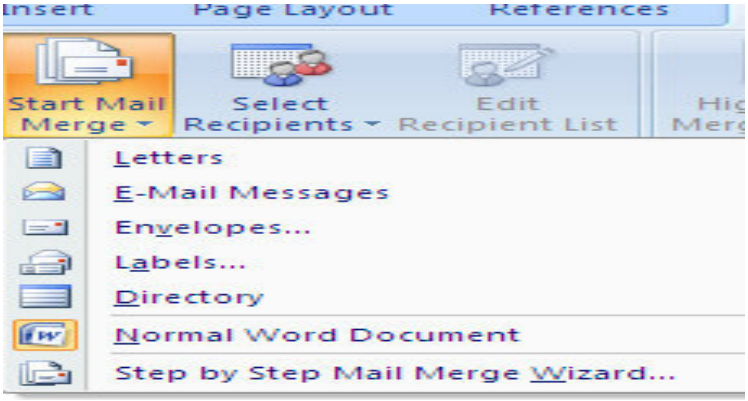
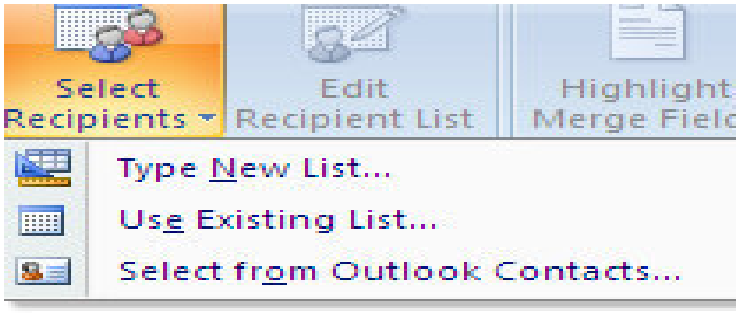


Fig 4.19 Option MAILINGS provide following important options these are Create document for mailing, Start Mail Merge, Write & Insert Fields and Preview Results with Finish









Example 1: Mail Merge two documents, in document1 type common matter in document2 type only data of students.

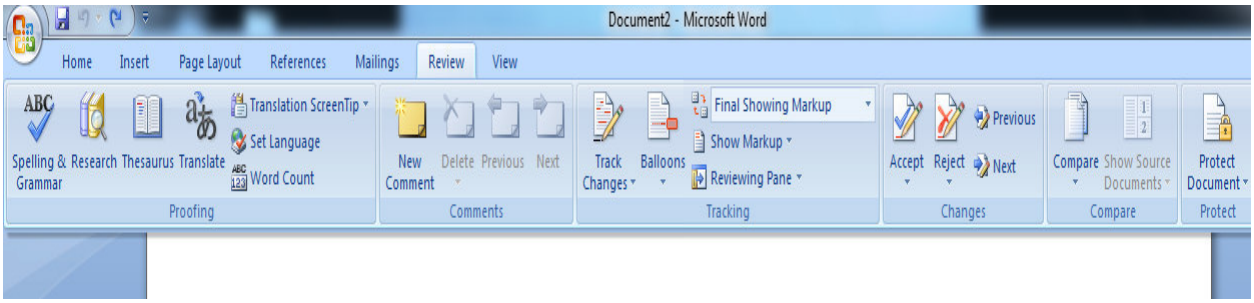


Fig. 4.20 Option REVIEW provide important options these are Proofing, Comments, Tracking, Changes, Compare, Protect

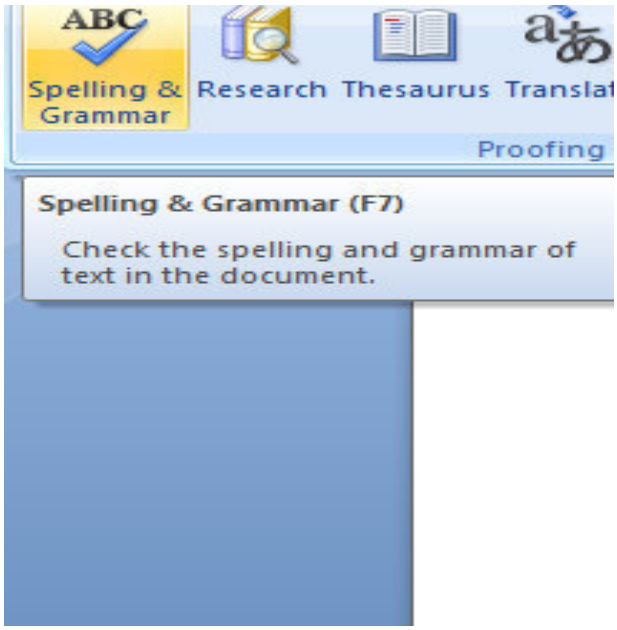
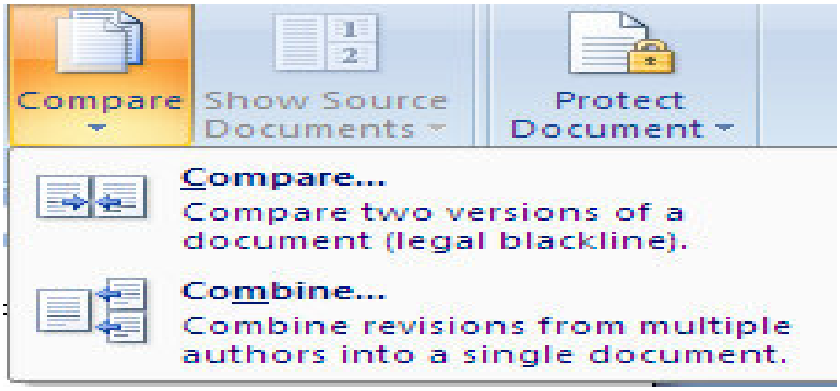
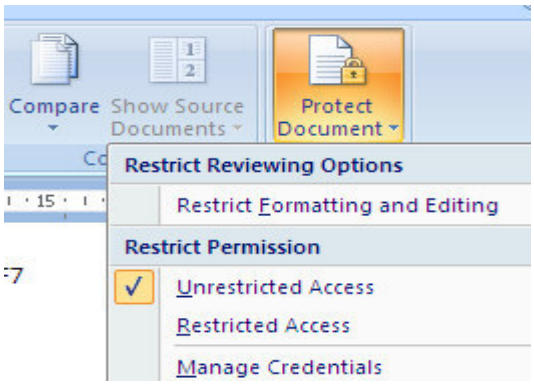


Fig 4.10 spelling and grammar comes under the review menu the short of this command is F7





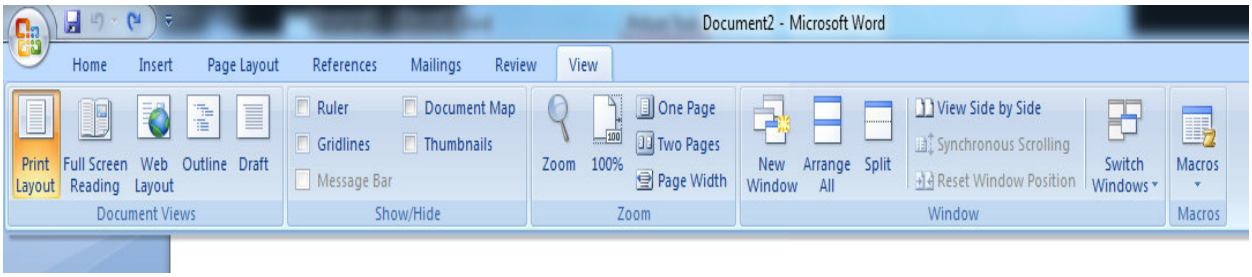
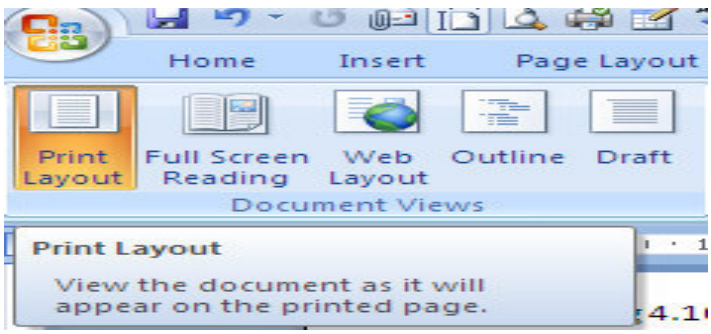
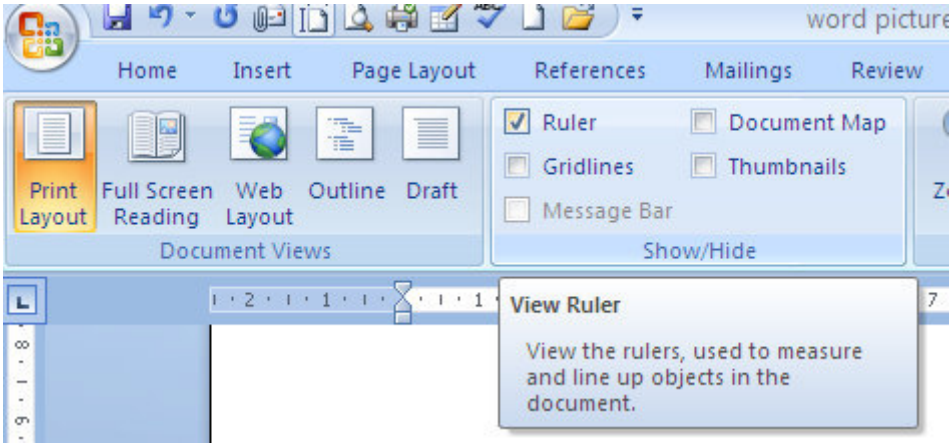
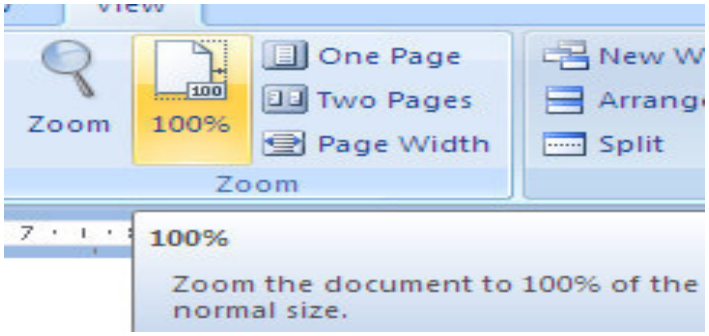
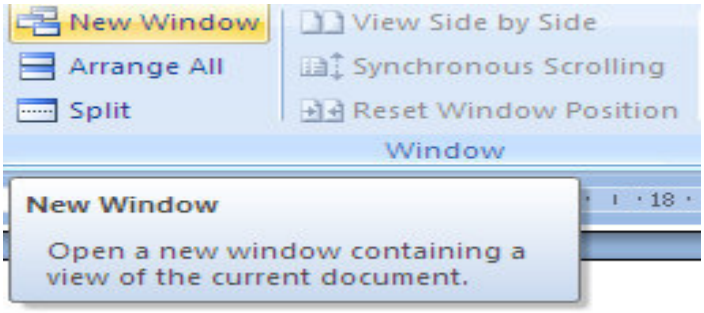


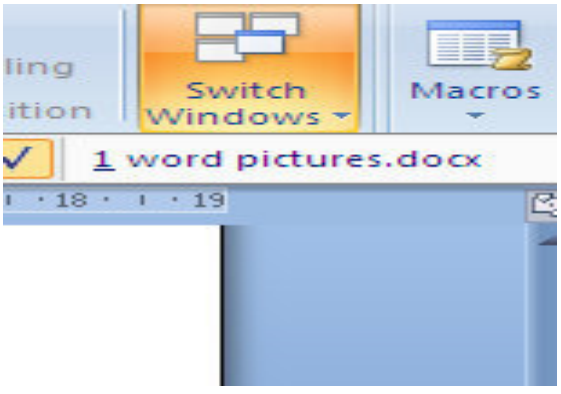
Fig 4.21 Option VIEW provide important options these are Document Views, Show/Hide, Zoom, Window, Macros

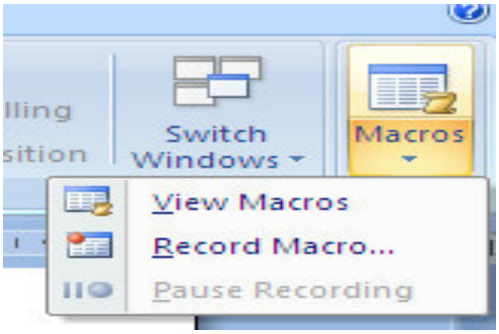



word picture
Home
Insert
Page Layout
References
Mailings
Review
Print Layout
Full Screen Reading
Web Layout
Outline
Draft
Document Views
Ruler
Gridlines
Message Bar
Document Map
Thumbnails
Show/Hide
View Ruler
View the rulers, used to measure and line up objects in the document.


Zoom
100%
One Page
Two Pages
Page Width
Zoom
100%
Zoom the document to 100% of the normal size.


New Window
Arrange All
Split
View Side by Side
Synchronous Scrolling
Reset Window Position
Window
New Window
Open a new window containing a view of the current document.


Switch Windows
Macros
1 word pictures.docx



Uses of following keys in the Microsoft word :

Backspace

This arrow key is called back space. This key is placed above the Enter Key. This key can be used to delete left side characters.

Delete Key

This key is a part of six keys combination (INSERT, HOME, PAGE UP, **DELETE**, END, PAGE DOWN). On the keyboard this key can be used to delete characters on the right side of the cursor.

Let us suppose the Suresh is typed as Sumesh and m is to be changed as r. Now place mouse pointer (cursor) after m. Press back space and now m is erased. Then type r. Now Sumesh become Suresh. Or place the cursor before m and press del m is deleted. Now enter r. The word is typed correctly.

There are two modes in Word-OVR and INS. OVR mode is overwriting mode and INS mode is insertion mode. The later mode can be selected by pressing INS Button on the keyboard. Insert a word or sentence and then continue typing in the MS Word. Then press enter and save the document.

Space between lines can be given by pressing processing enter button on the keyboard. Paragraph can be started by printing enter and then tab key to set the initial space for first line. Selecting text can be done by placing the mouse pointer on the word and double clicking. Now the word is selected. If sentence is to be selected, use shift + ctrl key and + " (right arrow) key. Now the sentence will be fully selected.

Lines can also be selected by placing the mouse pointer on the line and press double click that will select on one word for selecting complete paragraph press one more click (means press triple click) then complete paragraph will be selected.

Buttons for editing command:

LEFT ARROW = Move cursor one character Left of the current position
RIGHT ARROW = Move cursor one character right of the current position
Ctrl + Left Arrow = Move cursor to Previous word
Ctrl + Right Arrow = Move cursor to Next Word
END = End of the Same line
Home = Beginning of the same line
Up Arrow = Line Above
Down Arrow = Line Below
Ctrl+Up arrow = Previous screen Page
Ctrl+ Down arrow = Next Page
Page Up = Previous Page

Page Down = Next Screen Page
Ctrl+ Pg Up = Previous Page Top
Ctrl + Pg Down = Next Page Top
Ctrl + Home = First Line beginning
Ctrl + End = End of the Document

UNDO and REDO : these commands are part of Edit menu. If the Undo button is pressed then the last change made is deleted and the original text is displayed (means it will cancel new changes). If Redo button is pressed then the changes made will be displayed in the document

Undo can be done in three ways
Click undo button
Press ctrl+ Z keys
Open edit menu and press undo command. Redo can be done in three ways
Select Edit Menu click Redo button
Or
Press ctrl + Y keys
Or
Click Red Button in the Standard Tool Bar.

MOVING TEXT

Text can be moved from one place to another. Let us suppose the document in the **abc.doc** contains three paragraphs. Now the second paragraph is to be moved. Go to file menu and Open new document or press ctrl N. Now document is seen. Now place the cursor any where the second paragraph and click the mouse left button three times. The entire second paragraph is selected. Now go to Edit Menu, Select Cut command and click. The entire second paragraph is selected and a thick dotted line rotates round the paragraph.

Moving of the text cannot be done until or unless text will be selected.
Following key board commands can be used to select the text.
Shift + Left Arrow = One character left side is selected
Shift + Right Arrow = One character Right side is selected

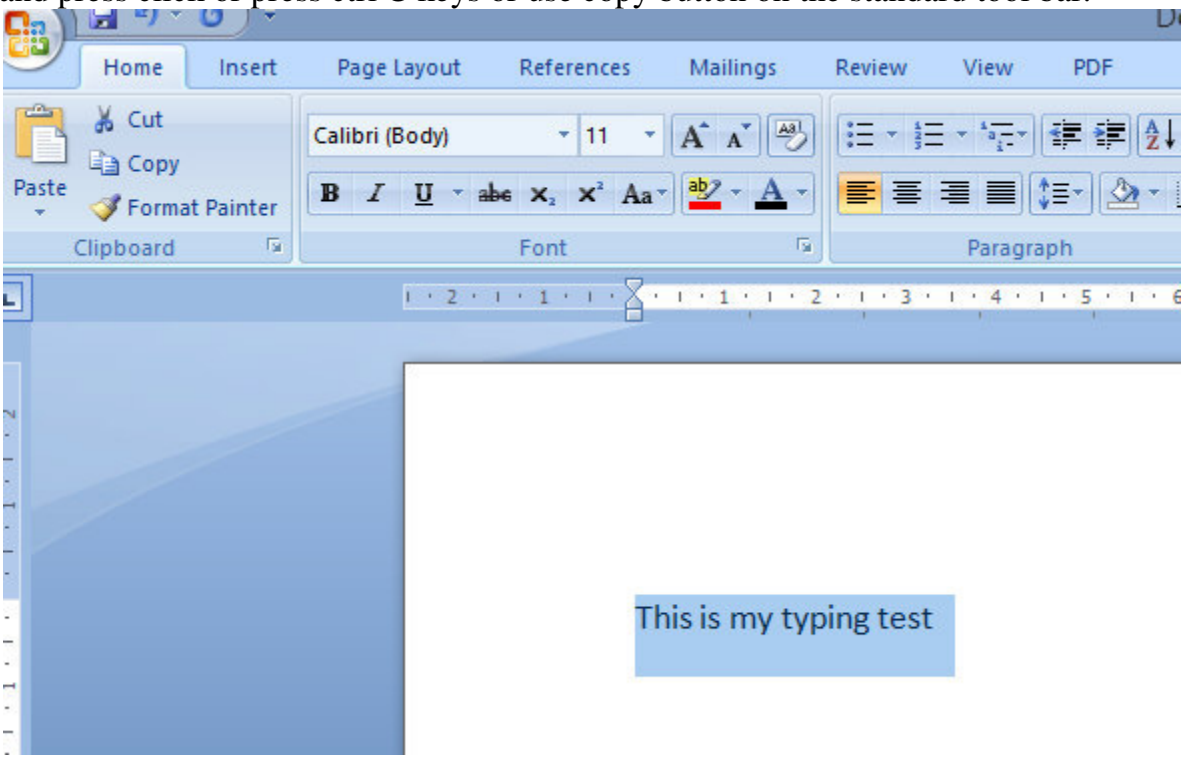
Shift + Ctrl +Left Arrow = Left Word
Shift + Ctrl + Right Arrow = Right Word
Shift + End = End of the line
Shift + Home = Beginning of the line
Shift + Up Arrow = Previous line
Shift + Down Arrow = Next Line
Shift + Ctrl +End = From point to End of the Document is selected
Shift + Ctrl + Home = From point to Beginning of the Document is selected

Cut can be done in three ways:

In this command selected text will disappear, and this command is used to move the text from one place to another place.

1. Open Edit menu and select Cut command and click.
2. Press ctrl Z in the keyboard.
3. Use cut button on the standard tool bar

Copy text : In this command hole text will remain on the same place and copy of the text can be used at many places in the document (Like photocopy of the master page).
Select the text paragraph by clicking the mouse button three times after placing the cursor on the paragraph. Open edit menu and select the copy command and press click or press ctrl C keys or use copy button on the standard tool bar.



Now the paragraph is copied.
Paste : This command can only be used if cut or copy command used earlier, means Cut and Copy commands are incomplete without using paste command.
To paste following steps can be used:
1. Open Edit Menu and select the Paste Command after using Cut / copy command.
2. Select the place by single click (where to paste text)
3. Press Ctrl V in the key board or Open Edit Menu Select Paste Command.

Formatting
Formatting includes many aspects, some of them are:
1. formatting of Font, Font size, Font type and Font Style
2. Bold, Italic and Underline.
3. Large Italic and Underline
4. Large dropped capital letters
5. Word Art special effects
6. Paragraph Indents
7. Paragraph Alignment
8. Spacing, Hanging Indent
9. Line Spacing
10. Borders

11. Shading
12. Margins
13. Auto Format
14. Bullets and Numbering
15. Table and Grid lines
16. Header and Footer

4.14. Exercise

Check your progress
Exercise1

State true/False
(*a*) In word, the search cannot be case sensitive
(*b*) It is possible to submit the search to only a part of the document
(*c*) It is not possible to cancel the search in between a search operation.

Ans . (a) F (b) F (c) T
Exercise 2
Short Question

Q.1. How are simple and complex tables created in a MS Word document? (9)

Q.2. What is Clip Art? How is the picture or Clip Art inserted in a document from clip Gallery? (9)

Q.3. How are document templates used in MS Word?

PRACTICE QUESTIONS
1. Why is MS Word called a WYSIWYG program?

_____
_____

2. Where does a text or graphic go when you cut or copy it?

_____
_____
_____
_____

3. What is word wrapping?

_____
_____
_____
_____

4. What is Mail Merge? How this can be use in MS Word? Explain with suitable example?

_____
_____
_____
_____

5. Write the following in the format as shown
We come across several documents in our work life everyday. Some of these are listed as follows:
(a) Documents that are used for identification
(*i*) Business cards
(*ii*) Certificates
(*iii*) Labels
(b) Documents that provide reference
(*i*) Index
(*ii*) Contracts
(*iii*) Calendar
(*iv*) Lists

6. Give a footer ' B.Com programme' in the centre of the footer. The footer should also consist of page no/s and total no. of pages on the right side.

7. Why do you indent text? Do you think indentation can replace page margins?

_____
_____
_____
_____

8. Give advantages of find and replace feature of Word processor.

_____
_____
_____
_____

9. What are the uses of tab stops? What are the different tab stops available?

_____
_____
_____
_____

10. What is use of word? Explain its applications?

_____
_____
_____
_____

11. Give a footer ‘ B.Com programme’ in the centre of the footer. The footer should also consist of page no/s and total no. of pages on the right side.

_____
_____
_____
_____

12. Why do you indent text? Do you think indentation can replace page margins?

_____
_____
_____
_____

13. Give advantages of find and replace feature of Word processor.

_____
_____
_____
_____

14. What are the uses of tab stops? What are the different tab stops available?

_____
_____
_____
_____

Chapter – 5 Spreadsheet and Its Business Applications

---

1. INTRODUCTION

5.1 Objectives
5.2 Introduction to worksheet
5.3 Worksheet Concepts
5.4 Methods of building a workbook
5.5 Important features of Excel
5.6 Shaving Workbook
5.7 Editing in workbook
5.8 Entering data in a cell
5.9 Formula copying
5.10 Moving data from selected cells
5.11 Rearranging worksheet
5.12 Project evolving multiple spreadsheets
5.13 Printing worksheet
5.14 Summary of the chapter
5.15 Exercise

5.1 Objectives

After studying this chapter, students are able to:

- Understand the use of creating, saving and editing worksheet.
- Understand insert, delete worksheet
- Explain the entering of data in cells.
- Understand the formula coping
- Understand moving data from selected cells
- Understand rearranging worksheet
- Understand Printing of worksheet

5.2 Introduction to Spreadsheet

INTRODUCTION

It might some time you realized the importance of computer in everybody's life. It has now come to a stage that without computers it will be very difficult to perform certain tasks in our life, for example, banking transaction, railway,

airlines and other transport reservation, traffic controls etc. Many business applications require the analysis of data, which may involve statistical and mathematical calculations. In these kinds of financial and commercial applications Spread Sheet Software plays an important role. The Spread Sheet makes the calculations, analysis and presentation of any numerical data in a very simple and effective way.

There are quite a few application packages available in this category, viz. Lotus 1-2-3, Quattro Pro,Symphony, Excel, etc. Ms Excel is Windows based Spread Sheet developed by Microsoft Corporation.

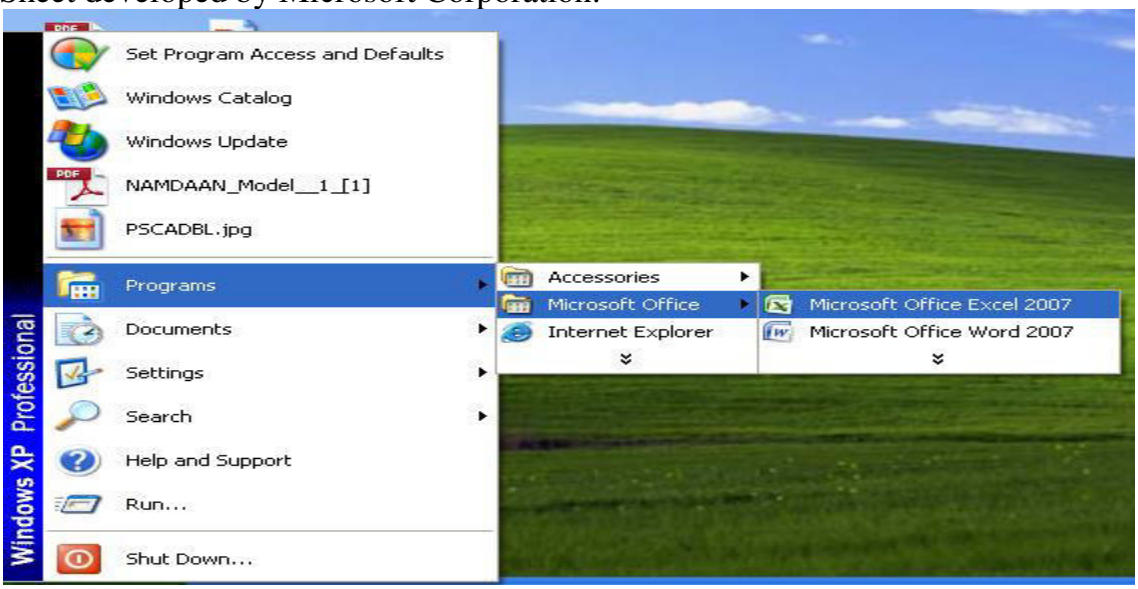
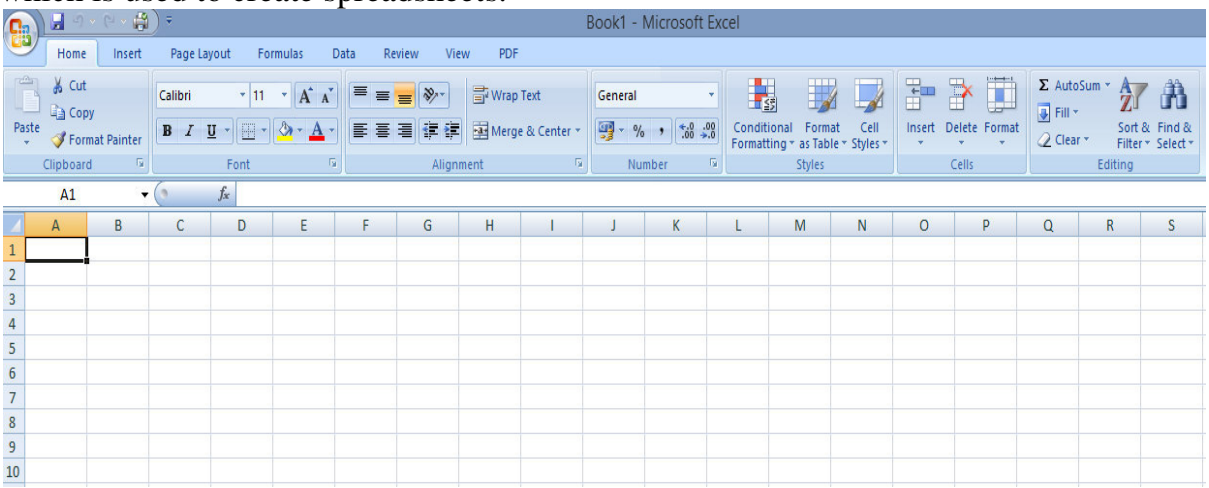
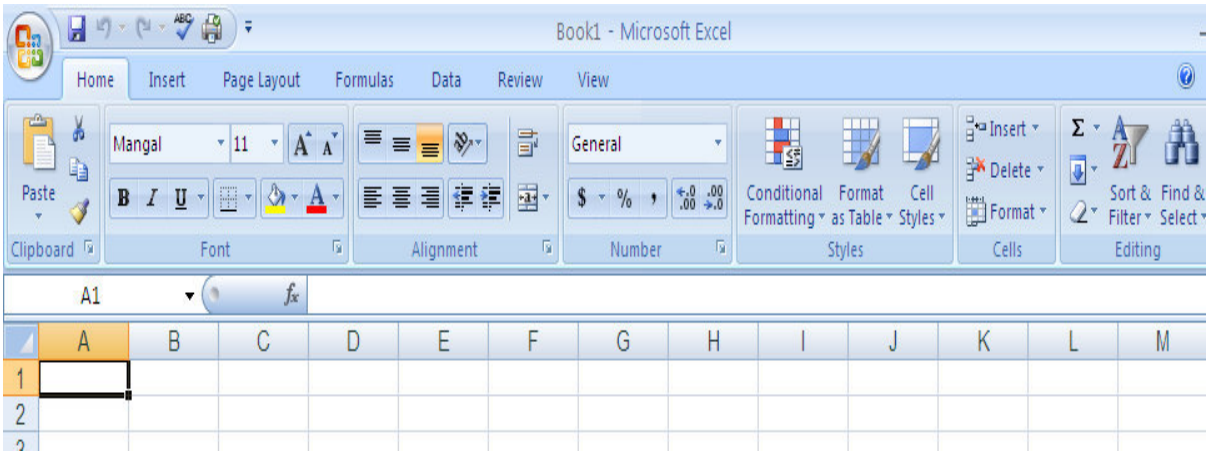


Fig 5.1Exploring the Excel Window

5.3 Spreadsheet concepts

Spreadsheet is defined as a large sheet containing a matrix of rows and columns. It is an effective tool for keeping track of all sorts of data like student attendance, marks and grades, a list of major purchases and amounts etc. It provides the facility to organize data into rows and columns. Excel is one of the Microsoft Office tools, which is used to create spreadsheets.





5.4 Methods of building a worksheet

Explain the method for building a worksheet.

The worksheet is a grid of ***Columns*** (*designated by letters*) *and* ***Rows*** (*designated by numbers*).. It is the important part of Excel. The letters and

numbers of the columns and rows called labels are displayed in gray buttons across the top and left side of the worksheet.

The intersection of a column and a row is called a **cell**. Shown in fig 5.1 and the cell reference is A1 (A means column name and 1 means row name)

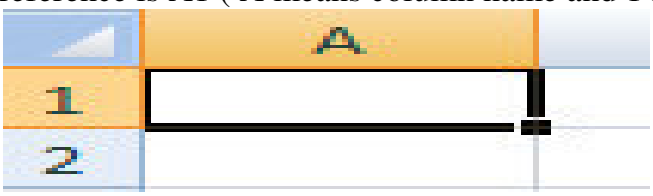


Fig 5.1 shows the cell which is intersection of coloumn (shown in alphabets and row shown in numbers only) Each cell on the spreadsheet has a cell address that is the column letter and the row number.

The column name and row number forms the address. For example, in the first row the first column has the address A1, the next column B1, like this. The second row of first column has the address A2. Cell is formed by the interaction section of column and row, formula has to be used only with reference to cell address.

The left most line shows the numbers from 1 to 18 rows and the top most line of the worksheet shows A to I columns. However, there are 256 columns and 16384 rows in the worksheet. The Excel worksheet is about 7 meters wide and 100 meters long. The rows are numbered from 1 to 16,384. The columns are named as A to Z then AA, AB, AC,…, BA, BB, etc.

Data Type in a Worksheet

MS-Excel recognizes four types of data.

1. Numbers
2. Text
3. Formula

4. Date and Time

1. Numbers or Numeric Data :- This can be any numerical value, consisting of digits (0-9), leading + or – sign, decimal point (.), and numerical operators are +, -, /, *, %, (,) , $, E, e,. If you type the data, which begins with any other character, then it will be treated as nonnumeric value.

2. Alphanumeric or Text Data :- The text data, may contain a combination of alphabets, spaces, digits and any other characters; for example, 75XYZ , 75-123, ABC 12. Texts are aligned to the left of the cell.
This may be changed using the alignment command, from the formatting tool bar.

3. Formula :- Formula is sequence of values, Cell-addresses, names, function or operators in a cell that produces a new value from existing values. It is a equation that analyzes data on a worksheet.
Formula in MS-Excel start with = sign. The formula = A4+B7 will add the contents of cell A4 and B7 and put the resulting value in the current cell.

4. Date and Time :- Microsoft Excel stores dates as sequential numbers known as serial values. Excel stores the time as a decimal fraction because time is considered as a portion of a day. Dates and time are values and, therefore can be added, subtracted and included in other calculations.

5.5 Important features of Excel

Different applications for which spreadsheet can be usefully deployed are :–
1. Ledgers
2. Banking forms
3. Income statements
4. Annual reports
5. Pay rolls
6. Budgets
7. Admission lists
8. Railway reservation
9. Ranking analysis
10. Cost analysis
11. Mathematical calculation
12. Standard calculation
13. Financial calculation
14. Tax calculation
15. Tender or Quotation
16. Billing aspects
17. Trigonometric function

Using Excel in Computer

1. Open Program Manager Window.
2. If not opened double click the icon of Program Manager to ask windows to open.
3. If Excel is installed in a separate window, double click the icon for that window to open.
4. If Excel is in Microsoft office window, open Microsoft office window by double click its icon.
5. Locate the icon MS Excel and click or highlight the icon by key board arrows and press enter.
6. Excel program is displayed in the screen.

5.6 SAVING THE WORK BOOK

The file should be saved before switching off the computer. The worksheet entries are first stored in RAM and they are to be saved in the hard disk or the floppy disk. See fig 5.2 showing saving of workbook for that purpose, the file is to be saved by giving a name.

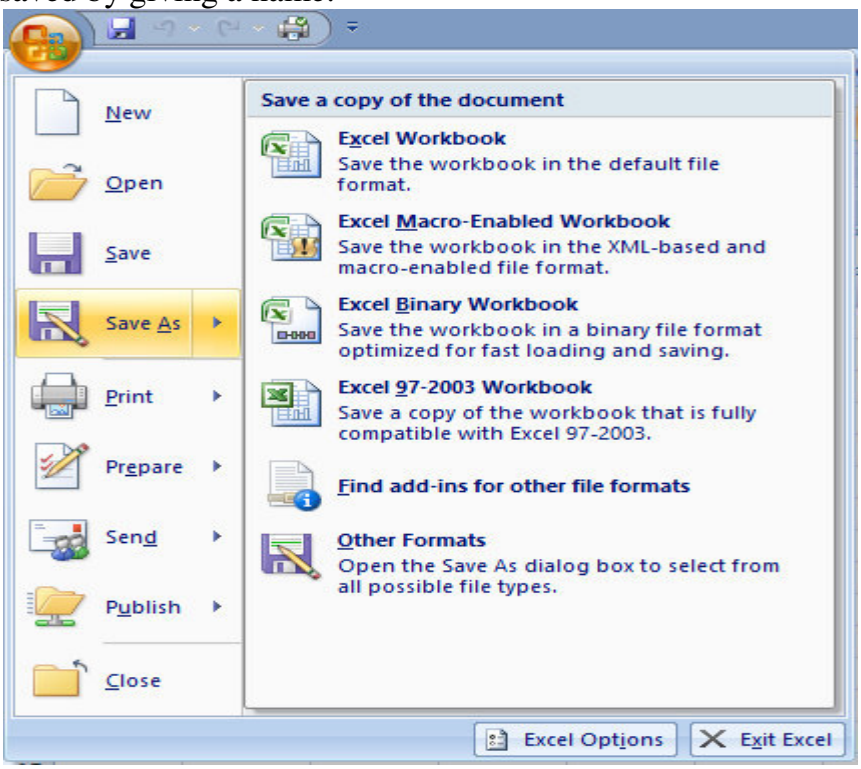
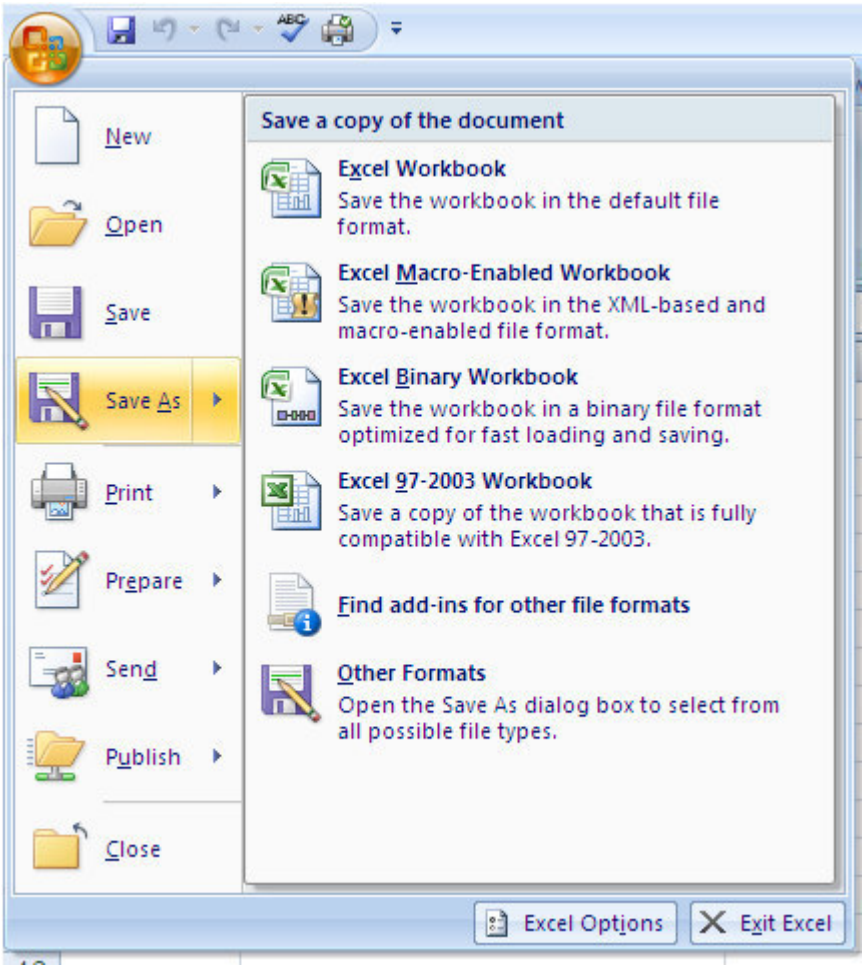
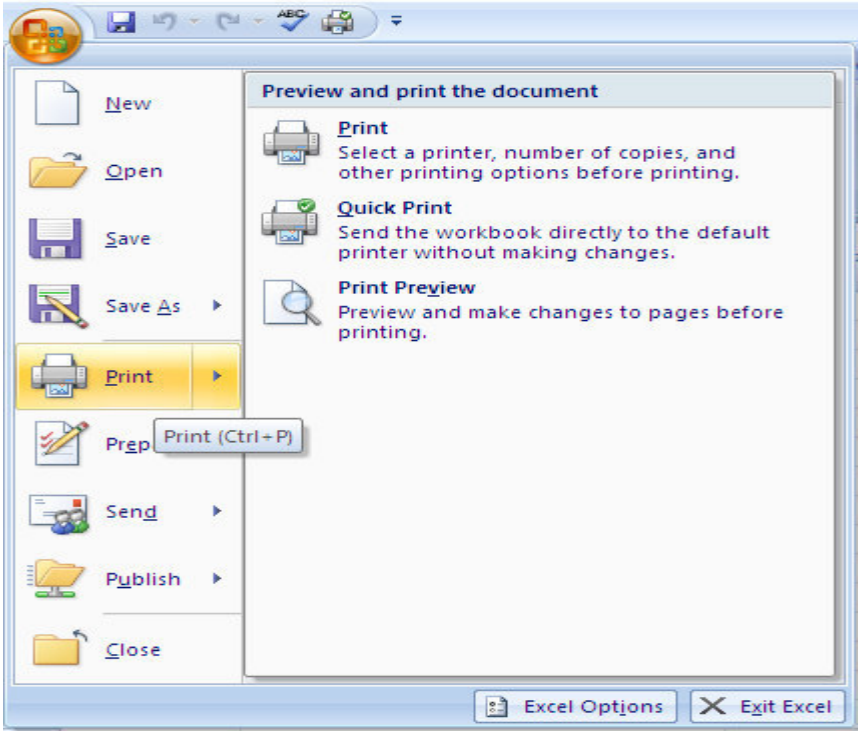


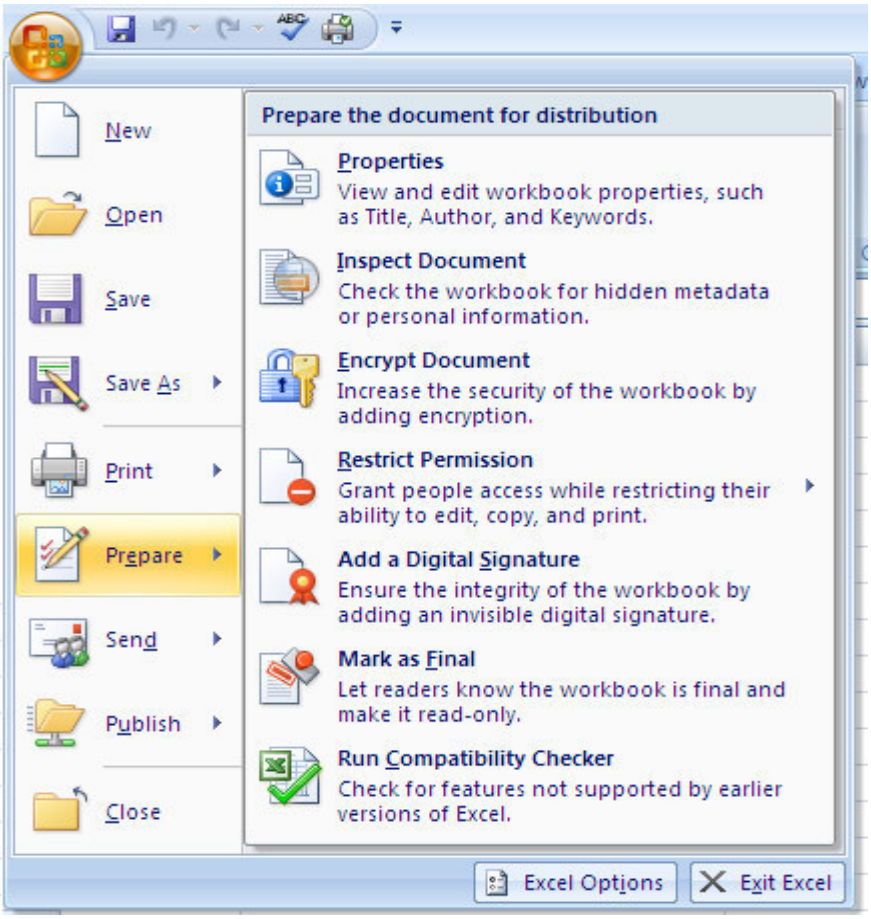
Fig 5.2 shows saving of workbook using various methods

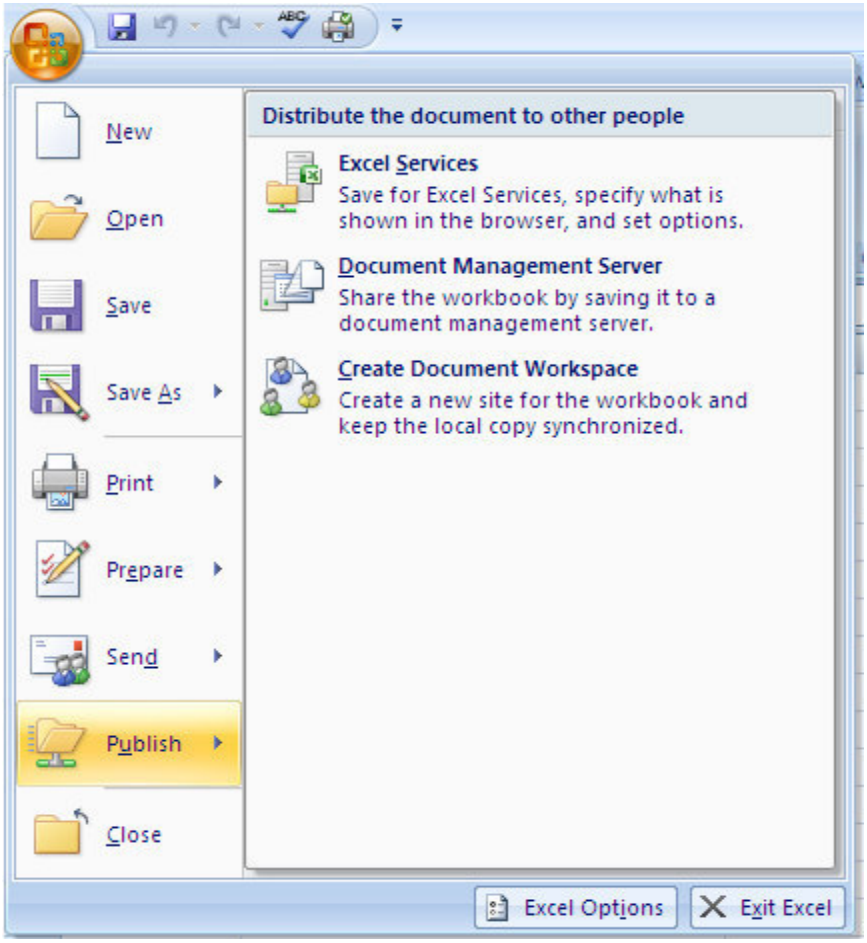
1. Use save button on the standard tool bar.
2. Use save Command from the file menu
3. Use Keyboard keys ^S to Save the file
4. Use close in the work sheet window. The MS office assistant will ask " Do you want to save the file? Press Enter. The file will be saved with .xlsx tag.

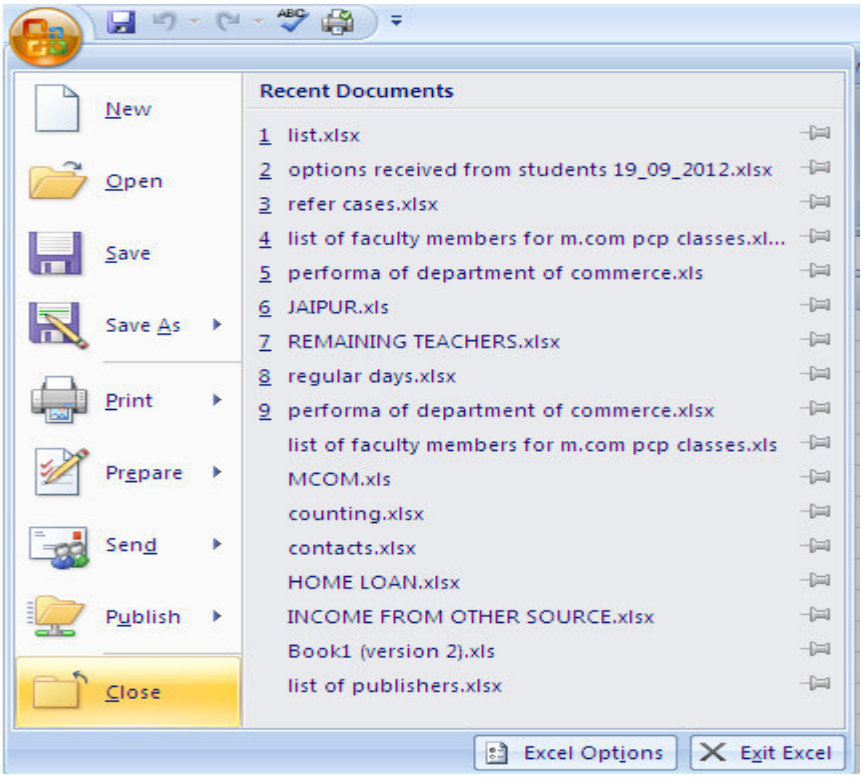


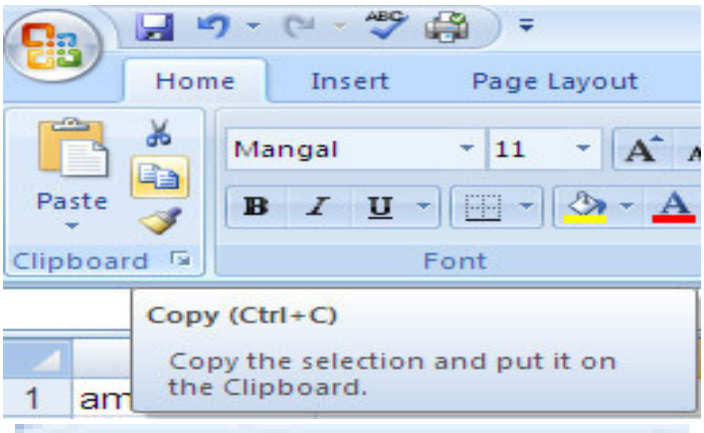
Some of the important points to be noted are that the worksheet is mostly used for manipulation of data at various levels. High Level manipulations are done in the worksheet. Keyboard and Mouse are mostly used as input devices.



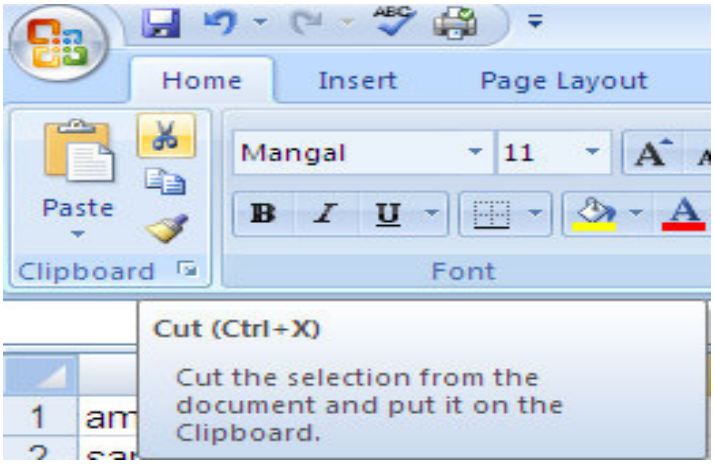

New
Open
Save
Save As
Print
Prepare
Send
Publish
Close
Prepare the document for distribution
Properties
View and edit workbook properties, such as Title, Author, and Keywords.
Inspect Document
Check the workbook for hidden metadata or personal information.
Encrypt Document
Increase the security of the workbook by adding encryption.
Restrict Permission
Grant people access while restricting their ability to edit, copy, and print.
Add a Digital Signature
Ensure the integrity of the workbook by adding an invisible digital signature.
Mark as Final
Let readers know the workbook is final and make it read-only.
Run Compatibility Checker
Check for features not supported by earlier versions of Excel.
Excel Options
Exit Excel

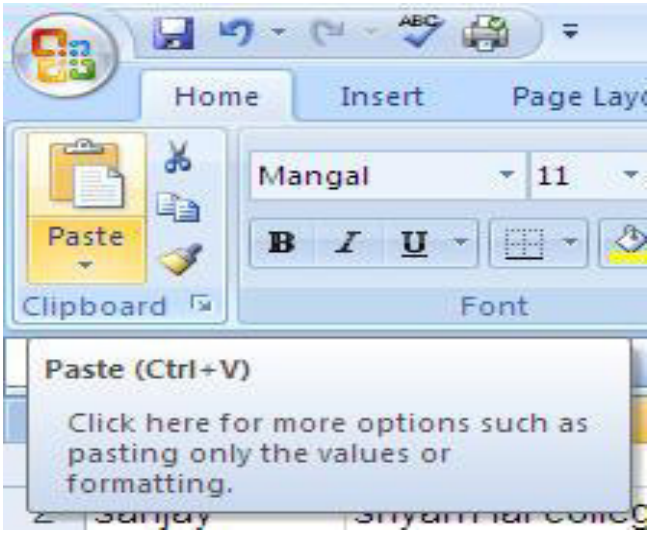

New
Open
Save
Save As
Print
Prepare
Send
Publish
Close
Distribute the document to other people
Excel Services
Save for Excel Services, specify what is shown in the browser, and set options.
Document Management Server
Share the workbook by saving it to a document management server.
Create Document Workspace
Create a new site for the workbook and keep the local copy synchronized.
Excel Options
Exit Excel

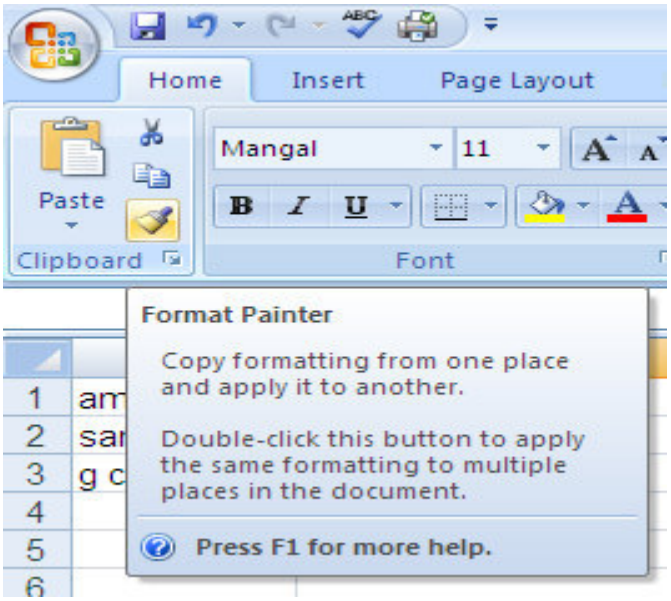

New
Open
Save
Save As
Print
Prepare
Send
Publish
Close
Recent Documents
1 list.xlsx
2 options received from students 19_09_2012.xlsx
3 refer cases.xlsx
4 list of faculty members for m.com pcp classes.xl...
5 performa of department of commerce.xls
6 JAIPUR.xls
7 REMAINING TEACHERS.xlsx
8 regular days.xlsx
9 performa of department of commerce.xlsx
list of faculty members for m.com pcp classes.xls
MCOM.xls
counting.xlsx
contacts.xlsx
HOME LOAN.xlsx
INCOME FROM OTHER SOURCE.xlsx
Book1 (version 2).xls
list of publishers.xlsx
Excel Options
Exit Excel


Home
Insert
Page Layout
Paste
Clipboard
Mangal
11
Font
Copy (Ctrl+C)
Copy the selection and put it on the Clipboard.

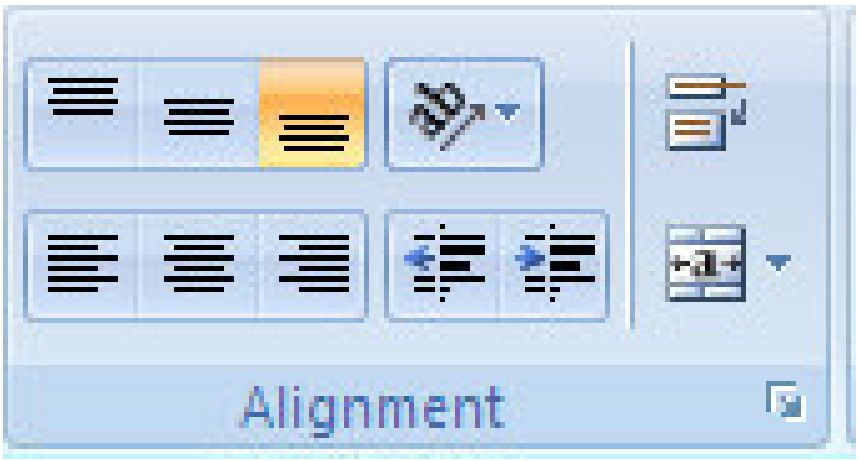

Paste
Clipboard

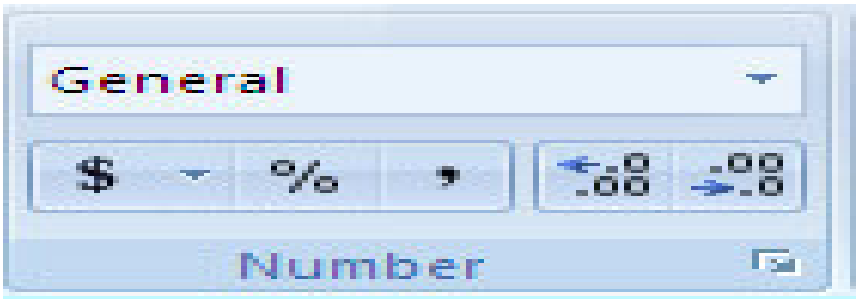

Home
Insert
Page Layout
Paste
Clipboard
Mangal
11
Font
Cut (Ctrl+X)
Cut the selection from the document and put it on the Clipboard.


Home
Insert
Paste
Clipboard
Mangal
11
Font
Paste (Ctrl+V)
Click here for more options such as pasting only the values or formatting.


Home
Insert
Page Layout
Paste
Clipboard
Mangal
11
Font
Format Painter
Copy formatting from one place and apply it to another.
Double-click this button to apply the same formatting to multiple places in the document.
Press F1 for more help.

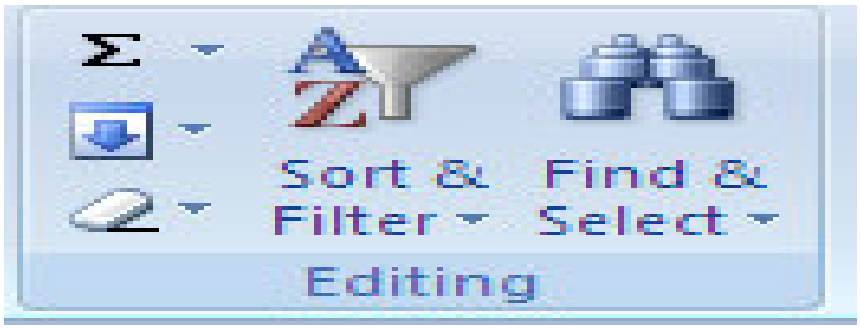

Mangal
11
Font

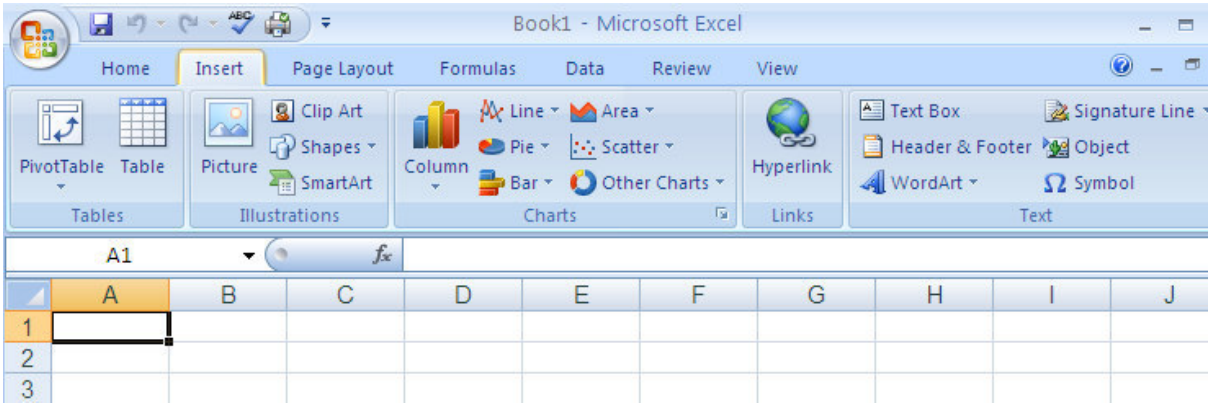

Alignment

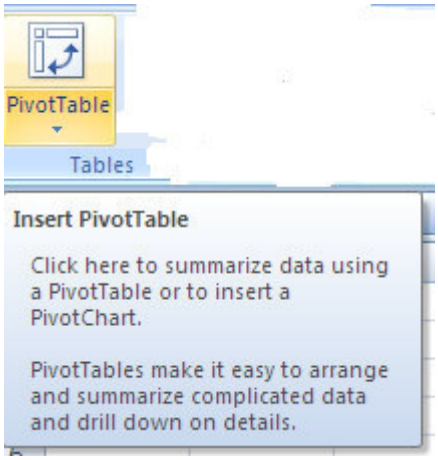

General
Number

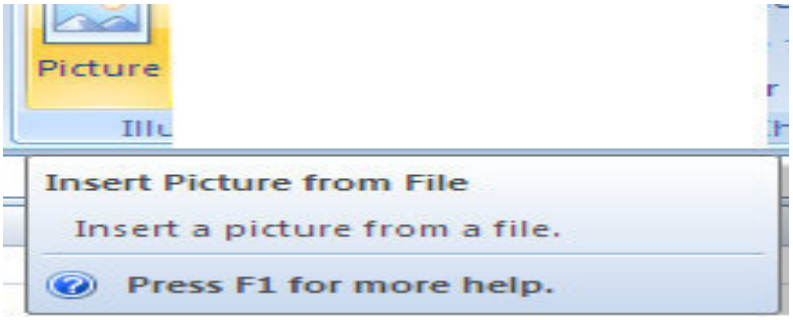

Conditional Formatting
Format as Table
Cell Styles
Styles

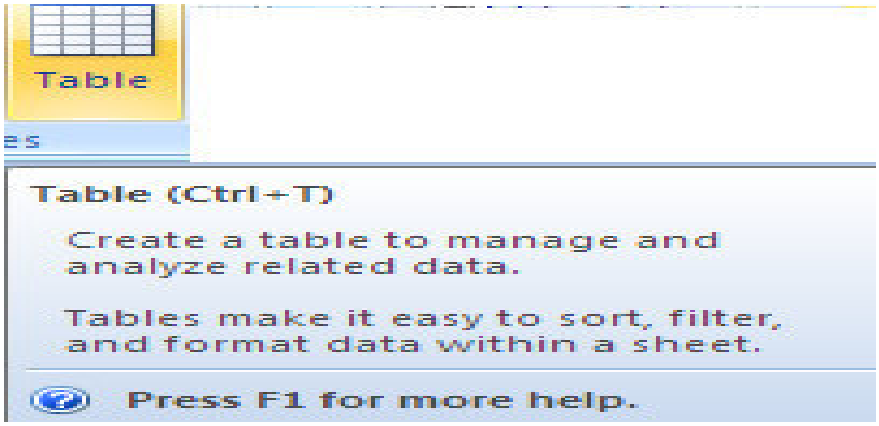

Insert
Delete
Format
Cells


Sort &
Filter
Find &
Select
Editing


Book1 - Microsoft Excel
Home
Insert
Page Layout
Formulas
Data
Review
View
PivotTable
Table
Picture
Clip Art
Shapes
SmartArt
Column
Line
Area
Pie
Scatter
Bar
Other Charts
Hyperlink
Text Box
Header & Footer
WordArt
Signature Line
Object
Symbol
Tables
Illustrations
Charts
Links
Text
A1
A
B
C
D
E
F
G
H
I
J
1
2
3


PivotTable
Tables
Insert PivotTable
Click here to summarize data using a PivotTable or to insert a PivotChart.
PivotTables make it easy to arrange and summarize complicated data and drill down on details.





5.7 Editing in work book

What does Editing of Cells mean? Explain.
Editing is the concept of making changes, modification or corrections in the data as well as positioning data as per requirements. Data can be edited only if the concerned cell is made active. Some of the functions of editing and functions are to be studied.

Alignment of data

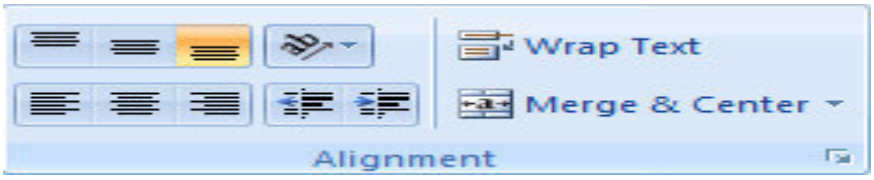


Fig 5.3 shows various types of alignments in ms excel

The data in the cell may be either left aligned or right aligned as default. Number will be right and the character data are aligned left in default. For example, Name is aligned left in the cell and 85 is aligned right in the cell.
To change the alignment in cells the alignment button can be used for this purpose formatting tool bar is to be used.
In the formatting tool bar, there are four buttons for alignment. They are
(*a*) Right align (*b*) Left align (*c*) Center align (*d*) Center across column
Marks Marks Marks Marks

A specific cell or a series of range of cells can be selected for alignment proposes. After selecting the cell or series of cells, place the pointer on the specific button, right or left or center align and press. The cell data or center cells data will be aligned as per instructions.
The center across the columns button can be pressed for aligning data in C particular cell. For example, the cell data mark-sheet can be selected and then the button center across columns is to be pressed. Then the data will be aligned center across columns.

Wrap text command is used to wrap text in the specified cell , shown in fig 5.5a

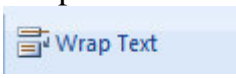


Fig 5.5a wrap text command

For example showing below "This is my wraping of text " in a single sentence and wrap text command will fold the text according to the shape / size of the of the cell. Shown in fig 5.6



Result shown in fig 5.7

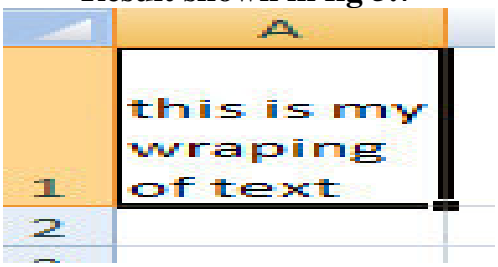


Fig 5.8 shows how to merge and centre text in excel file using merge & centre command.



Fog 5.8 merge & centre command.

See fig 5.9 "type this line in a cell "this is my wraping of text"shown in fig 5.10

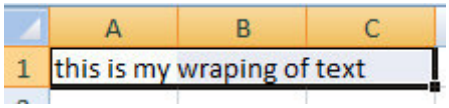


Fig 10 shows a single line typed in the excel

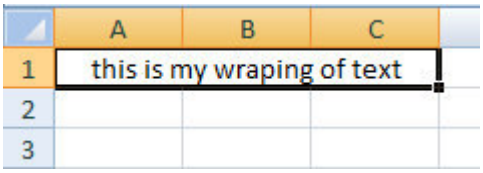


Fig 5.11 shows that all three cell A,B,C are merged together and comes into centre of the these three cells.

5.8 Entering data in a cell

A is the column name and 1 is the row number and the cell reference is A1 as the same B is the name of the column and 1 is the row number. These cell references used in formulas where as there is no need to write values.

Fig. 2.3 A

Editing Cell Data

Editing can be done only in active cells. Press F2 or double click the cell for editing. The status bar shows edit and the formula bar shows the data in the cell.

Editing can be done in the cell or in the active bar. Press Home key to get the cursor to the first position that is left of data in the cell. Press Del key to delete and enter "and press enter" The data is aligned right.

Label prefix characters and label itself can be edited by F2 key. If Excel is operating in Insert mode, typing can be done. OVR shows the Overtype mode and INS shows the Insert mode.

If many changes are to be done, editing can be done directly by selecting the cells and entering new data. It replaces the entire old data with new data. Confirm button can be clicked or Enter can be pressed to save changes in the cells. Sum function is an inbuilt function.

For example, formula = C3 + D3 + E3 +F3 + G3 + H3 can be easily added if the sum function is clicked which is in the status bar. Ranges can also be specified in Formula bar which can be used for sum function. Select the cell and to get the result press = Sum (C5: E5)

Example :

Sometimes error may occur if any non-numeric data are entered in the cells. Sum function can be used for numbers only and not for characters. Sometimes if the range is not given the formula is displayed in the cell and the results can be got.

If you want total activate cell A9 and type total : Then activate cellB9 by arrow key. See fig 5.12 & 5.13

	A	B	C	D	E
1		Month	Sales	Salary	Rent
2	1	January	5000	4000	200
3	2	Feb	6000	300	200
4	3	March	8000	200	200
5	4	April	7000	300	200
6	5	May	6000	500	200
7	6	June	7000	500	100
8	7				
9	8				
10	9	Total	=SUM(c2:c6)		
11					

Fig 5.12 showing formula

	A	B	C	D	E
1		Month	Sales	Salary	Rent
2	1	January	5000	4000	200
3	2	Feb	6000	300	200
4	3	March	8000	200	200
5	4	April	7000	300	200
6	5	May	6000	500	200
7	6	June	7000	500	100
8	7				
9	8				
10	9	Tota	32000		
11					

Fig 5.13 showing solution using formula

You can add sales total vertically or add BLD in horizontal manner by pointer.
It may be either:
= Sum (D2 : D7) or
= Sum (E2 :E7)
Mouse can be used to click the Sum function in the tools bar.

Change of Row Height or Column Width

Sometimes the data entered in the cell may require more space than the column width. The full data or numerals cannot be visible in the cell. Sometimes the character entries may not be visible as the column width is not sufficient. For this purpose column width is to be changed. Changes in column width can be made.

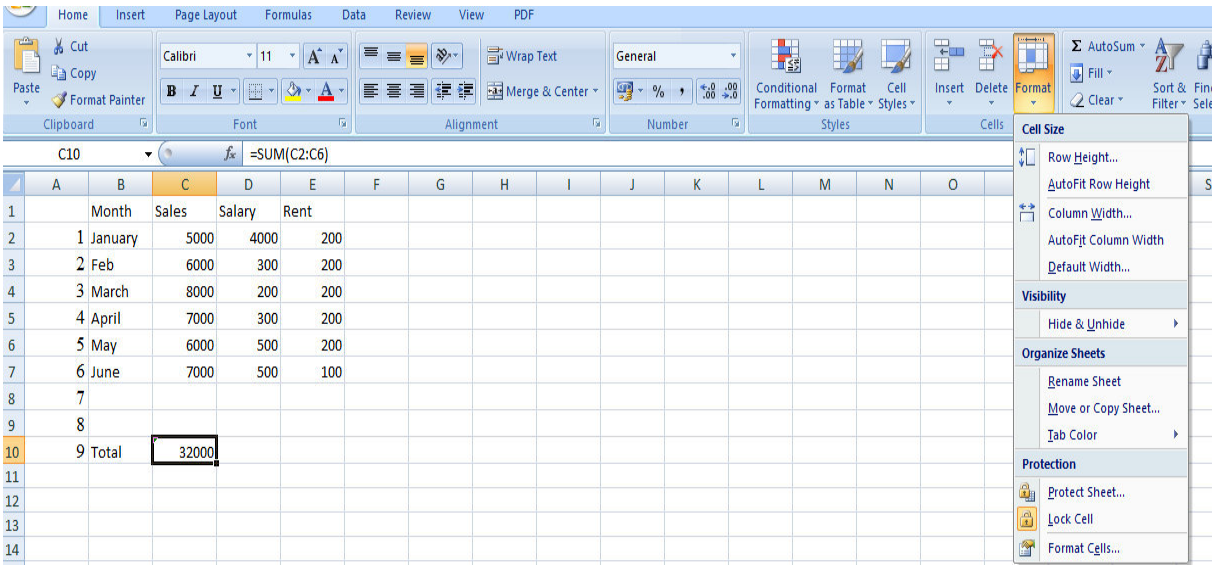


Fig 5.14 for cells command

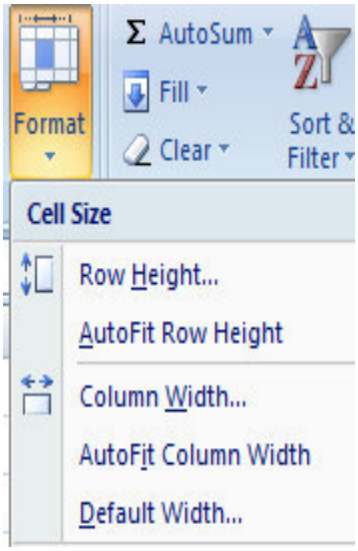


Fig 5.15 shows the way you can change the size of the cells with row height and coloumn width command in the Home Menu-> Cells

---

5.7 INSERTING, DELETING WORKSHEETS

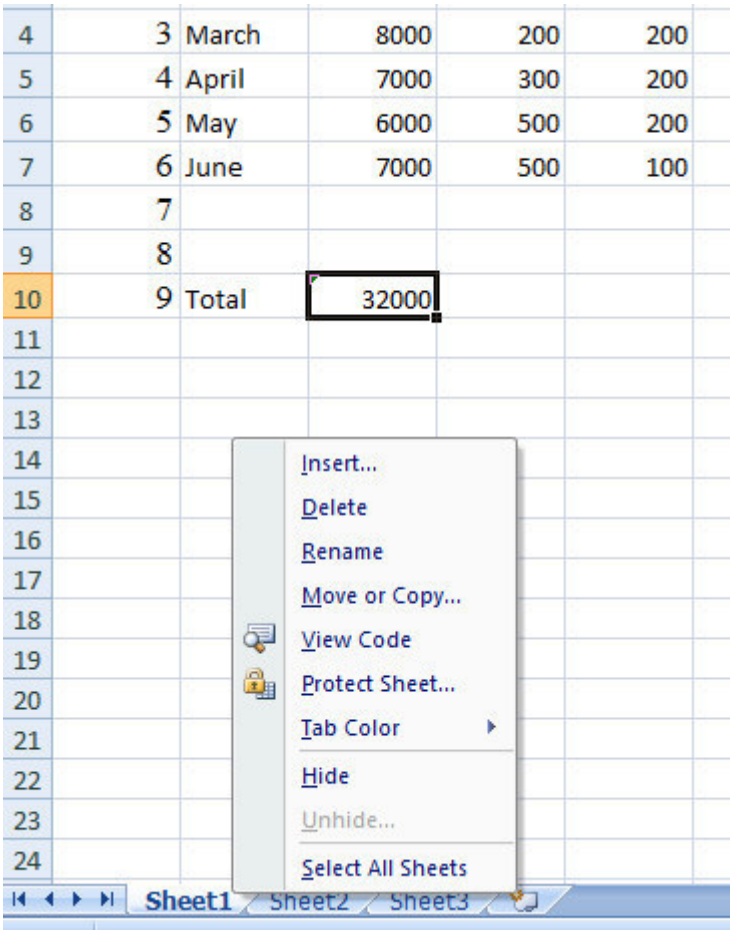


Fig. 5.17 shows how to use insert, delete and renameing worksheet

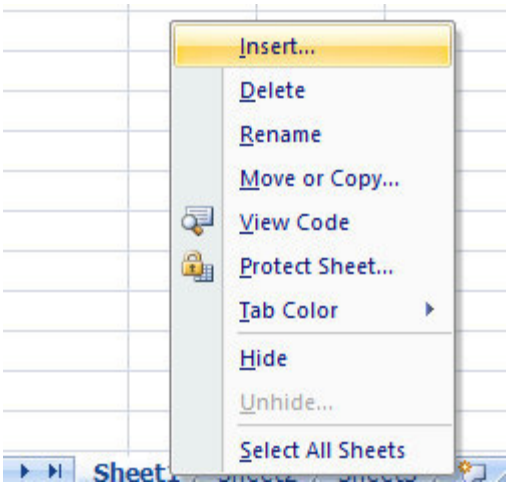


Fig 5.18 shows Insert worksheet

Worksheet can be inserted using Insert Menu command. See fig 5.17 and fig 5.18 You can also name the sheet1,sheet 2, sheet 3 according to your choice and work using rename command. Steps to rename the sheet1 are given below:
1. Select the Sheet1 Press right click of the mouse and select rename command shown in the figure below. Give new name according to your choice after using rename command give new name to the sheet1 of your choice shown in the figure below (Sheet1 rename to Payroll)
Selected Sheet can be deleted using delete command. Steps to remember are select the sheet ->right click the mouse ->select delete command.

5.8 FORMULA COPYING

Formula Bar

	A	B	C	D	E	F	G
1		name	add no	Marks1	Marks2	Marks3	Total Class
2	1	BAC	1234	40	70	30	140
3	2	DLI	5678	50	60	70	180
4	3	DEP	5678	50	60	70	160
5	4	GILL	7891	60	70	50	180
6							

Fig. 5.19

If you copy formula from D2 cell to F2 cell the cell references will change automatically. This is somehow advantage of Excel that Total class/ marks is calculated for every employee.

	A	B	C	D	E	F	G	H
1		name	add no	Marks1	Marks2	Marks3	Total Class	
2	1	BAC	1234	40	70	30	140	
3	2	DLI	5678	50	60	70	180	
4	3	DEP	5678	50	60	70	180	
5	4	GILL	7891	60	70	50	180	
6								
7								

But in some cases we need same Cell value for all calculations, see figure 5.21 using $ to fix Cell references by putting $sign in front and after the Alphabet (A) for example given below Instalment Amount is same for all calculations so we are using = $B$1 to $B$6 cell reference , see figure 5.21.

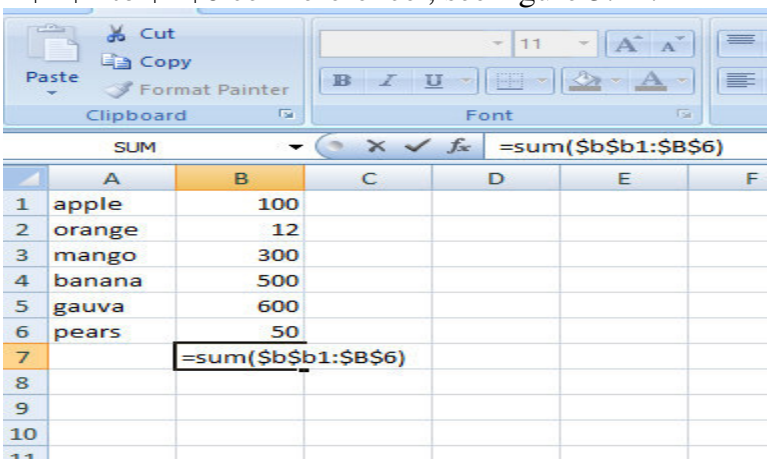


Fig.5.21 use of $ for fixed cell reference

Opening a new file

Select the MS Excel program directly by clicking the Icon in the Desktop if it is in Desktop.

If MS Excel is in the programs menu, select MS Excel from program and click. By using keyboard form windows key. Use arrow key to select the program menu and then MS Excel program and press Enter. Now MS Excel window with Book 1 opens and it will be a new work-sheet.

If any one of the existing files say mark list .xls is to be opened. Open file menu Alt + F and use key to select open command. Standard Tool bar contains a button Open. Now the files will be opened. The open dialog box will save some of the files, directories, sub-directories and Excel files and the directories drive.

File can be opened by typing the File menu in the text area provided. You can open the file of your choice. Otherwise you can use the scroll bar to select the required file.

5.10 MOVING DATA

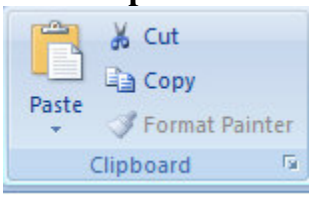
The worksheet file already prepared may have to be changed or moved to some other files or area. All the columns and row may not be needed and hence the data required are to be removed.



Data can be short and filter using short & filter command

Movement of data can be done by moving cell data. All cells can be moved or some specific cells can be moved.
The ways for moving data are :
(1) Use of cut and paste command, and
(2) Mouse movement.

Cut and paste



The required columns and rows can be selected by for the purpose of moving.
For example, the file has the following:

Formula Bar

	A	B	C	D			G
1		name	add no	Marks1	Marks2	Marks3	Total Class
2	1	BAC	1234	40	70	30	140
3	2	DLI	5678	50	60	70	180
4	3	DEP	5678	50	60	70	160
5	4	GILL	7891	60	70	50	180
6							

Fig 5.20 shows salary statement
The general method is to select the required cells, order cut and then go to the area already selected, order for paste. In this case if first 4 rows are to be moved the following should be done. Make A1 cell active by pressing ^Home or Home key or by mouse. For cutting A1 cell : Dotted moving line is seen in the border around the cell. The dotted moving line is called as “MARQUEEING”. Now the status bar shows select the destination and press enter or choose paste. Now use arrow key to move the pointer to C1 from A1. Then press enter key. Or use mouse to select or activate C1 cell.
^V can be used for paste command that is the short cut key.
Now the data is moved from A1 cell to C1 cell.
Mouse pointer shape may be in three kinds:
1. When the pointer is inside the cell.
2. Arrow mark when it is outside the borders.
3. If the pointer is in the right corner (bottom) of the border.

Without releasing the button drag the mouse pointer to C1 cell. A Grey border is seen around C1 cell. If the mouse button is released the data is moved to C1 cell.

Copying data to another area

If the same data are to be copied in another area, then copy command can be used.

1. Copying data in single cell.
2. Copying data in range of cells.
3. Copy the data to C new location.
4. Copy the data to C new area in the worksheet.

For example, if the data in B1 cell is to be copied in H1 cell.

Activate B1 cell by using arrow keys or mouse. Open Edit menu-use Copy command. Select the new cell H1 by activating the cell by arrow key or mouse click. Paste command. Now the data in B1 is pasted in H1 also.

For erasing the cell data

— Activate B2 cell and press Del.
— Now data in B2 is deleted.
— Activate B2 cell and press shift key use arrow or arrow to select cells and release the button. Now series of cells are selected.
— Press Del in keyboard.
— The selected cells are cleared and data are erased.

For the purpose of deleting rows

Move mouse pointer to row (left side) and click and right click. Delete dialog box will appear. Select shift cells up or entire row options. Then the entire row will be deleted. In the similar manner, series of rows and columns can be deleted. Model :

Delete using Keyboard

— Activate B1 cell or B2 cell using pointer.
— Open Edit menu, select Delete command.
— Delete dialog box is opened.
— Select shift cells up or entire row and Press OK.
— Now the cell row is deleted.

Delete using keyboard

— Activate any column in C by using arrow key.
— Press Ctrl + Space bar to select column C.
— Right click mouse or press Shift + F 10.
— Short cut menu appears. Choose delete command.
— Now rows are deleted. If column is selected then column will be deleted.

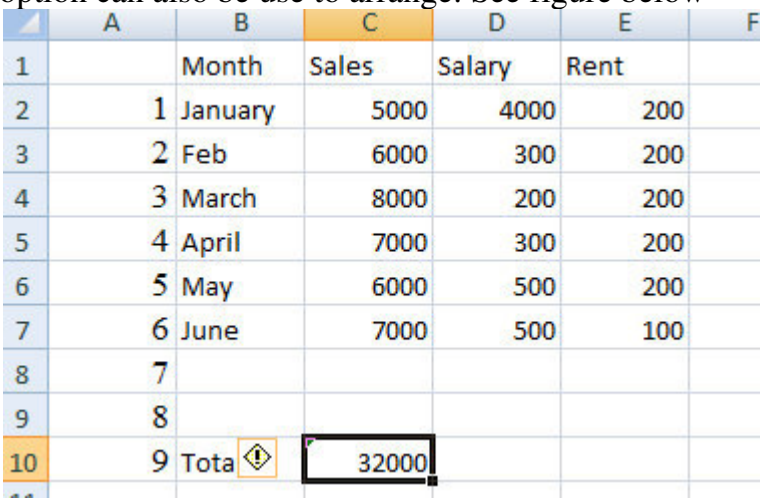
Entering data in workbook.

In the formula bar, now A1 is seen. In the status bar, the word Ready is found. The mode indicator shows ready. The terms such as edit, point, etc. can be seen as mode indicators. The cells can save values and formula. The values may be characters or numerals. The word length should not be more than 255 characters.

Examples of numeric entries :
2346
0.2346
23.46
+23.46
-23.01
#345
(567) – this is taken as – 567
If any non-numeric characters are found then the entire cell will be a non- numeric cell. Example, 10th March, 1990-91, 34 + 5, 1234_76, etc. Non-numeric or characters entries
Sampath Raj
Sunandha
V. Pad
K.S.V.
Accounting year
7.2.98

2.11 REARRANGING WORKSHEET

Rearranging can be done by selecting worksheet for example **salary of Feb 2009** should come before salary of March 2009.In WINDOW menu arrange option can also be use to arrange. See figure below



	A	B	C	D	E	F
1		Month	Sales	Salary	Rent	
2	1	January	5000	4000	200	
3	2	Feb	6000	300	200	
4	3	March	8000	200	200	
5	4	April	7000	300	200	
6	5	May	6000	500	200	
7	6	June	7000	500	100	
8	7					
9	8					
10	9	Tota	32000			

2.12 PROJECT INVOLVING MULTIPLE SPREADSHEETS HANDLING OPERATORS IN FORMULA

There are four types of operators in Excel as follows:
1. Arithmetical Operators
2. Relational Operators
3. Text Concatenation Operator

4. Reference Operators

Arithmetical Operators Relational Operators Text concatenation Reference Operators Operator
num( ) Parenthesis > Greater than : (colon)– Range
^ Exponential < Less than Operator
# Multiplication <= Less than or equal
/ Division to &
+ Addition >= Greater than or
- Subtraction equal to , (Comma) – Union
= Equal to Operator
Not equal to

Examples for Operators:

Arithmetical Operators:
Arithmetic operation can be entered in the formula bar.
Example:= 3 ^ 3 * 7 – 9
Here as per the operator precedence first 3 ^ 3 will be evaluated that is 27.
Then * is done 27 × 7 = 189 – 9 = 180 will be displayed. Brackets can be used for changing the results 3 ^ 3 * (7 – 9) = 27 * (-2) = - 54

Operator precedence

^ - exponential
* - Multiplications
/ - Division
÷ - Remainder
+ - Addition
- - Subtraction

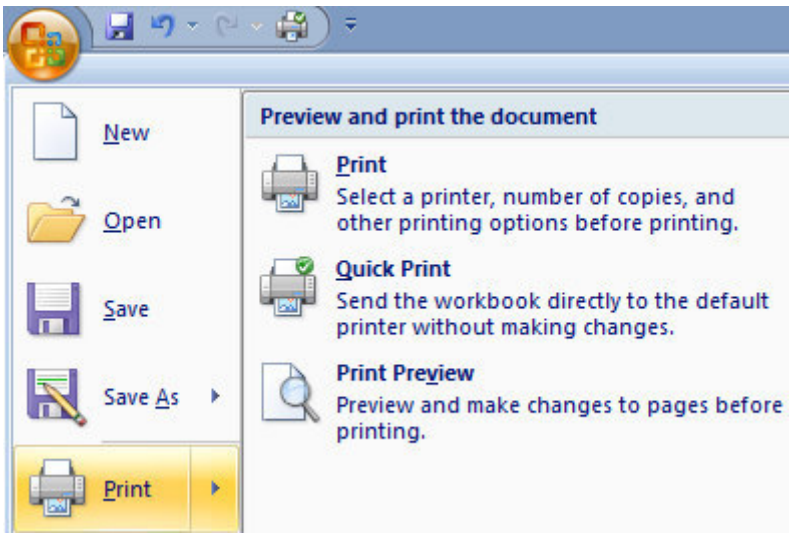
1. Parenthesis : = 7*(5+4) gives 63
2. Exponential : = 7^2 gives 49
3. Multiplication : = 5 * 6 gives 30
4. Division : = 45 / 9 gives 5
5. Subtraction : = 35-6 gives 29

Relational Operators:
1. Greater than : = 7>5 returns TRUE
2. Less than : = 7<5 returns FALSE
3. Less than or equal to : =5<=7 returns TRUE
4. Greater than or equal to : = 7>= returns FALSE
5. Equal to : = 7=9 returns FALSE
6. Not equal to : = 59 returns TRUE

Text Concatenation Operator
Example : =”Sampath”&Raj” gives SampathRaj
Reference Operators:
: Colon = B2:B10 means reference from cell B2 to B10.
, Comma = SUM (B2:B10,D2:D10) means adding the values from B2 to B10 and D2 to D10.

2.13 Printing Worksheet

Print button on a standard tool bar enables to print entire or a part of the worksheet. When you print, you can change the page set up, i.e., top, bottom, left, etc. We can print the Mark list. XLSX worksheet that we had created. Print command can be used only on worksheet that is locked in memory of the PC.
• Open the MARK LIST.XLSX work sheet.
• Open the  menu and choose see figure below and use



the print Command.
• Then Excel displays print dialog box.
It helps us to select what to print. It also has select options such as the number of copies, page range and to set up page and printer. In the top left corner of the dialog box, it displays the name of the printer and the printer type. The printer name can be selected by pressing printer set up button. If you try to print with a different printer you are using, then it is selected in the print dialog box. Else you may not get the correct print-out.
The print dialog box contains a number of options. However, the default options are current worksheet. By default Excel prints one copy of the current sheet. The Excel worksheets have multiple sheets. It is used for complex tasks. Most of these can be completed within a single sheet. Press ENTER or Click the OK button. Excel starts

printing the worksheet. Print dialog box differs according to the specification. The print has various options such as selection, selected sheets, entire workbook. Number of copies can also be changed. Range can be selected. Either all pages can be typed or pages from-to-can be printed.
In the dialog box there are buttons with O.K., cancel, page set-up, Print preview, printer set-up and Help. Printer Set-up and help can be studied separately. Page Set-up: In the page set-up dialog box, following options are available :
Orientation may be portrait or Landscape, Paper printing may be horizontal or vertical. Sealing can be done as adjust to % of size. Fit to page can be given, wide can also be given. Page size can be selected. Print quality may also be selected. Use mouse pointer to click the options available.

Exercise for practice
Exercise 1

Short Questions
Q.1. What is word wrap command how this command is used in MS Excel. Explain with the help of suitable example?

_____
_____
_____
_____

Q2. What is Align and Centre command? What is the purpose of using this command give example?

_____
_____
_____
_____

Q.3.What is a chart? List out some of the different charts available in MS Excel.

_____
_____
_____
_____

Q.4. What do you mean by cell reference in MS Excel? What are the different types of references?

_____
_____
_____
_____

Q.5. Why is formatting of spreadsheets required?

Q.6. What do you mean by circular reference in MS Excel?

Q.7. What are Header and Footer Selections? Explain in detail.

Q8. How to resize the cell (column width and Row width) using commands?

Exercise for practice
Exercise 2

Long questions
1. What are the features of MS Excel ?

2. What are common errors of MS Excel?

3. How Header and Footer can be inserted?

4. Differentiate between Workbook and Worksheet

_____
_____
_____
_____

5. Write the cell address of the following cells:
(*a*) 14th row and 2nd column
(*b*) 10th row and 1st column
(*c*) 150th row and 52nd column

_____
_____
_____
_____

6. What do you understand by cell referencing, including absolute and Relative cell referencing?

_____
_____
_____
_____

7. What is the default alignment of numbers and text in Excel? (SOL,DU,2010)

_____
_____
_____
_____

8. What is Excel Screen? State the items in Excel Screen.

_____
_____
_____
_____

9. What does Auto Fill means? Explain.

_____
_____
_____
_____

10. What are header and footer selections? Explain in detail.

_____
_____

_____
_____

11. What is meant by range of columns? Explain its use.

_____
_____
_____
_____

12. Explain the method for building a worksheet.

_____
_____
_____
_____

13. What does editing of cells mean? Explain.

_____
_____
_____
_____

14. What is Watermark? How this can be used in printing of Fee receipt, Marksheet of SOL? Explain.

_____
_____
_____
_____

Chapter 6

Generally used spread sheet functions

---

1. INTRODUCTION

6.1 Objectives
6.2 Functions in MS Excel
6.3 Structure of a function
6.4 Financial
6.5 Logical
6.6 Mathematical
6.7 Statistical
6.8 Exercise

6.1 Objectives

After studying this chapter, students are able to:

- Understand the use of functions
- Understand the structure of the function
- Understand the data used in function
- Understand the use of various function under statistical function
- Understand the use of various function under Mathematical function
- Understand the use of various function under Financial function
- Understand the use of various function under Logical function

---

6.2 Functions in MS-Excel

Functions are predefined or in built formulas that can perform calculations by using specific values or range of cells, called arguments, in a particular order, or Figure 6.1 is showing how you can use functions.

First go to Formulas -> Function Library

Figure 6.1, Figure 6.2 , Figure 6.3 and fig 6.4 will help to use all the four functions in your syllabus structure. Functions can be used to perform simple or complex

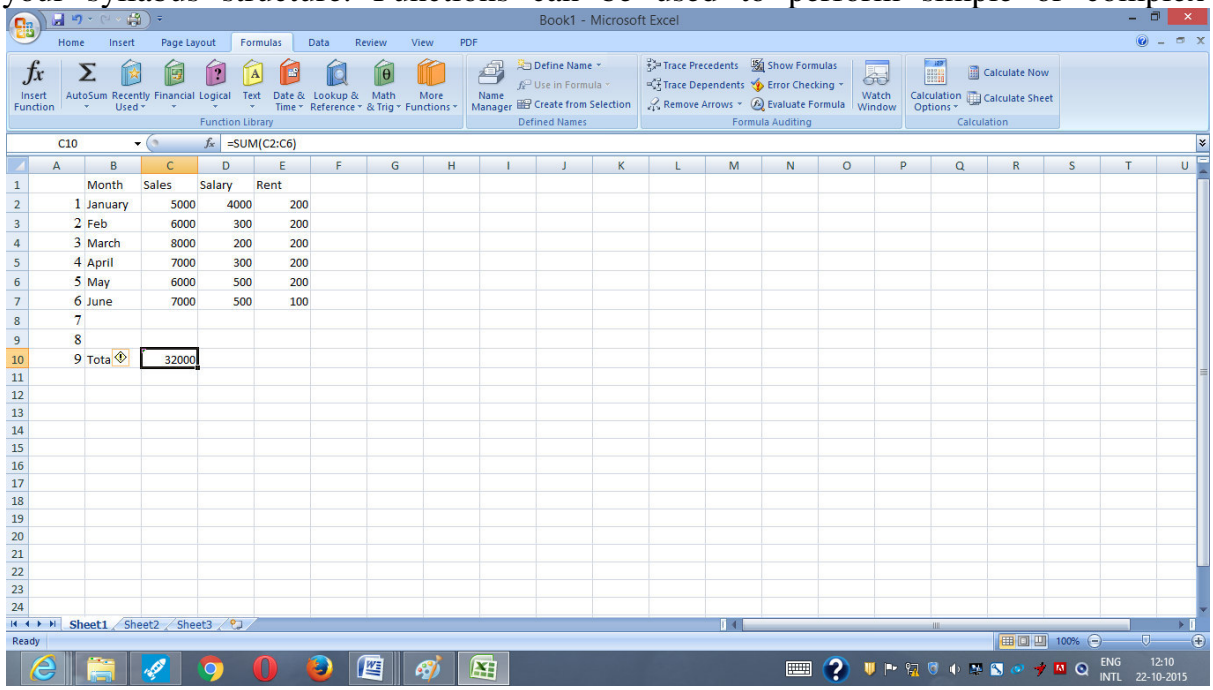


Fig. 6.1 functions

calculations. Function can be called from Function Library see in the figure no 6.2, a list of available functions will appear or by a short cut method if you click a cell and press SHIFT+F3 a list of available functions will appear see in the figure no 6.2



Fig 6.2 function library

Some to the commonly used following functions are:

1. Mathematical function see fig 6.3



Fig. 6.3 Mathematical functions

2. Statistical function see fig 6.4

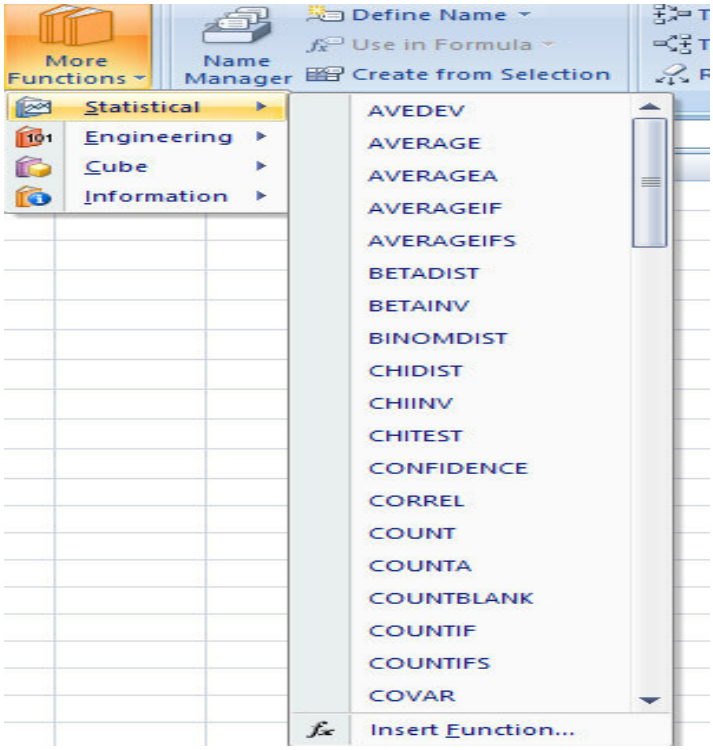


Fig 6.4 Statistical functions

3. Financial functions see figure 6.5



Fig 6.5 financial functions

4. Logical functions see figure 6.6



Fig 6.6 Logical functions

In figure 6.2 you can find various functions but most commonly used functions

are financial , Mathematical & Trigonometric (Math & Trig), Statistical and Logical.

6.3 Structure of a function

Structure : The structure of a function begins with an equal sign (=), followed by the function name, an ([)opening parenthesis, the arguments for the function separated by commas, and a (])closing parenthesis.
Arguments : Arguments can be numbers, text, logical values such as TRUE or FALSE, Group of numbers (array), or cell references. The argument you designate must produce a valid value for that argument. Arguments can also be constants, formulas, or other functions.
Entering formulas : When you create a formula that contains a function, the Insert Function dialog box helps you enter worksheet functions. As you enter a function into the formula, the Insert Function dialog box displays the name of the function, each of its arguments, a description of the function and each argument, the current result of the function, and the current result of the entire formula.

See example given below the SUM function adds all the numbers specified in the argument i.e. values or can be range of the numbers like A1 cell to A10 cell.

Example

= Name of the function (parameter1, parameter 2)
= SUM(number1, number2)
Or
= SUM(A1,A2, A3,A4)
Or
= SUM(A1:A4)

6.4 Financial Functions

PMT
Calculates the payment for a loan based on constant payments and a constant interest rate.
Syntax is = PMT(rate,nper,pv,fv,type) Rate – Interest rate for the loan.
Nper – Total number of payments for the loan.
Pv – Present value, or the total amount that a series of future payments is worth now; also known as the principal.

Fv – Present value, or a cash balance you want to attain after the last payment is made. If fv is omitted, it is assumed to be 0 (Zero), that is, the future value of a loan is 0.

Type - is the number 0 (Zero) or 1 and indicates when payments are due. Set type equal to 0 or omitted If payments are due at the end of the period. 1 If payments are due at the beginning of the period.

Remarks

The payment returned by PMT includes principal and interest but no taxes, reserve payments, or fees sometimes associated with loans. Make sure that you are consistent about the units you use for specifying rate and nper if you make monthly payments on a four-year loan at an annual interest rate of 12 percent, use 12%, 12 for rate and 4*12 for nper. If you make annual payments on the same loan, use 12 percent for rate and 4 for nper.

Tip – To find the total amount paid over the duration of the loan, multiply the returned PMT value by nper.

Examples

The following formula returns the monthly payment on a Rs. **20,000** loan at an annual rate of 16 percent that you must pay off in 20 months.For the same loan, if payments are due at the beginning of the period, the payment is: **PMT (16% / 12, 20, 20,000, 0, 1) equals -- Rs. 1,130.79** The following formula returns the amount someone must pay to you each month if you loan that person Rs. **10,000** in at 24 percent and want to be paid back in 10 months.

You can use PMT to determine payments to annuities other than loans. For example, if you want to save Rs. 50,000 in 18 years by saving a constant amount each month. You can use PMT to determine how much you must save. If you assume you'll be able to earn 6 percent interest on your saving, you can use PMT to determine how much to save each month.

PMT (6%/12, 0, 50,000) equal –Rs.129.08

If you pay Rs.**129.08** into a 6 percent savings account every month for 18 years, you will have Rs. **50,000**.

IPMT

Returns the interest payment for given period for an investment based on periodic, constant payments and a constant interest rate.

Syntax of the function is =IPMT(RATE,PER,NPER,PV,FV,TYPE)

Rate – Interest rate per period.

Per – Period for which you want to find the interest and it must be in the
range 1 to Total number of payment periods in an annuity(NPER)

Nper – Total number of payment periods in an annuity.

Pv – present value or the lump-sum amount that a series of future payments is worth right now. Fv – future value or a cash balance you want to attain after the last payment is made. If fv is omitted, it is assumed to be 0 (the future value of a loan, for example, is 0).

Type – number 0 or 1 and indicates when payments are due. If type is omitted, it is assumed to be 0.

Remarks
Make sure that you are consistent about the units you for specifying rate and Nper. If you make monthly payments on a four-year loan at 12 percent annual

Interest, use 12%/12 for rate and 4*12 for Nper. If you make annual payments on the same loan, use 12% for rate and 4 for Nper. For all the arguments, cash you pay out, such as deposits to savings, is represented by negative numbers; cash your receive, such as dividend checks, is represented by positive numbers.

PPMT
Returns the payment on the principal for a given period for an investment based on periodic, constant payments and a constant interest rate.
Syntax
PPMT (rate,per,nper,pv,fv,type) Rate – is the interest rate per period.
PER – specifies the period and must be in the range 1 to nper.
Nper – is the total number of payment periods in an annuity.
Pv – is the present value and the total amount that a series of future payments is worth now.
Fv – is the future value, or a cash balance you want to attain after the last payment is made. If fv is omitted, it is assumed to be 0 (Zero), that is, the future value of a loan is 0.
Type – is the number 0 or 1 and indicates when payments are due.
Set type equal to
O or omitted If payments are due at the end of the period **1** If payments are due at the beginning of the period
Remark
Make sure that you are consistent about the units you use for specifying rate and nper. If you make monthly payments on a four year loan at 12 percent annual interest, use 12%12 for rate and 4*12 for nper. If you make annual payments on the same loan, use 12%12 for rate and 4 for nper.

Examples
The following formula returns the principal payment for the first month of a two-year Rs.2,000 loan at 8 percent annual interest:
The following formula returns the principal payment for the last year of a 10-year Rs. 200,000 loan at 8 percent annual interest:
PPMT (16%, 10, 400000) equals –Rs. 71345.20
Value in RED Colour means this is payment. You can also change loan amount with negative amount then this RED Colour figure will not come.

6.5 Logical Function

AND

Returns TRUE if all its arguments are TRUE; returns FALSE if one or more arguments is FALSE.

AND Condition is used where both the conditions must be true for example Student must clear Xth and XIIth class for getting admission into Graduation.(Means student must have passed Xth Class and XII th Class before getting admission into college)

Syntax

AND (logical1, logical2,…)

Logical1, logical2, … are 1 to 30 conditions you want to test that can be either TRUE or FALSE.

1. The arguments must evaluate to logical values such as TRUE or FALSE, on the arguments must be arrays or references that contain logical values.
2. If an array or reference argument contains text or empty cells, those values are ignored.
3. If the specified range contains no logical values, AND returns the #VALUE! Error value.

See example

Examples

AND (2+2=4, 2+3=5) equals TRUE

AND (TURE, TRUE) equals TRUE

AND (TRUE, FALSE) equals FALSE

If B1:B3 contains the values TRUE, FALSE, and TRUE, then:

AND (B1:B2) equals FALSE

If B4 contains a number between 1 and 100, then:

AND (1<B4, B4<100) equals TRUE

Suppose you want to display B4 if it contains a number strictly between 1 and 100, and you want to display a message if it is not. If B4 contains 104 then:

IF (AND(1<B4, b4<100), b4, “The value is out of range.”) equals “The value is out of range.”

If B4 contains 50, then:

IF(AND(1<B4<B4<100), B4, “The value is out of range.”) equals 50

Example

Student must clear Xth and XIIth class for getting admission into Graduation.

(Means student must have passed Xth Class and XII th Class before getting admission into college)

= IF(AND(B5 = ”PASSED”, C5 = ”PASSED”), ”ELEGIBLE OF ADMISSION IN GRADUATION”,”NOT ELEGIBLE FOR ADMISSION INTO GRADUATION”)

FALSE

Returns the logical value FALSE.

Syntax

FALSE ( )

Remark. You can also type the word FALSE directly onto the worksheet or into the formula, and Microsoft Excel interprets it as the logical value FALSE.

IF

Returns one value if a condition you specify evaluates to TRUE and another value if it evaluates to FALSE. Use IF to conduct conditional tests on values and formulas.

Syntax

IF (logical_test,value_if_ture,value_if,false)

Logical_test – is any value or expression that can be evaluated to TRUE or FALSE

Value_if_true – is the value that is returned if logical_test is TRUE. If logical_test is TRUE and value_if_true is omitted, TRUE is returned. Value_if_true can be another formula.

Value_if_false – is the value that is returned if logical_test is FALSE. If logical_test is FALSE and value_if_false is omitted, FALSE is returned. Value_if_false can be another formula.

Examples

In the following Example, if the value in cell A10 is 100, then logical_test is TRUE, and the total value for the range B5:B15 is calculated. Otherwise, logical_test is FALSE, and empty text (" ") is returned that blanks the cell that contains the IF function.

IF(A10=100,SUM(B5:B15),"")

Suppose an expense worksheet contains in B2:B4 the following data for "Actual Expenses" for January, February, and March: 1500, 500, 500. C2:C4 contains the following data for "Predicted Expenses" for the same periods: 900, 925 You can write a formula to check whether you are over budget for a particular month, generating text for a message with the following formulas:

IF(B3>C2, "Over Budget", "OK") equals "Over Budget"

IF(B3>C3, "Over Budget", "OK") equals "OK"

Suppose you want to assign letter grades to numbers referenced by %age.

See the following table:

= IF(I3>90,"A",IF(I3>80,"B",IF(I3>70,"C",IF(I3>60,"D",IF(I3>50,"E","F")))))

NOTE : "A" = These " " are used only in case of Character otherwise there is no need of " "in case of numeric results required for example

Basic is given but calculate DA,HRA,TA etc. you can check this in Part-B examples.

OR

Returns TRUE if any argument is TRUE; returns FALSE if all arguments are FALSE.

Syntax

OR (logical1,logical2,…)

Logical1,logical2,… are 1 to 30 conditions you want to test that can be either TRUE or FALSE.

The arguments must evaluate to logical values such as TRUE or FALSE, or in array or references that contain logical values.

If an array or reference argument contains text, numbers, or empty cells, those values are ignored.
If the specified range contains no logical values, OR returns the #VALUE! error value.
You can use an OR array formula to see if a value occurs in an array. To enter an array formula, press CTRL+SHIFT+ENTER in Microsoft Excel 97 for Windows.
Examples
OR(1+1=1,2+2=5) equal FALSE
If A1:A3 contains the values TRUE, FALSE, and TRUE, then:
OR(A1:A3) equals TRUE
TRUE
Returns the logical value TRUE.
Syntax
TRUE( )
Remark. You can enter the value TRUE directly into cells and formulas without using this function. The TRUE function is provided primarily for compatibility with other spreadsheet programs.

6.6 Mathematical Function

ABS
ABS returns the absolute value of a number. The absolute value of a number is the number without its sign.
Syntax
Example :
ABS(number)
Put following numbers in the excel sheet you will get these results to understand the concept of ABS function Number absolute number
=ABS(2%) Result will be
2% =.02
1/2 =0.5
2-4 = 2
2*-4 =8
2/-5 =0.4

RAND
Returns an evenly distributed random number greater than or equal to 0 and less than 1. A new random number is returned every time the worksheet is calculated.
Syntax
= RAND( )
If you want to find random numbers between 0 to 50 then try formula given:

= RAND()*50 (value will be generated between 0 to 50 only)
Remarks

If you want to generate a random real number between 50 to 100 then use the given below formula.
=RAND( )*(b – a) + a
Here B will the maximum number b= 100 and a will the minimum number i.e. a= 50
If you want to use RAND to generate a random number but don't want the numbers to change every time the cell is calculated, you can enter = RAND( ) in the formula bar and then press F9 to change the formula to a random number. B will the higher no

RANDBETWEEN
Returns a random number between the numbers you specify. A new random number is returned every time the worksheet is calculated. If this function is not available, and returns the #NAME? error, install and load the Analysis Tool Pak add-in. **How?**
On the Tools menu, click Add-Ins. In the Add-Ins available list, select the Analysis Tool Pak box, and then click OK. If necessary, follow the instructions in the setup program.
Syntax
ROUND
ROUND(number,num_digits)
Number is the number you want to round.

Num_digits specifies the number of digits to which you want to round number.
• If num_digits is greater than 0 (zero), then number is rounded to the specified number of decimal places.
• If num_digits is 0, then number is rounded to the nearest integer.
• If num_digits is less than 0, then number is rounded to the left of the decimal point.

See Examples
Formulas for ROUND Function
ROUND (2.15, 1) equal 2.2 ROUND(2.149, 1) equals 2.1
ROUND (-1.475, 2) equals -1.48 ROUND(21.5, -1) equals 20
ROUNDDOWN
Rounds a number down, toward zero.
Syntax
ROUNDDOWN(number,num_digits)
Number is any real number that you want rounded down.
Num_digits is the number of digits to which you want to round number.
Remark
• ROUNDDOWN behaves like ROUND, except that it always rounds a number down.
• If num_digits is greater than 0 (zero), then number is rounded down to the specified number of decimal places.
• If num_digits is 0 or omitted, then number is rounded down to the nearest integer.
• If num_digits is less than 0, then number is rounded down to the left of the decimal point.
Examples

ROUNDDOWN(3.2, 0) equals 3 ROUNDDOWN(76.9, 0) equals 76
ROUNDDOWN(3.14159, 3) equals 3.141
ROUNDDOWN(-3.14159, 1) equal -3.1
ROUNDDOWN(31415.92654, -2) equals 31,400
ROUNDUP
Rounds a number up, away from 0 (zero).

Syntax
ROUNDUP(number,num_digits)
Number is any real number that you want rounded up.
Num_digits is the number of digits to which you want to round number.

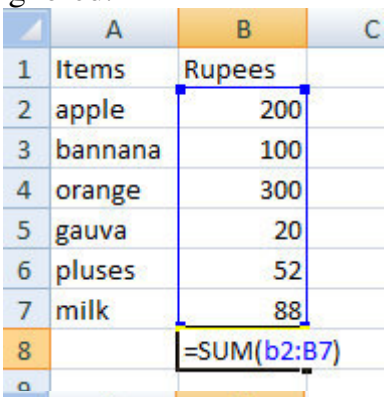
Remark
• ROUNDDOWN behaves like ROUND, except that it always rounds a number up.
• If num_digits is greater than 0 (zero), then number is rounded up to the specified number of decimal places.
• If num_digits is 0 or omitted, then number is rounded up to the nearest integer.
• If num_digits is less than 0, then number is rounded up to the left of the decimal point.
Examples
ROUNDDOWN(3.2, 0) equals 4 ROUNDDOWN(76.9, 0) equals77
ROUNDDOWN(3.14159, 3) equals 3.142
ROUNDDOWN(-3.14159, 1) equal -3.2
ROUNDDOWN(31415.92654, -2) equals 31,500

SQRT
Returns a positive square root.

Syntax
SQRT (number)
Number is the number for which you want the square root.
= SQRT(16)
=4
Remark
If number is negative = SQRT(-16) Then, SQRT returns the #NUM! error value.

SUM
Adds all the numbers in a range of cells.
Syntax
SUM(number1,number2, …)
Number1,number2, .are 1 to 30 arguments for which you want the total value or sum..
Remarks
Numbers, logical values, and text representations of numbers that you type directly into the list of arguments are counted. See the first and second examples following.

If an arguments is an array or reference, only numbers in that array or reference are counted. Empty cells, logical values, text, or error values in the array or reference are ignored.



	A	B	C
1	Items	Rupees	
2	apple	200	
3	bannana	100	
4	orange	300	
5	gauva	20	
6	pluses	52	
7	milk	88	
8		=SUM(b2:B7)	

	A	B
1	Items	Rupees
2	apple	200
3	bannana	100
4	orange	300
5	gauva	20
6	pluses	52
7	milk	88
8		760

SUMIF

Adds the cells specified by a given criteria.

Syntax

SUMIF(criteria range, criteria,,sum_range)

Criteria_Range is the range of cells you want to evaluate the criteria

Criteria is the criteria in the form of a number, expression, or text that defines which cells will be added. For Example Commission of two flats which are greater than 200000 lacs. Is 49000

Sum_range are the actual cells to sum i.e. to pick values from this range.

The cells in sum_range are summed only if their corresponding cells in range match the criteria. If sum_range is omitted, the cells in criteria_range are summed.

Example

Suppose A1:A4 contain the following property values for four homes :
Rs. 100,000, Rs. 200,000, Rs. 300,000, Rs. 400,000, respectively. B1:B4 contain the following sales commissions on each of the corresponding property values:
Rs. 7,000, Rs. 14,000, Rs. 21,000, Rs. 28,000.

S U M I F (A 1 : A 4 ,
“ > 2 0 0 0 0 0 ” , B 1 : B 4)
equals Rs. 49,000

SUMSQ Returns the sum of the squares of thearguments.
Syntax
SUMSQ (number 1, number 2 …)
Number1, number2, … are 1 to 30 arguments
for which you want the sum of the squares. You can also use a single array or a reference to an array instead of arguments separated by commas.
Example
SUMSQ (3, 4) equals 25

6.7 Statistical Function

AVEDEV
Returns the average of the absolute deviations of data points from their mean. AVEDEV is a measure of the variability in a data set.
Syntax
AVEDEV(number 1, number 2, …)
Number 1, number 2, … are 1 to 30 arguments for which you want the average of the absolute deviations. You can also use a single array or a reference to an array instead of arguments separated by commas
Remarks
• The arguments must be either numbers or names, arrays, or references that contain numbers.
• If an array or reference argument contains text, logical values, or empty cells, those values are ignored; however, cells with the value zero are included.
AVEDEV is influenced by the unit of measurement in the input data.
Example
AVEDEV(4, 5, 6, 7, 5, 4, 3) equals 1.020408
AVERAGE
Returns the average (arithmetic mean) of the arguments.
Syntax
AVERAGE(NUMBER1,NUMBER2,…)
Number 1, number 2, … are 1 to 30 numeric arguments for which you want the average.
Remarks. The arguments must either be numbers or be names, arrays, or references that contain numbers. If an array or reference argument contains text, logical values, or empty cells, those values are ignored; however, cells with the value zero are included.
TIP : When averaging cells, keep in mind the difference between empty cells and those containing the value zero, especially if you have cleared the Zero values check box on the View tab (Options command, Tools menu). Empty cells are not counted, but zero values are.
CORREL

Returns the correlation coefficient of the array1 and array2 cell ranges. Use the correlation coefficient to determine the relationship between two properties.

For *Example*, you can examine the relationship between a location's average temperature and the use of air conditioners.

Syntax

CORREL(array1,array2)

Array 1 is a cell range of values.

Array 2 is a second cell range of values.

Example

CORREL ({3,2,4,5,6},{9,7,12,15,17}) equals 0.997054

FRQUENCY

Calculates how often values occur within a range of values, and then returns a vertical array of numbers. For Example, use FRQUENCY to count the number of test scores that fall within ranges of scores. Because FRQUENCY to return an array, it must be entered as an array formula.

Syntax

FRQUENCY(data_array,ins_array)

Data_array is a set of values for which you want to count frequencies. If data_array contains no values, FRQUENCY returns an array or zeros.

Bins_array is an array (Set) of or reference to intervals into which you want to group the values in data_array. If bins_array contains no values, FRQUENCY returns the number of elements in data_array.

Remarks

• FRQUENCY is entered as an array formula after you select a range of adjacent cells into which you want the returned distribution to appear.

• The number of elements in the returned array is one more than the number of elements in bins_array

• FRQUENCY ignores blank cells and text.

• Formulas that return arrays must be entered as array formulas. To get the output in an array, press CTRL+SHIFT+ENTER instead of enter only.

Example

FRQUENCY(A2:E6,B9:B13) equals {7;3;4;6;5}

INTERCEPT

Calculates the point at which a line will Intersect the y-axis by using existing x-values and y-values. The intercept point is based on a best-fit regression line plotted through the known x-values and known y-values. Use the intercept when you want to determine the value of the dependent variable when the independent variable is 0 (zero). For Example, you can use the INTERCEPT function to predict a metal's electrical resistance at 0ºC when your data points were taken at room temperature and higher.

Syntax

INTERCEPT(known_y's,known_x's)

Known_y's is the dependent set of observations or data.

Knows_x's is the Independent set of observations or data.

Remarks

• The arguments should be either numbers or names, arrays, or references that contain numbers.

• If an array or reference argument contains text, logical values, or empty cells, those values are Ignored; however, cells with the value zero are included.

• If known_y's and known_x's contain a different number of data points or contain no data points, INTERCEPT returns the #N/A error value.

Example

INTERCEPT({2, 3, 9, 1, 0,}, {6, 5, 11, 7, 5}) equals 0.0483871

MAX

Returns the largest value in a set of values.

Syntax

MAX(number1,number2,…)

Number1, number2, … are 1 to 30 numbers for which you want to find the maximum value.

Remarks

You can specify arguments that are numbers, empty cells, logical values, or text representations of numbers. Arguments that are error values or text that cannot be translated into numbers cause errors.

If an argument is an array or reference, only numbers in that array or reference are used. Empty cells, logical values, or text in the array or reference are ignored. If logical values and text must not be ignored, use MAX instead. If the arguments contain no numbers, MAX returns 0 (zero).

MIN

Return the smallest number in a set of values.

Syntax

MIN(number1,number2,…)

Number1, number2, … are 1 to 30 numbers for which you want to find the minimum value.

Remarks

You can specify arguments that are numbers, empty cells, logical values, or text representations of numbers. Arguments that are error values or text that cannot be translated into numbers cause errors.

If an argument is an array or reference, only numbers in that array or reference are used. Empty cells, logical values, or text in the array or reference are ignored. If logical values and text should not be ignored, use MINA instead. If the arguments contain no numbers, MIN returns 0.

MODE

Returns the most frequently occurring, or repetitive, value in an array or range of data. Like MEDIAN, MODE is a location measure.

Syntax

MODE(number1,number2,…)

Number1, number2, … are 1 to 30 arguments for which you want to calculate the mode. You can also use a single array or a reference to an array instead of arguments separated by commas.

Remarks

• The arguments should be numbers, names, arrays, or references that contain numbers.

• If an array or reference argument contains text, logical values, or empty cells, those values are ignored; however, cells with the value zero are included.

• If the data set contains no duplicate data points, MODE returns the #N/A error value.

SLOPE

Returns the slope of the linear regression line through data points in known_y's and known_x's. The slope is the vertical distance divided by the horizontal distance between any two points on the line, which is the rate of change along the regression line.

Syntax

SLOPE (known_y's,known_x's)

Known_y's is an array or cell range of numeric dependent data points.

Known_x's is the set of independent data points.

Remarks

• The arguments must be either numbers or names, arrays, or references that contain numbers.

• If an array or reference argument contains text, logical values, or empty cells, those values are ignored; however, cells with the value zero are included.

• If known_y's and known_x's are empty or have a different number of data points, SLOPE returns the #N/A error value.

Example

SLOPE({2,3,9,1,8,7,5},{6,5,11,7,5,4,4,}) equals 0.3.5556

=STDEV

STDEV(number1,number2,...)

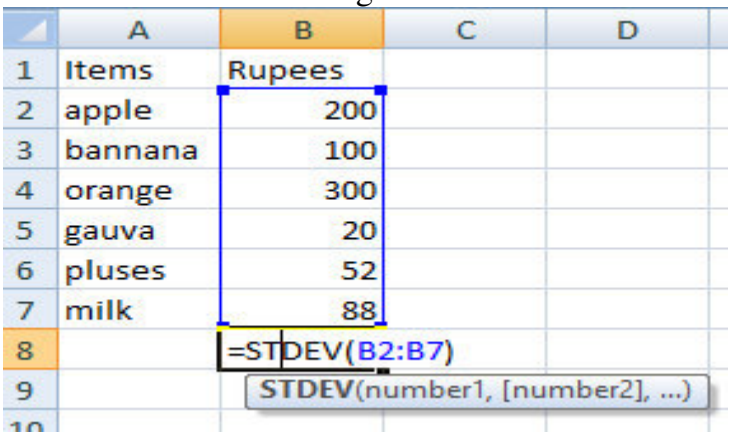
Number1, number2, ... are 1 to 30 number arguments corresponding to a sample of a population. You can also use a single array or a reference to an array instead of arguments separated by commas.

Remarks

STDEV assumes that its arguments are a sample of the population. If your data represents the entire population, then compute the standard deviation using STDEVP.

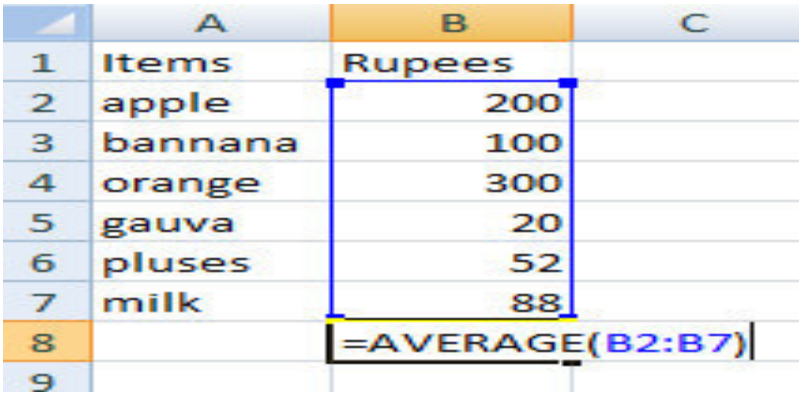
The standard deviation is calculated using the "n-1" method. Arguments can either be numbers or names, arrays, or references that contain numbers. Logical values and text representations of numbers that you type directly into the list of arguments are counted. If an argument is an array or reference, only numbers in that array or reference are counted. Empty cells, logical values, text, or error

values in the array or reference are ignored.
Arguments that are error values or text that cannot be translated into numbers cause errors. If you want to include logical values and text representations of numbers in a reference as part of the calculation, use the STDEVA function.
STDEV uses the following formula:





AVERAGE FUNCTION



	A	B
1	Items	Rupees
2	apple	200
3	bannana	100
4	orange	300
5	gauva	20
6	pluses	52
7	milk	88
8		126.6667

where ON *B8* is the sample mean AVERAGE(number1,number2,…) and n is the sample size.

Example

Suppose 10 tools stamped from the same machine during a production run are collected as a random sample and measured for breaking strength. The example may be easier to understand if you copy it to a blank worksheet.

6.8 Exercise Practical Questions

Check your progress

Exercise 1: Practical Questions

1. How can you generate random numbers between 100 and 200? Explain?

---

2. Explain Round function. How it is different from round down and roundup functions.

---

3. Explain AND, IF and OR function with suitable example.

---

4. Explain the difference between count, counta, countblank functions.

---

5. Explain slope and intercept functions. How they can be used in regression equations?

_____
_____
_____
_____

6. Explain PMT function. How can it be used in loan and lease statement.

_____
_____
_____
_____

7. Explain the difference between AND and OR functions. What are their applications?

_____
_____
_____
_____

8. What is SUMIF Function? Where we can use this function explain with the help of suitable example.

_____
_____
_____
_____

Exercise 2: Short Question Answers

1. Differentiate Sort and Filter Command. (DU,SOL,2010)

_____
_____
_____
_____

2. Difference between PMT, PPMT and IPMT Functions

_____
_____
_____
_____

3. Explain the structure of Function with suitable example.

_____
_____
_____

4. Explain any three Logical Functions with suitable examples.

5. Explain any three Statistical Functions with suitable examples.

6. Explain any four Mathematical functions with examples

7. Explain any three financial functions with examples

Chapter 7

Presentation Software

---

1. INTRODUCTION

7.1 Objectives
7.2 Advantages of Presentation
7.3 Creating a Presentation
7.4 Templates
7.5 Editing
7.6 Sorting
7.7 Inserting a worksheet object
7.8 Inserting a graph and editing
7.9 Inserting drawing objects
7.10 Layouts
7.11 Exercise

7.1 Objectives

After studying this chapter, students are able to:

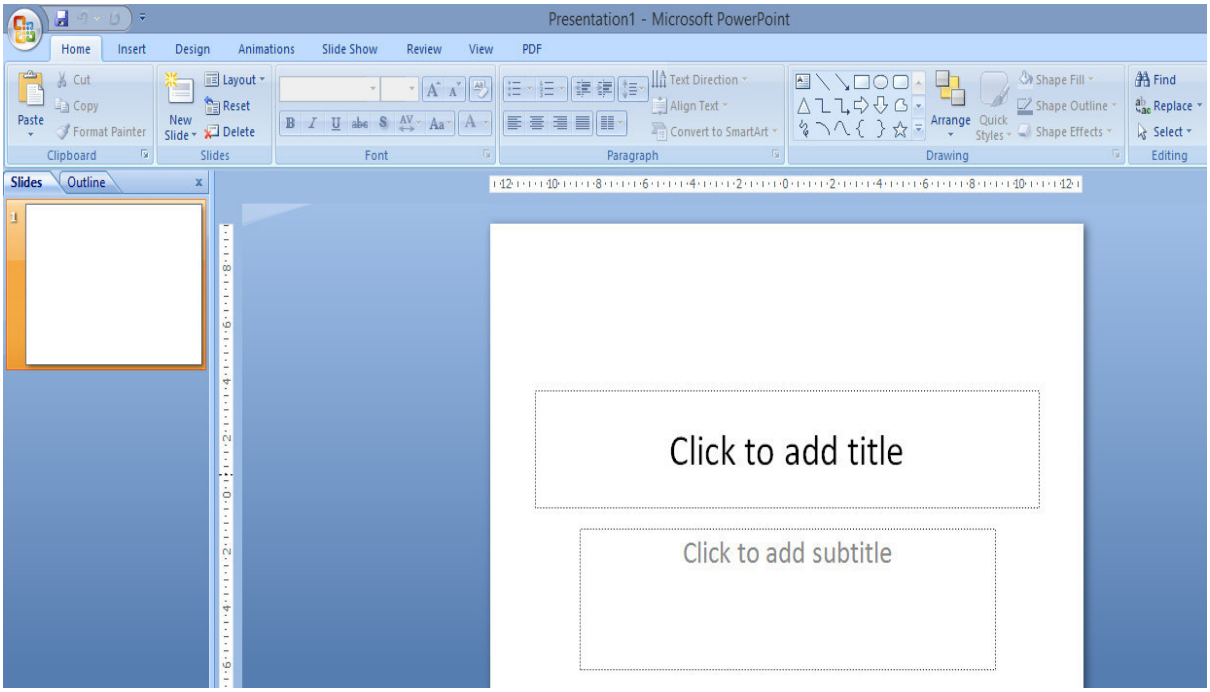
- Understand the advantages of presentation
- Understand the Creating a Presentation
- Understand the Templates
- Understand the Editing
- Understand the Sorting
- Understand the various layouts and drawing objects

7.2 Advantages of Presentations

Effective communication is very important for the success of any enterprise or a human being. Before the advent of computers, any lecture or presentation involved the use of Chalk, blackboard and even sometime overhead projectors, physical models, slides, handouts, etc. Out of these chalk and blackboard is the oldest method and is not effective in communicating the ideas. The visual aids like overhead projectors, physical models, slides, etc. improved the communication in effectively transferring the ideas from one person to the other.

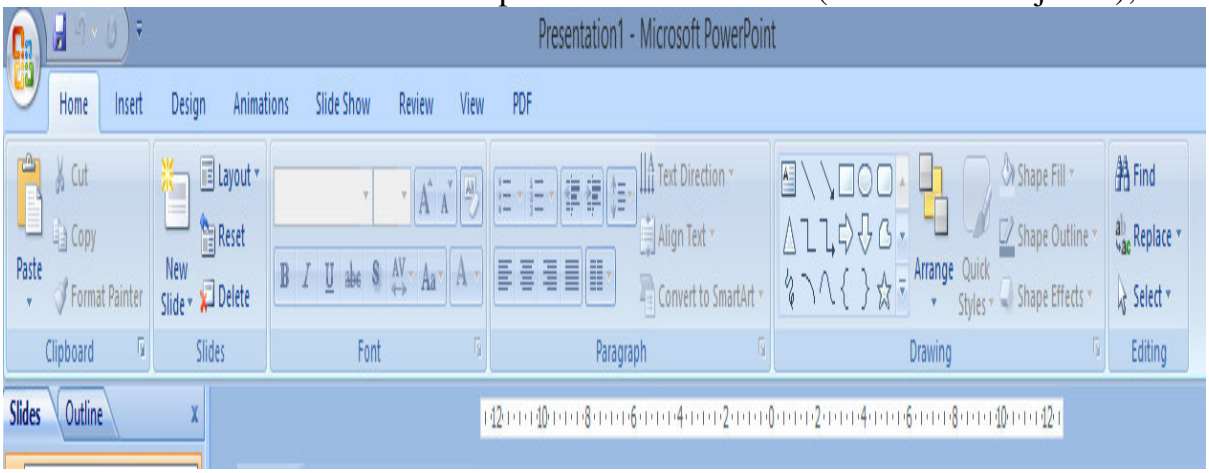
To help us in creating a presentation using a computer, Microsoft Office suite includes presentation graphics software called PowerPoint. Using PowerPoint you can create presentation material in the form of charts graphics, slides, handouts, speaker's notes,

etc. These may be organized in the form of slides which are electronic presentations that can be seen on your computer screen or on some other screen using a projection device.



ADVANTAGES OF PRESENTATIONS

1. It is a very useful software that deals with multimedia presentation.
2. The slides of MS-PowerPoint can have text, graphs, tables, graphics, photographs, sound and even music.
3. Various animation effects make the presentations through MSPowerPoint more effective and attractive.
4. Various combinations of background and foreground colours can be chosen.
5. Using MS-PowerPoint one can create: on-screen presentation, web presentation, overhead transparencies, 35mm slides, printouts, notes, handouts and outlines.
6. Features like design, AutoContent Wizard ClipArt pictures, editing etc. that are available in MS-PowerPoint helps the user to develop the slides easily and effectively.
7. Carrying a CD containing MS-PowerPoint slides show is much easier than carrying a set of transparencies or a set of slides.
8. Colour and Black and white transparencies for the OHP (Over Head Projector);



Creating a presentation in Microsoft PowerPoint involves starting with a basic design; adding new slides and content; choosing layouts; modifying slide design, if you want, by changing the colour scheme or applying different design templates; and creating effects such as animated slide transitions. The information below focuses on the options available to you when you start the process.

The **New Presentation** task pane in PowerPoint gives you a range of ways with which to start creating a presentation. These include:

Blank Start with slides that have minimal design and no colour applied to them.

Existing presentation Base your new presentation on one that you have already written and designed. This command creates a copy of an existing presentation so you can make the design or content changes you want for the new presentation.

Design template Base your presentation on a PowerPoint template that already has a design concept, fonts, and color scheme. In addition to the templates that come with PowerPoint, you can use one you created yourself.

Templates with suggested content Use the AutoContent Wizard to apply a design template that includes suggestions for text on your slides. You then type the text that you want.

A template on a Web site Create a presentation using a template located on a Web site.

A template on Microsoft.com Choose from additional PowerPoint templates in the Microsoft Office Template Gallery. These are arranged according to type of presentation.

Note The hyperlink in this topic goes to the Web. You can switch back to Help at any time.

Content inserted from other sources

You can also insert slides from other presentations or text from other applications such as Microsoft Word.

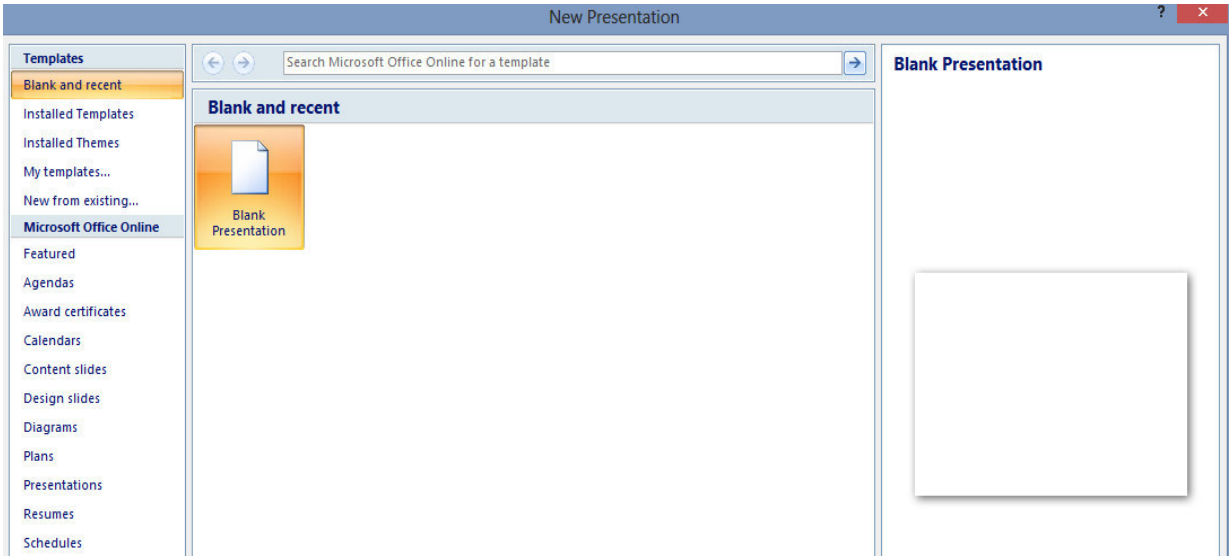


Fig. 7.1Create a presentation using blank slides

Blank Presentation: Blank presentation contains only the outline and there will be no presentations. It contains values for colour, font, etc.

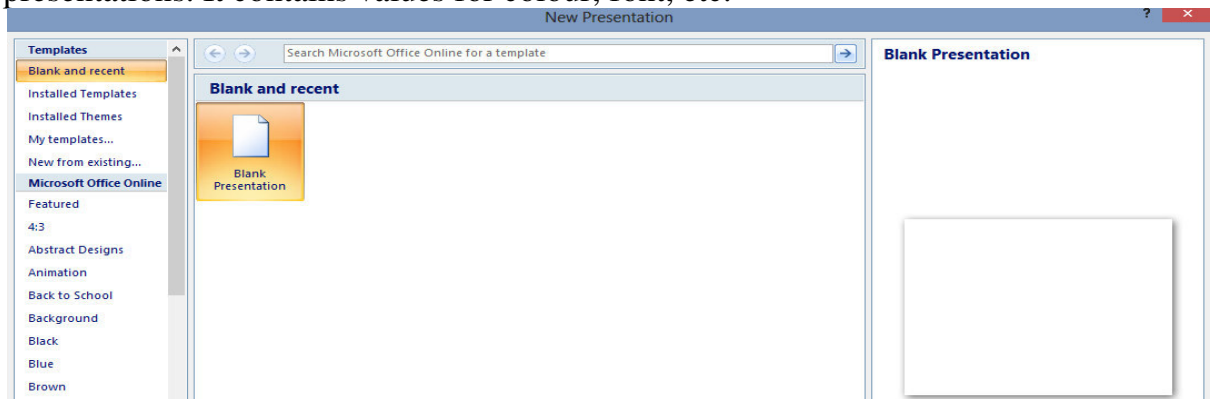


Fig. 7.2 presentation using blank slides

Pick a Look Wizard contains different models of presentation. User can select the "look and feel." User can create the presentation for black and white transparencies, colour transparencies, on-screen presentation etc. Slide background, notes, audience handout etc. can also be included in the slide.

1. On the Standard toolbar, click New.
2. If you want to keep the default title layout for the first slide, go to step 3.
If you want a different layout for the first slide, in the Slide Layout task pane, click the layout you want.
3. On the slide or on the Outline tab, type the text you want.
4. To insert a new slide, on the toolbar, click New Slide, and click the layout you want.



Fig. 7.2a presentation using blank slides

5. Repeat steps 3 and 4 for each new slide, and add any other design elements or effects you want.
6. When you finish, on the File menu, click Save, type a name for your presentation, and then click Save.

Create a new presentation from an existing one

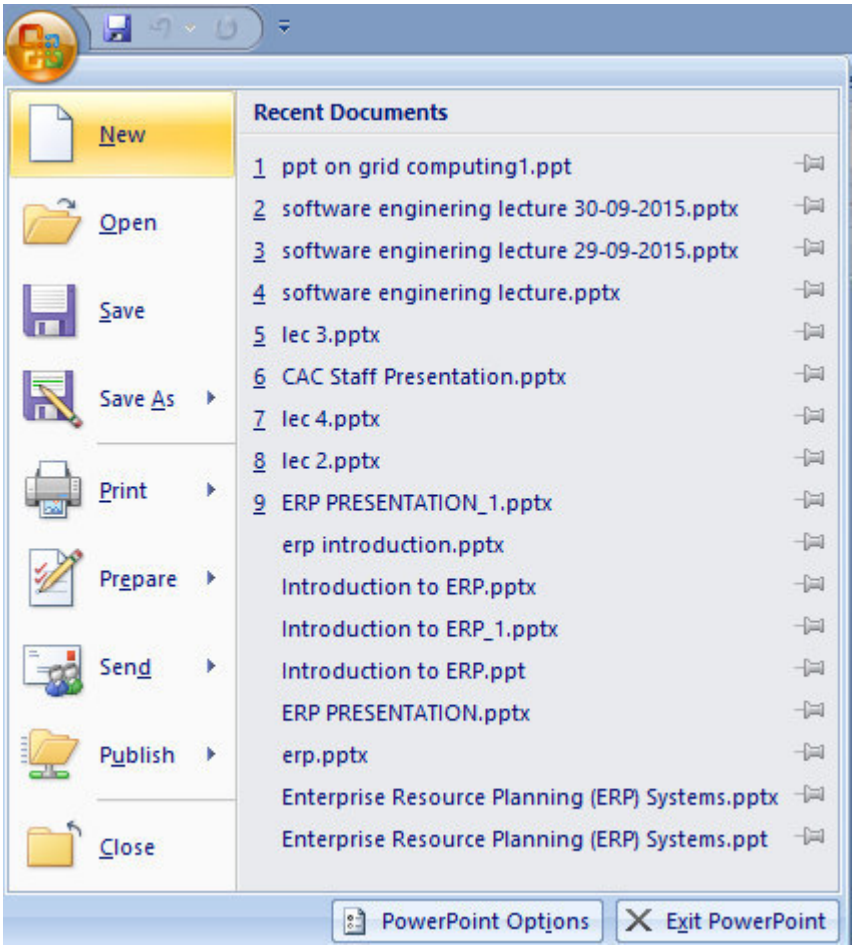


Fig. 7.2b

When you follow these steps, you create a copy of an existing presentation so you can make design and content changes to it for a new presentation, without altering the original.

1. If the New Presentation task pane isn't displayed, on the File menu, click New.
2. Under New from existing presentation, click Choose presentation.
3. In the file list, click the presentation you want, and then click Create New.
4. Make the changes you want to the presentation, and then on the File menu, click Save As.
5. In the File name box, type a name for the new presentation.
6. Click Save.

7.4 Templates

Create a presentation using a design template

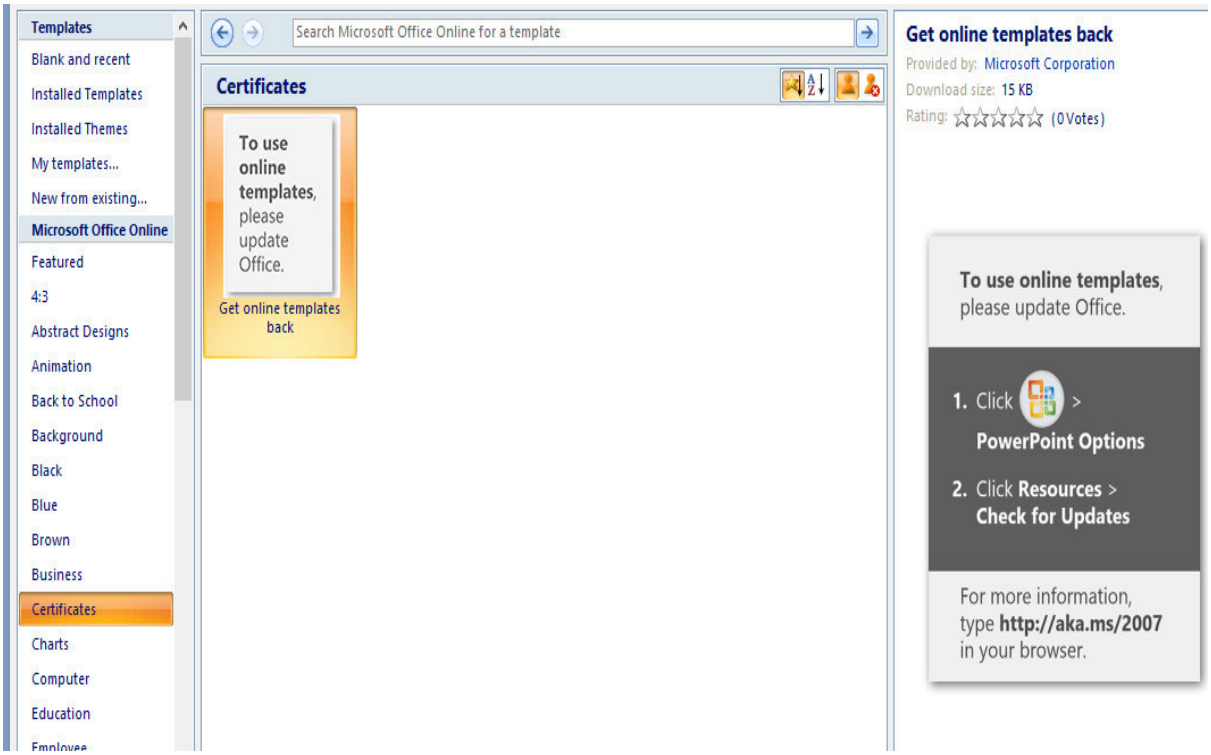


Fig. 7.3 use of templates

Design Templates: Template is used to create presentation based on existing models. The template determines the colour scheme, font and other designs.

1. If the New Presentation task pane isn't displayed, on the File menu, click New.
2. Under New, click From Design Template.
3. In the Slide Design task pane, click a design template that you'd like to apply.
4. If you want to keep the default title layout for the first slide, go to step 5. If you want a different layout for the first slide, on the Format menu, click Slide Layout, and then click the layout you want.
5. On the slide or on the Outline tab, type the text for the first slide.
6. To insert a new slide, on the toolbar, click New Slide, and click the layout you want for the slide.
7. Repeat steps 5 and 6 to keep adding slides, and add any other design elements or effects you want.

8. To save the presentation, on the File menu, click Save; in the File name box type a name for the presentation, and then click Save.

Note If you have created a template, it will appear, in alphabetical order according to what you named it, among the Microsoft PowerPoint templates in the Slide Design task pane.

Create a presentation using suggested content

1. If the New Presentation task pane isn't displayed, on the File menu, click New.
2. Under New, click From AutoContent Wizard, and then follow the instructions in the wizard.
3. In the presentation, replace the text suggestions with the text you want, and then make any other changes you want, such as adding or deleting slides, adding art elements or animation effects, and inserting headers and footers.

4. When you finish, on the File menu, click Save, type a name in the File name box, and then click Save.



AutoContent Wizard : It contains various steps for creating. The wizard contains many simple questions and the user can fix the content and the model of presentation.

Presentation style contains some formatting options. Presentation options contain title, footer, last date of slide updating, slide number etc.

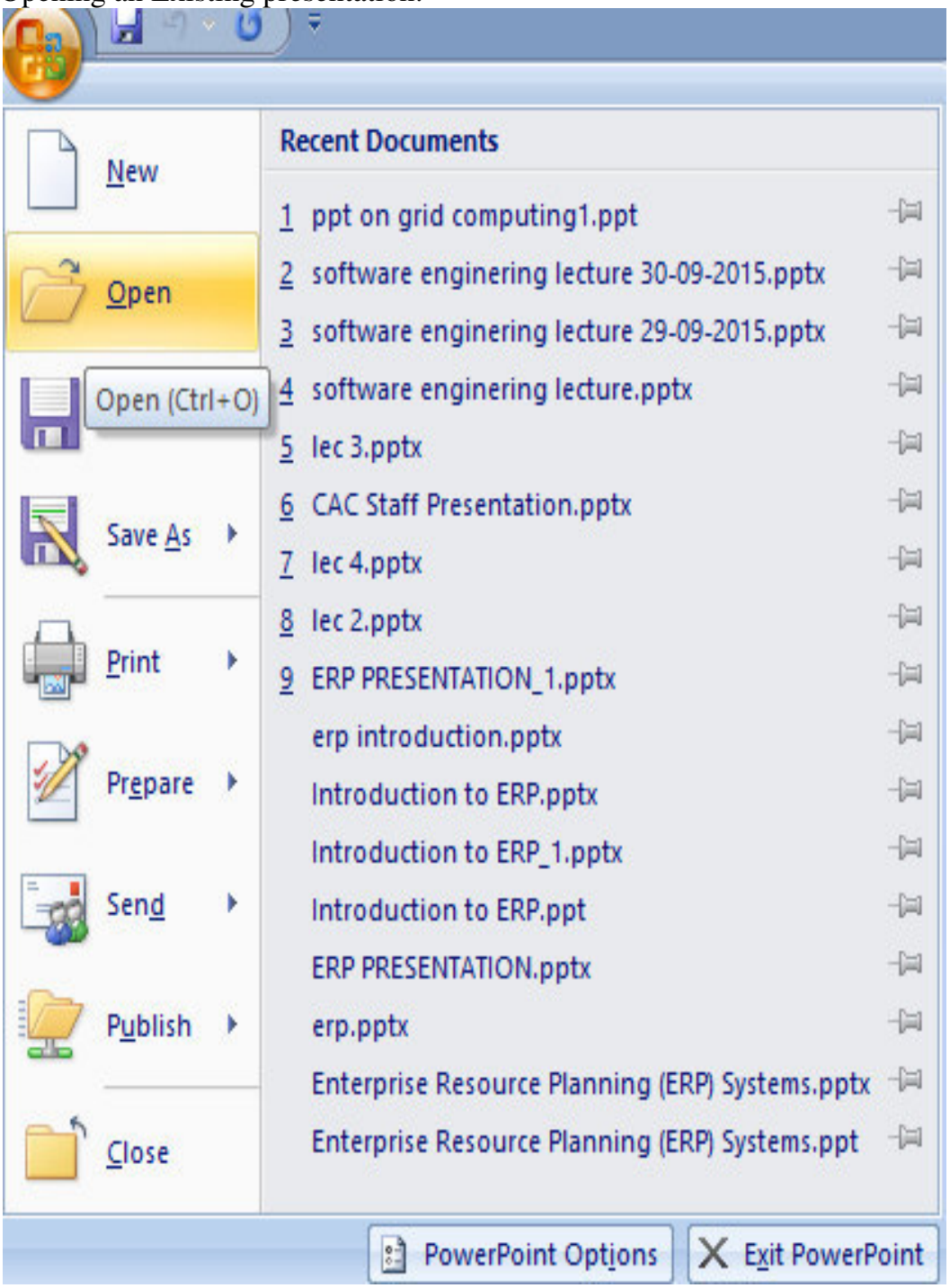
AutoContent Wizard starts by providing ideas and an organization for the presentation. There are presentation types, presentation style, presentation options and Finish.

Design Templates contains various types of templates. Some of them are Arstv, Azure, Bamboo, Blends, Blue Diagonal, Blueprint, Bold Stripes, Cactus, Capsules, Cheders, Cirus, Expedition, Factory etc.

Pre-designed Slide layouts are already designed for the user. Some of them are – Title Slide, Bulleted List, Two Column Text, Table, Text, Chart, Organizational Chart, Chart, Text and Clip Art, Title only, Blank Slide etc.

7.5 **Editing**

Opening an Existing presentation:



7.3 OPENING AN EXISTING PRESENTION

Select O. Open an Existing presentation – Select the files.ppt-Click OK.

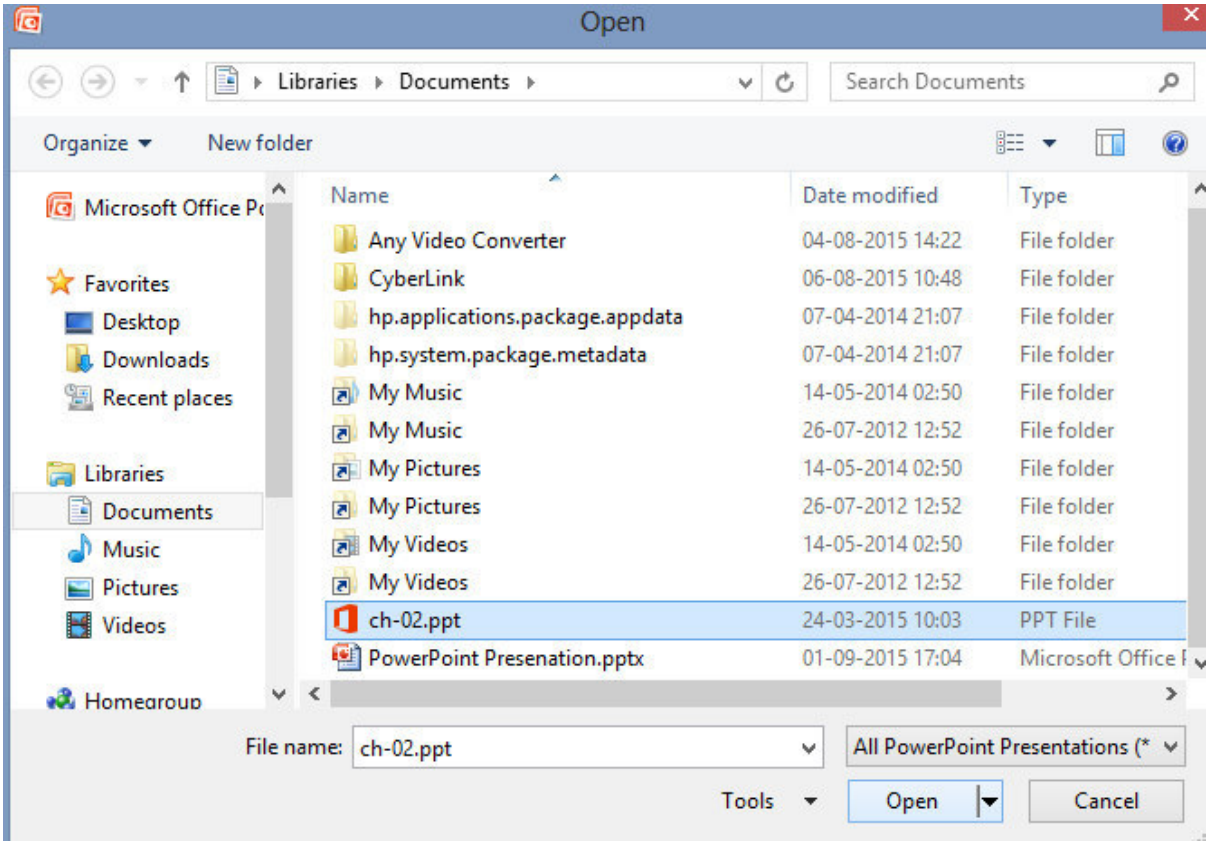
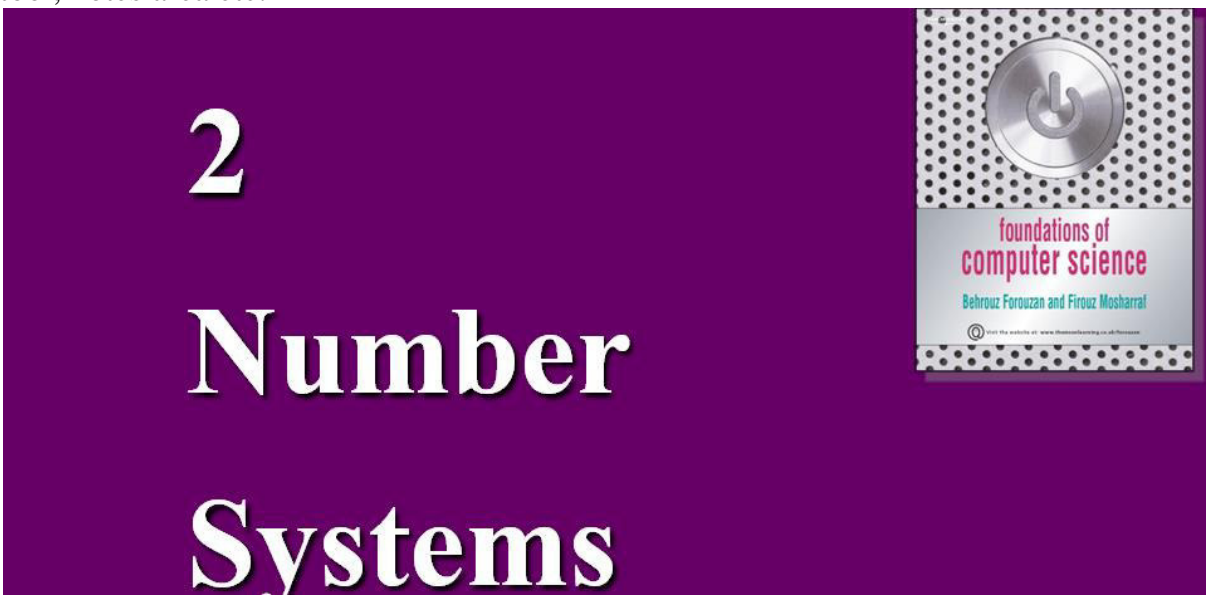


Fig. 7.5

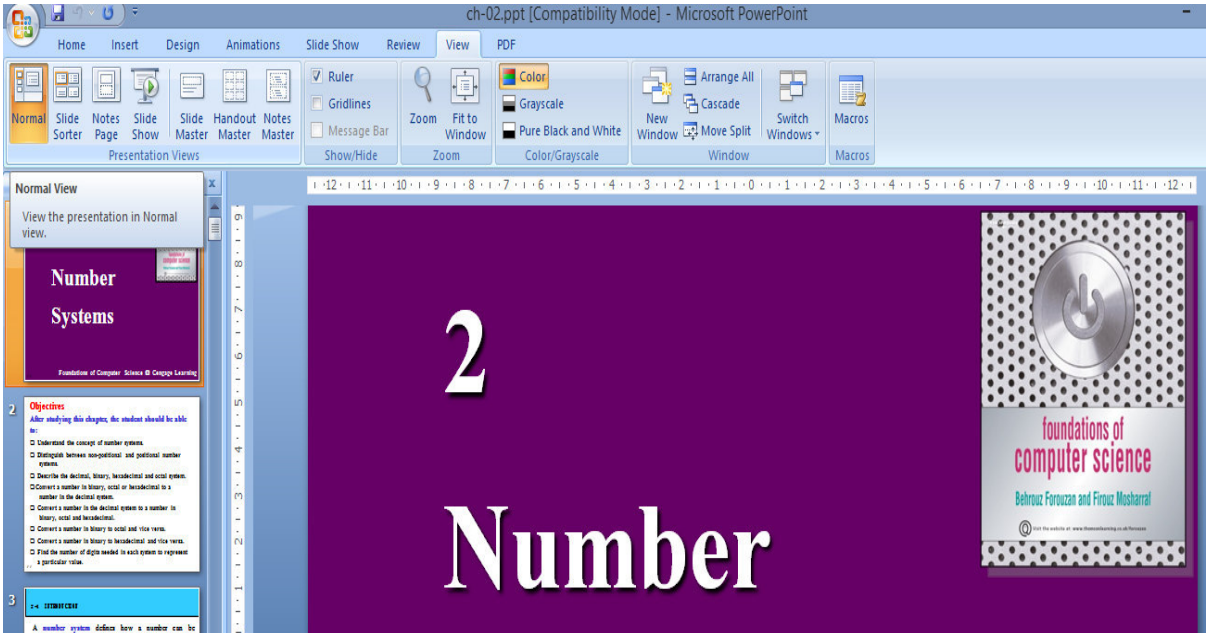
Work Area

The work area of the PowerPoint contains Outline Area, Menu Bar, Toolbar, Slide area etc. In the bottom, there will be view buttons, Status bar, Drawing tool, notes area etc.



Views in PowerPoint

Five different views are available in PowerPoint.



1. Normal View : In which only the current slide is seen
2. Outline View : in which a test outline of the presentation is seen.
3. Slide Sorter View : In which thumbnail images of each slide in the presentation are seen.
4. Notes Page View : In which a small image of the slide is accompanied by a notes section
5. Slide Show : In which a full sized version of each slide is seen on the full computer screen.

MASTERS IN MS POWERPOINT

Masters are like that of a letterhead. The Matters incorporated will not change like the name of the firm, address, logo, date, reference etc.

There are many masters in PowerPoint. They are Slide Master, Title Master, Handout Master, The Notes Master etc.

Slide Master

Slide Master is used to control text characteristics of the presentation. Font Type, Font Size, Color, background color and effects such as shadowing, bullet style etc. can be controlled. For this purpose, Text Box Button on the Drawing Toolbar can be used.

Title Master

Title master is used to show a different look for titles. It will create more emphasis for the title.

Notes Presentation

Notes Presentation is used to add the items on the notes which may be art, text, headers etc. Slides can be viewed in Black and White. For this purpose:
View - Black and White – Click. Slide Miniature is used to minimize the slide. It is a tiny slide that resembles the current slide. For this purpose:
View – Slide Miniature – Click.
Zooming can also be done.

Handout Master

Handout master is used to add items in the presentation. Items such as text, art, header, footers, date, time, page number etc can be added in the presentation.

Slide Master

You must be working in slide View to edit text, images, or colors on the slide.

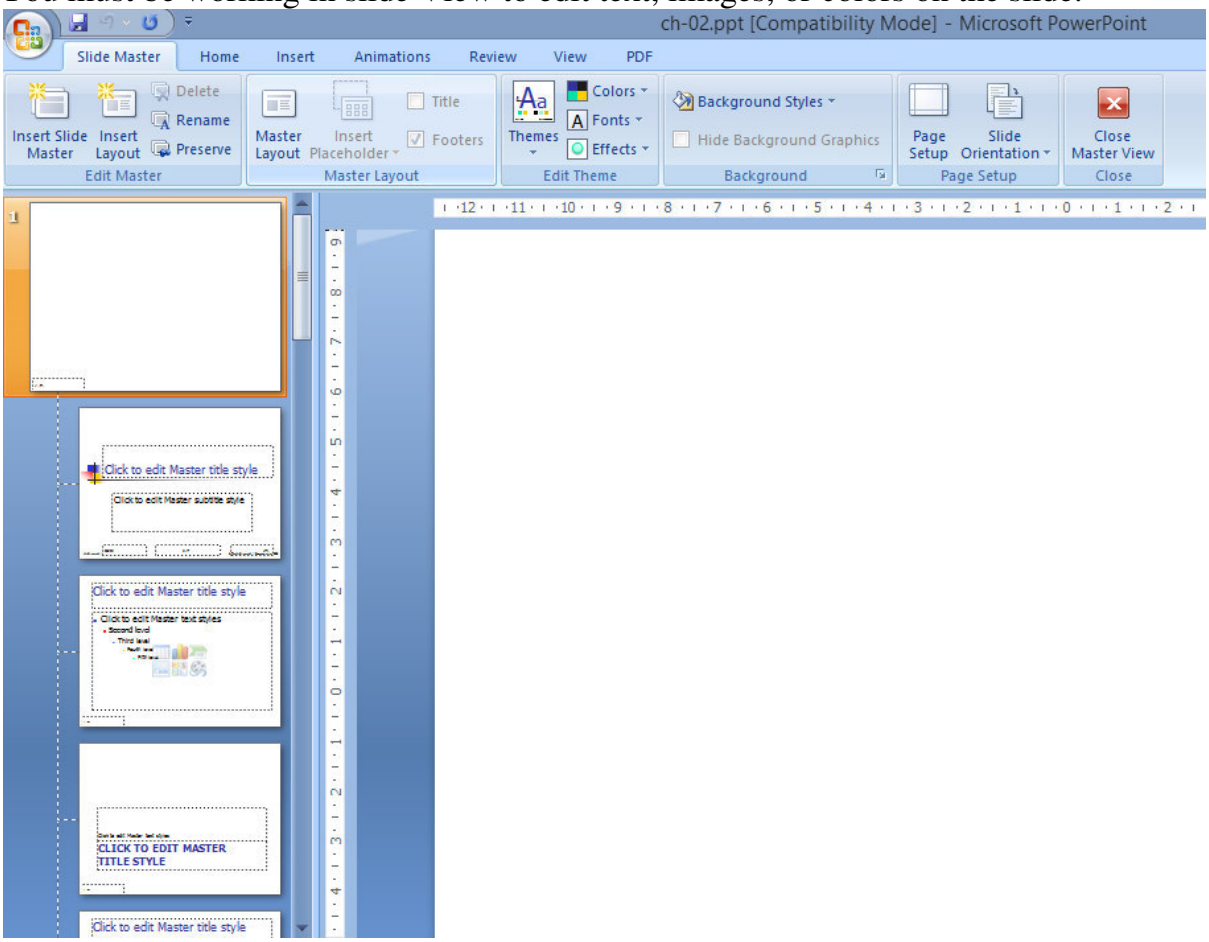
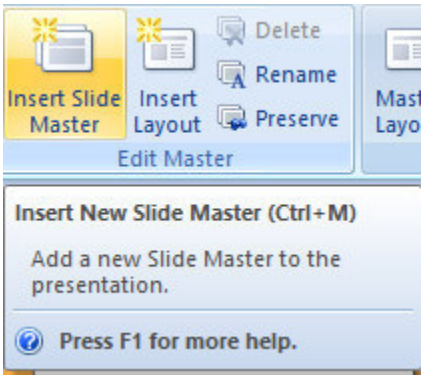


Fig. 7.6

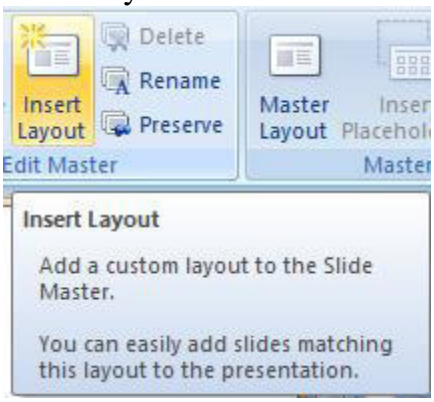
There are two options in slide master

1. Insert Slider Master
2. Insert Layout

Insert Slide Master: This is used to add a new slide master to the presentation



Insert Layout : Add a new slide master to the presentation . CTRL +M is used



Outline View

In outline view you can quickly scan the entire presentation, edit text, but not the color of text or do a spell check. You could also print the outline view to keep for speaker's notes as you present your show.

Fig. 7.7

7.6 Shorting

Slide Shorter View

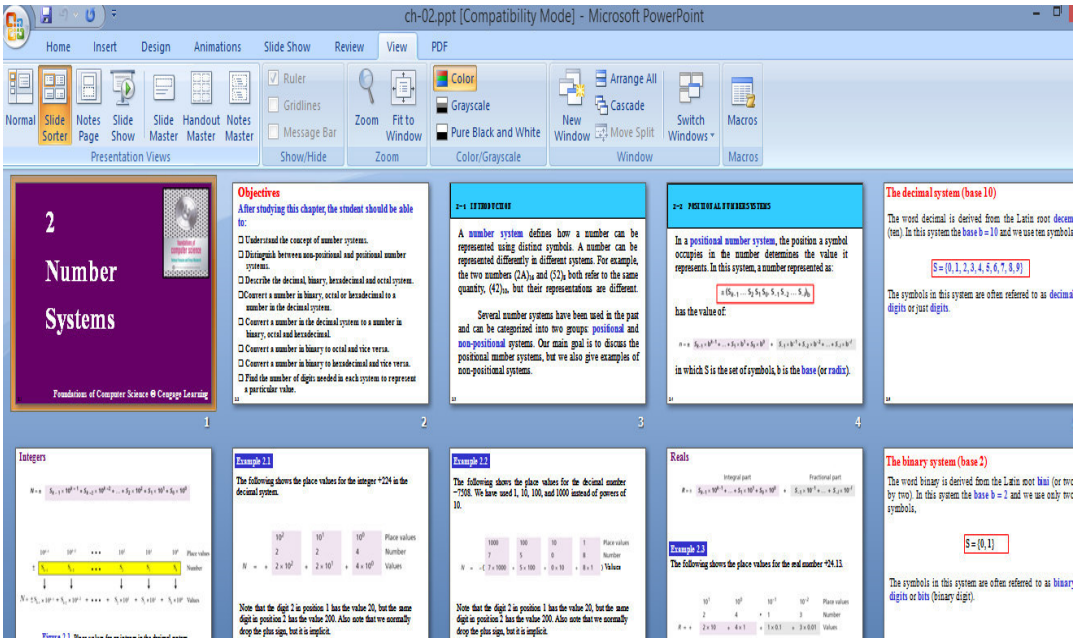


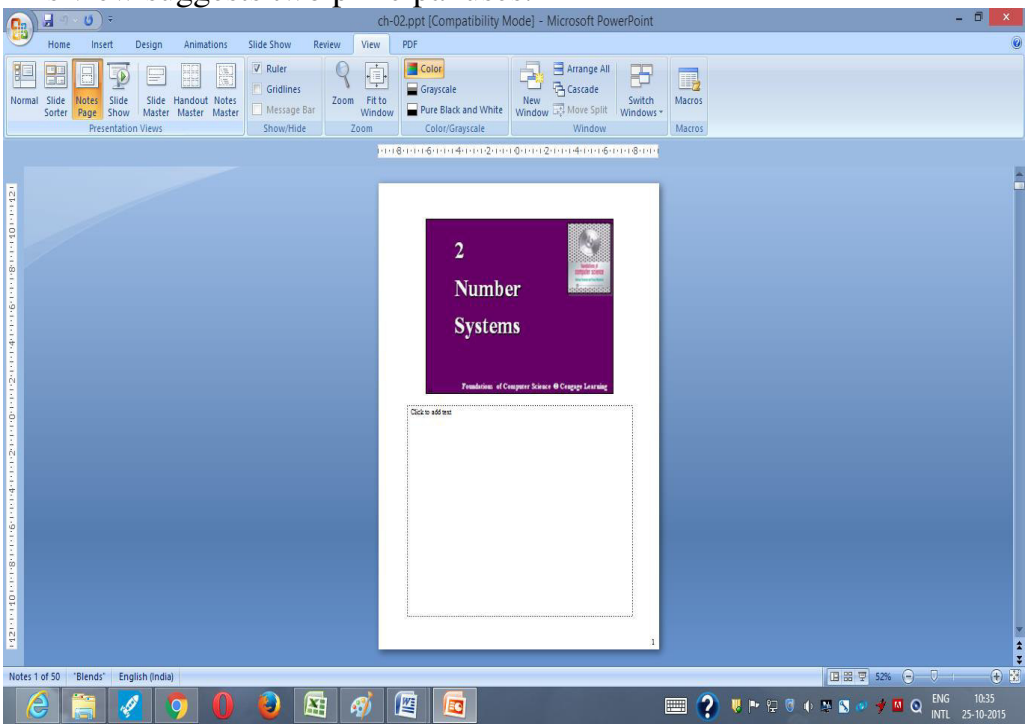
Fig. 7.8

- This is one of the most useful views. From this view you can.
- Click and drag to move a slide to a new position in presentation.
- Copy a slide and Paste a duplicate into the presentation

• Set a transition for each individual slide or for the entire presentation.
• Choose the method of Building text.
• Get an overview of what the entire presentation will look like.

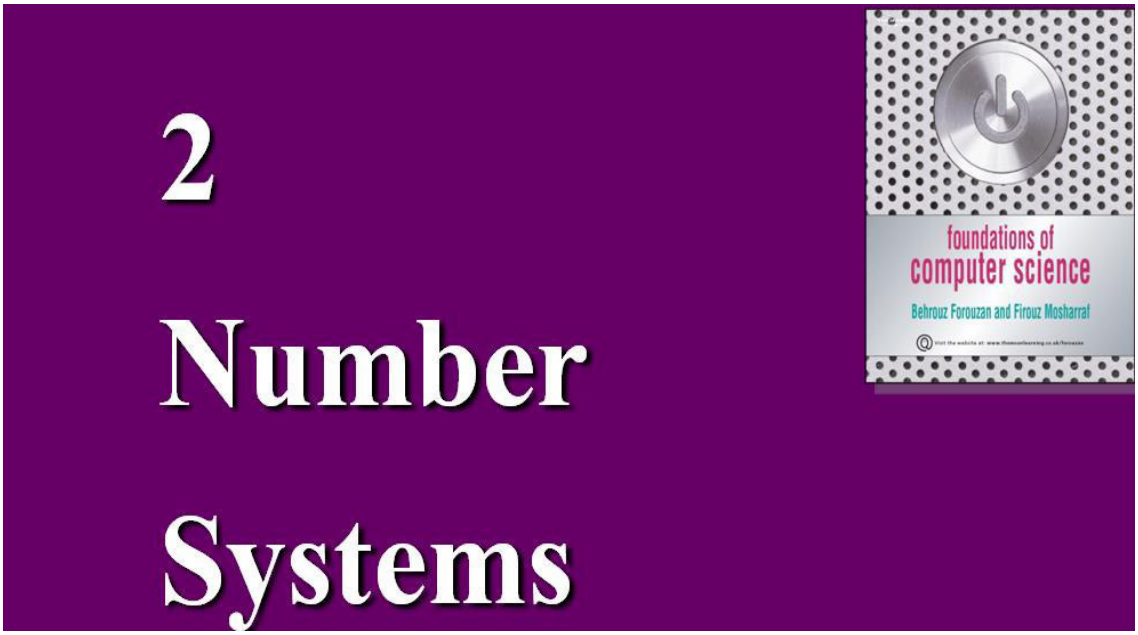
Note page View

This view suggests two principal uses:-



• Print a set of these for use as speaker's notes. In each notes section below the slide image you might record important point you want to be sure your audience knows about before going to the next slide. Do not try to say everything you want to say on the slide.
• Leave the notes area blank and print a set of these for each person in your audience. Encourage them to make notes regarding the slide.

Slide Show



• Click last button on view menu.

• Slides are displayed in full screen view.

• Used for making on O screen presentation.

• Next slide is brought up, when mouse is clicked or any key on the keyboard.

• Previous slide is brought up, when mouse is right clicked or page up key is pressed.

• Slides can be timed to come up one after the other automatically.

Handout master is used to add items in the presentation. Items such as text, art, header, footers, date, time, page number etc can be added in the presentation.

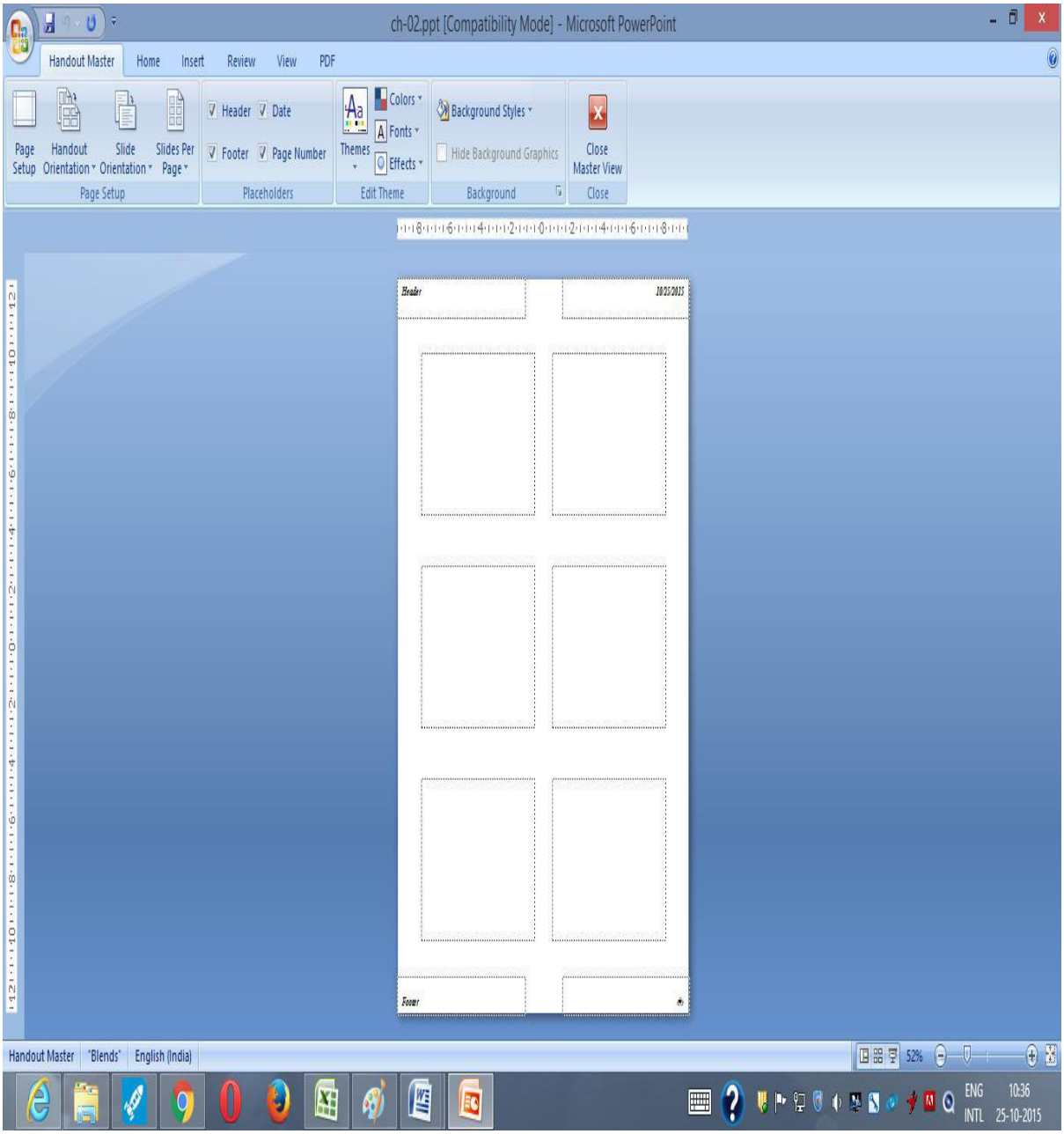


Figure 7.9 : Handout Master

7.7 INSERTING A NEW SLIDE

A new slide can be inserted as follow:

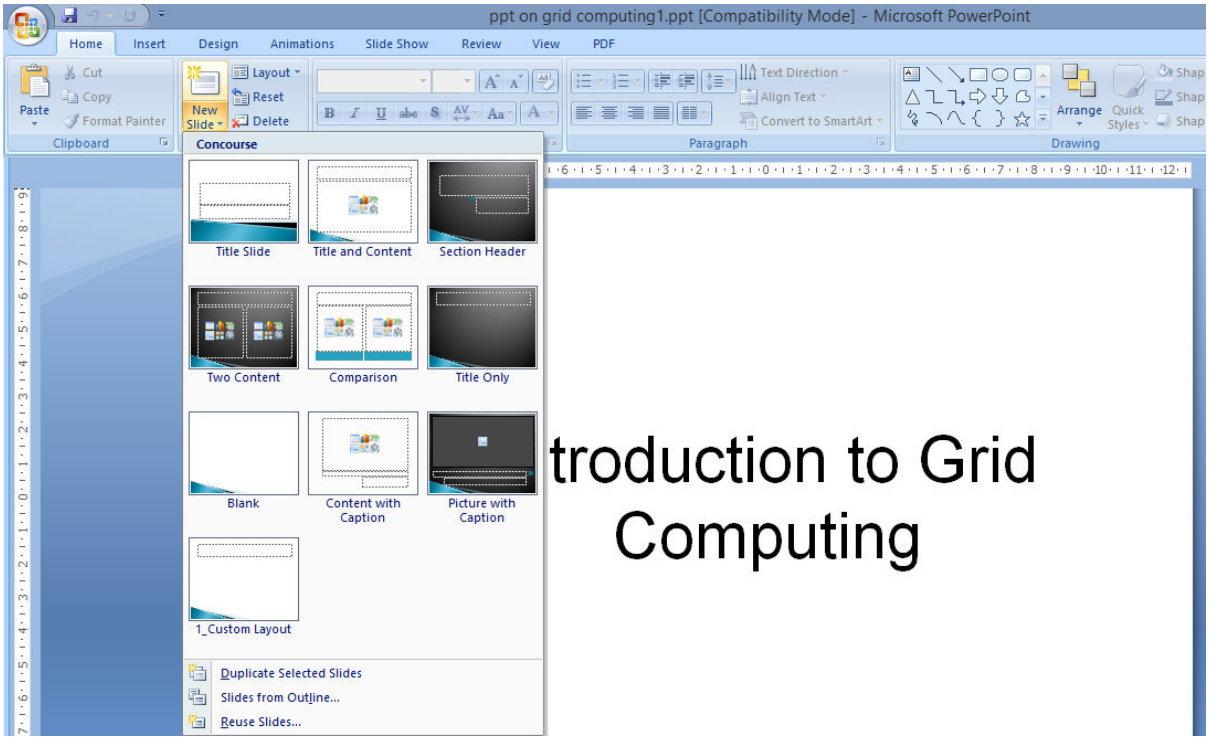
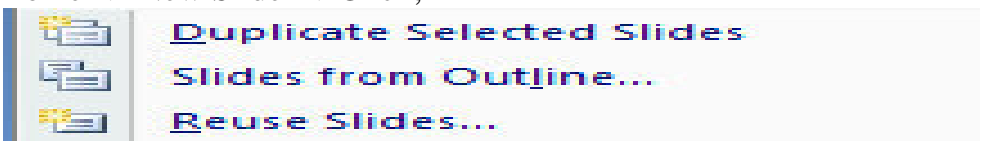


Fig 7.6 insert various types of slides

Home –> New Slide – >Click;



There are many type of slide available namely as shown in the fig 7.6 above

1. Title Slide
2. Title and content
3. Title only
4. Blank
5. Content with caption
6. Picture with caption
7. Custom layout

And

Insert – Duplicate selected Slide – Click. Inserting Slide Number:

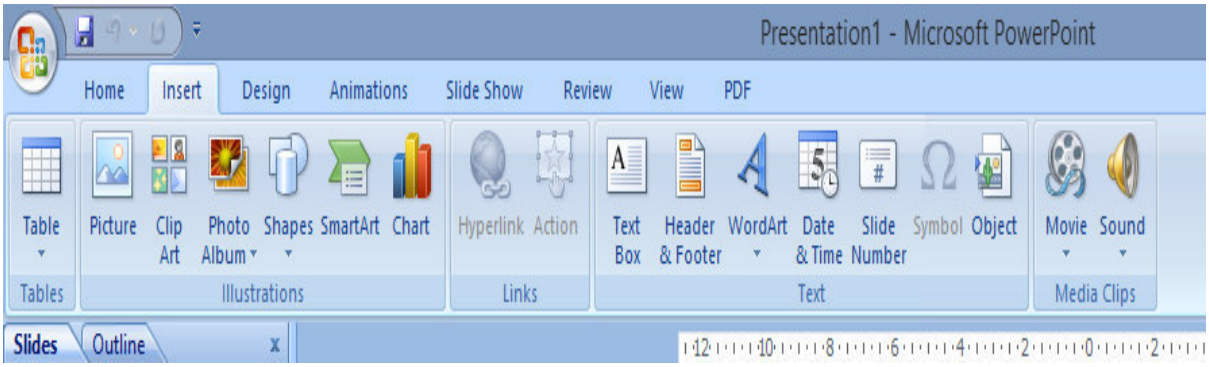
Insert – Slide from outline

Insert – Reuse sides

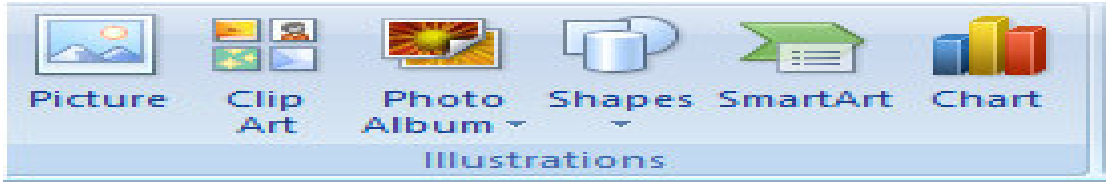
7.8 **Editing a Presentation**

Editing a presentation by inserting and deleting text is very simple. To insert text, you move the insertion point (the blinking bar) to where you want to insert the text. You move the insertion using the arrow keys on the keyboard or by using the mouse to click where you want to move the insertion point. Once the insertion point is where you want, just start typing.
There are a couple of ways to delete text. One way to delete text is to place the insertion point to the left of the text you want to delete and press the <Backspace> key. Another way to delete text is to place the insertion point to the right of the text you want to delete and press the < Delete> key.

7.8a **Method of Inserting ClipArt and Pictures and Method of inserting Tables in MS PowerPoint**

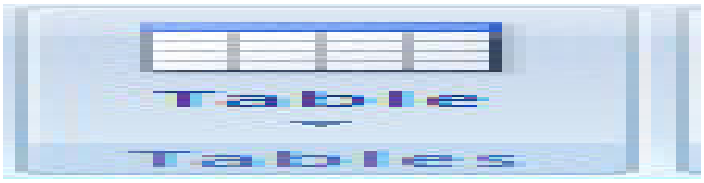


Inserting ClipArt and Pictures:



Insert – Illustrations – Picture see figure above
For inserting other pictures, objects, movies, sounds and charts, follow the same procedure.

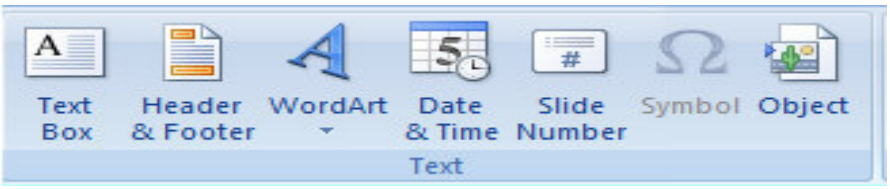
Inserting Tables:



Insert – Tables – Click; Columns and Rows – Type and – Click.



Insert – links



Insert-text



Insert- media clips

Meeting Minder

Meeting Minder is one of the special features of PowerPoint. It helps to take notes during the presentation. For example, the participants may review the presentation and prepare notes during the presentation. For example, the participants may review the presentation and prepare notes on the finer points and gather information on the on-going project or note on the trends.

Right Click on the mouse button – Select Meeting Minder – or Tools – Meeting Minder – Type the notes in the area.

Scheduling a Meeting

Scheduling of meeting can be done: Contacts button – Categories – Select the Category – Click.

Rehearse Timings

Rehearse Timings is the time for movement of slides during slide show.

Timings can be set for slides before rehearse and it will be automatic.

Slide show – Rehearse Timings. Use the buttons in the dialog box and set timings in seconds for each and every slide.

Advance button is used to move to the next slide.

Pause button is used to pause recording time during the process of rehearsal.

RECORDING VOICE OR SOUND IN POWERPOINT PRESENTATION

Audio comments can be included to the slides. Narrations can also be added for a web-based presentation. For this purpose there should be a sound card and a microphone.
Recording can be done as follows: Slide Show – Record Narartion.
In the Record narration box, select appropriate buttons such as Ok., Cancel, Set Microphone level, Change Quality and Browse.
Microphone checking can be done using Microphone Check box.
Sound selection can be done.
Then Insert the narration on the slides as an embedded object and to begin recording click OK button. Save it with narration and timing. To save any narration, click No. Now the narration alone is saved with each slide.

BROADCASTING PRESENTATION

Broadcasting presentation is presenting the slides on line to other users on the network. There must be URL and timings should be scheduled. The presentation will be as if it is real and may be shown in desired manner.
Broadcasting can be done in the following manner:
Slide Show – Online Broadcast - SetUp and Schedule – Click.
Now the Broadcast Schedule dialog box appears. Set the required model. There are two major steps in Broadcasting presentation.

SLIDE NAVIGATION

Slide Navigator is used to navigate between slides.
Right Click the mouse button on the screen. The options will be as follows: Next, Previous, Go, Meeting Minder, Speaker Notes, Point Options, Screen, Help and End Show. In the Go Option, there are Slide Navigator, By Title, Customs show, Previously viewed options are available.
Select the required option and click.

ANIMATION AND METHOD OF CREATING ANIMATION IN POWERPOINT

Animation is the process of moving objects, graphics, text, logos, charts and diagrams in different directions. It may be from the top, bottom, or sideward etc. It enables to focus on the important points, control the flow of information.
Some of the animation types are:
Off, Drive in, Flying, Camera, Flash Once, Laser Text, Typewriter, Reverse Order, Drop-in. Fly from top, Animate Chart, Wipe Right, Dissolve, Split Vertical out, Appear etc.
Slide Show – Preset Animation – Click.

CUSTOM ANIMATION

Custom Animation can be done to customize the animation process. For this purpose:
1. Select the text, object, - Slide show – Custom Animation;
2. Effects Tab or Chart Effects Tab – Check Animate slide object –
3. Text animation style – Direction – select the choices –
4. Introduce text, All at Once / By word / By letter – Click;
5. Paragraphs can also be selected and custom animation can be done.
6. Preview and then click OK.

SLIDE TRANSITION

Slide Transition can be done and can be added to the slide. Customized Transition will present a live like presentation.

Slide Show – Slide Transition – Effects Box – Type of Transition – Apply – Apply to ALL – Repeat for each slide; Preview – O.K.

Hide and Unhide Slides: Slides can be hidden and can be got back the following manner:

Slide Show – Hide Slide; Now it will contain a null sign.

To unhide the slide: Slide Show – Unhide;

Custom Show

Custom show is the time of customized presentation. Required slides can be selected and also be changed in the order. It is a type of presentation inside presentation. This method is useful for having presentations for different audience at different times using identical presentations. There will be jumps in the order and groups.

Slide Show – Custom Show – Select New – In the dialog box changes the order, delete etc. – Click O.K.

Add, remove, Up and Down arrow buttons can be used to change the position of slides.

Navigation may be Forward Navigation, Reverse Navigation or Existing the show. This can be done using Left click, Enter button, backspace button or Esc Key etc.

7.8 GRAPHS – CREATING GRAPHS

The simple and effective way of presentation of data is presentation through charts or graphs. It is a pictorial representation of data.

Insert – Graph – Select the Graph – Edit – Paste special if it is in Ms Excel.

There are various types of graphs. Some of them are:

Area Graph, Bar Graph, Column Graph, Doughnut Graph, Line Graph, Pie Graph, Radar Graph, XY Scatter Graph, Surface Graph, Bubble Graph, Stock chart, 2-D or 3-D charts.

Creating Graphs

Graphs can be created in the following manner:

Select New Slide – Type of Chart – Text Slide – Ok

Double click to add Chart command button is seen. Click;

Then there will be datasheet with MS Graph Example. Change the data labels and change data. Click OK. Now new graph is created. Rows and Columns in data sheet can be used by selecting the entire row or column and clicking Del Command or pressing Del kay.

METHODS OF RUNNING A SLIDE SHOW

Slide show presentation can be done for viewing the slide information in an

interesting manner.
Slide Show button in the left – Bottom corner of the window. Or View – Slide show – Click slide show button. Dialog box can also be used to run the show. In the dialog box, the range of slides can be selected and then show can be started. The PowerPoint does not run the slide show. Slide is displayed in the entire screen. Automatic advance option, timings etc. can be defined for the slides. Or Right click the mouse, select the required options and run the show. Mouse point can be converted into an electronic pen by clicking the pen / Pointer selector box in the extreme right bottom of the slide. Areas in the screen can also be highlighted.

Method of Printing a Presentation

MS-PowerPoint presentation can be printed on each page in the following manner:
Slides are printed on each page on by one. Notes Page prints each slide with speaker's notes. Handout (2 slides per page) prints two slides on each page. Handout (3 slides per page) prints three slides per page. Handouts (6 slides per page) print sex slides per page. Outline view prints only text part of the slides printed.
For Printing:
File – Print –Select the print required – Print dialog box – Number of copies – O.K.

Inserting chart

You can create a chart from scratch in Microsoft PowerPoint, or you can import a Microsoft Excel worksheet or chart. The default charting program for PowerPoint is Microsoft Graph, and it is installed automatically with PowerPoint. When you create a new chart in PowerPoint, Microsoft Graph opens and a chart is displayed with its associated data in a table called a datasheet. You can enter your own data on the datasheet, import data from a text file or Lotus 1-2-3 file, import or insert a Microsoft Excel worksheet or chart, or paste data from another program. Microsoft PowerPoint window Pie Chart Microsoft Graph window with datasheet with Bar Chart When you work on a chart, the Microsoft Graph program appears, with its own menus and buttons (or, if you have inserted an Excel chart, Excel menu and buttons appear, integrated with the PowerPoint menus) so that you can modify the chart. For example, you might want to change the chart type from pie to column, make the text larger, or add new colors. Information about how to modify charts is available from the Help menu on your menu bar while you are working on a chart.
Add a chart
Do one of the following:
1. Create a chart
2. On the Insert menu, click Chart.
3. To replace the sample data, click a cell on the datasheet, and then type the information you want.

To return to the slide, click outside the chart.

Tip

Microsoft PowerPoint comes with slide layouts that include placeholders for charts. To create a new slide by using one of these layouts, click New Slide on the

Insert menu, and then select one of the layouts that contains a chart placeholder.
254

Import a Microsoft Excel chart

1. On the Insert menu, click Chart.
2. Switch to the datasheet. If the datasheet is not visible, click View Datasheet to display it.
3. If you want the imported data to begin at a cell other than the upper-left cell on the datasheet, select the cell you want.
4. On the Edit menu, click Import File.
5. In the Look in box, click the drive, folder, or Internet location that contains the file, and click the *.xls file format in the Files of type box.
6. Double-click the file you want to import.
7. In the Import Data Options dialog box, select the sheet you want to import. You can import only one sheet.
8. Do one of the following:

• To import all the data on the worksheet, click Entire sheet under Import.
• To import part of the data, click Range, and then type the range of data you want. For example, to import cells A1 through B5, type A1:B5 in the Range box. If the range is named, you can type the name instead of the range reference.

If you selected a cell in step 3, clear the Overwrite existing cells check box.

Delete data from a chart

You can delete data from a chart, including the corresponding data on the worksheet. Or, you can delete the data series without losing any data on the worksheet or datasheet.

1. In Microsoft PowerPoint, double-click the chart you want to change.
2. Switch to the datasheet. If the datasheet is not visible, click View Datasheet to display it.
3. Do one of the following:

• Delete data from a chart and worksheet
• Select the information you want to delete.
• Press DELETE.
• To return to the slide, click outside the chart.

Delete a data series from the chart without deleting the corresponding data from the worksheet or datasheet

• Double-click the row or column header for the data series that you don't want to show in the chart.
• To return to the slide, click outside the chart.

Note If you want to put the data series back in the chart, double-click the row or column header again.

Edit data in a chart

Do one of the following:

Edit data for a chart created in Microsoft PowerPoint with Microsoft Graph

1. In PowerPoint, double-click the chart in which you want to edit data.

2. Switch to the datasheet. If the datasheet is not visible, click View Datasheet to display it.
3. Click a cell, and then type the text or numbers you want.
4. For information about working on the Microsoft Graph datasheet, click Microsoft Graph Help on the Help menu.
5. To return to the slide, click outside the chart or datasheet.
Note If you change existing text or values, the chart changes to reflect the new data.

Edit data for a chart created in Microsoft Excel

1. In PowerPoint, double-click the chart in which you want to edit data.
2. The menus and toolbars change to show the Microsoft Excel menus and buttons.
3. Click the tab for the sheet that contains the data for the chart — for example, Sheet1.
4. Type the new data in the cells on the worksheet.
5. For information about working with Microsoft Excel worksheets, click Microsoft Excel Help on the Help menu.
6. To make sure that the chart is displayed in the PowerPoint presentation when you return to the slide, click the tab for the sheet that contains the chart — for example, Chart1.

To return to the slide, click outside the chart.

Add data to a chart

1. In Microsoft PowerPoint, double-click the chart you want to change.
2. Switch to the datasheet. If the datasheet is not visible, click View Datasheet to display it.
3. Do one of the following:

Enter data

1. Click a cell, and then type the text or numbers you want.
2. For information about working on the datasheet, click Microsoft Graph Help on the Help menu.
3. To return to the slide, click outside the chart.

Note The first row and column of the datasheet are reserved for text that identifies the information in that row or column. In the case of an xy (scatter) or bubble chart, the first row or column contains values.

Import data

1. If you want the imported data to begin at a cell other than the upper-left cell on the datasheet, select the cell you want.
2. On the Edit menu, click Import File.
3. Double-click the file you want to import.
4. Do one of the following:

Import a text file

• Follow the instructions in the Text Import Wizard dialog boxes.

Import a Microsoft Excel spreadsheet or chart

1. In the Import Data Options dialog box, select the sheet you want to import.
You can import only one sheet.
2. Do one of the following:
• To import all the data on the worksheet, click Entire sheet under Import.

• To import part of the data, click Range, and then type the range of data you want. For example, to import cells A1 through B5, type A1:B5 in the Range box. If the range is named, you can type the name instead of the range reference.
3. If you selected a cell earlier in the procedure, clear the Overwrite existing cells check box.

Link to data

When you link to data in another program, such as a Microsoft Word table or Microsoft Excel spreadsheet, all existing data from the Microsoft Graph datasheet is deleted.
1. In the source program, select the data you want to link to the datasheet of the PowerPoint chart. For example, if you are working in an Excel worksheet, select a range of cells.
2. On the program's Edit menu, click Copy.
3. In PowerPoint, switch to the datasheet of the chart.
4. On the Edit menu, click Paste Link.
Note The chart will be updated when the data in the source program changes.

Inserting Drawing Objects

You can add a variety of diagrams, using the diagramming tools on the Drawing toolbar. Diagram types include Cycle, Target, Radial, Venn, and Pyramid. Use the diagrams to illustrate various conceptual material and enliven documents and presentations (diagrams are not numerically based).
Diagram (radial type) Diagram toolbar Drawing sizing handle Drawing border
When you add or change a diagram, the diagram appears with drawing space around it, outlined by a non-printing border and sizing handles. You can size the diagram by using sizing commands to make the drawing area larger so you have more room to work, or you can get rid of extra space by fitting the border more closely to the diagram.
Format the entire diagram with preset styles; or, format pieces of it like you format shapes — add colour and text, change line weight and style, and add fill textures, and backgrounds. Use the Diagram toolbar that appears with your diagram to add elements or segments and to move them forward or backward. You can also animate a diagram to direct focus to different pieces of a diagram and control the flow of information during a presentation.

Flowcharts

Flowcharts (or flow diagrams) can be created using a combination of AutoShapes on the Drawing toolbar, including flowchart shapes and connectors.
On the Drawing toolbar, click Diagram. Click one of the following diagram types:
• Venn
• Cycle
• Pyramid
• Target
• Radial
Click OK.
Do one or more of the following:

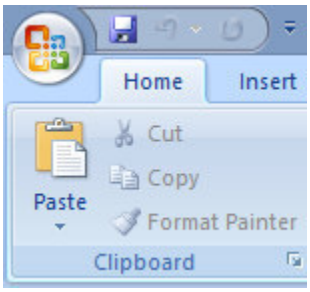
If you want to add text to an element in the diagram, right-click the element, click Edit Text, and then type the text.
For cycle and target diagrams, you can only add text to the text placeholders that appear when you insert the diagram or diagram element.
If you want to add an element, click Insert Shape on the Diagram toolbar.
If you want to add a preset design scheme, click AutoFormat on the Diagram toolbar, and select a style from the Diagram Style Gallery.
Click outside the drawing when you are finished.

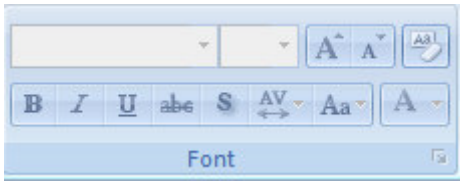
7.10 Layouts

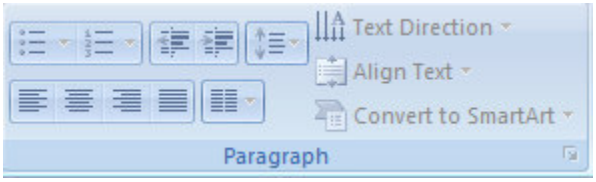
Layouts
"Layout" refers to the way things are arranged on a slide. A layout contains placeholders, which in turn hold text such as titles and bulleted lists and slide content such as tables, charts, pictures, shapes, and clip art. A basic layout with placeholders for a title and a bulleted list.
A layout with three placeholders: for title, a bulleted list, and content such as a table, diagram, chart, or clip art.
Each time you add a new slide, you can choose a layout for it in the Slide Layout task pan. Layouts come in a whole range of configurations; you can also choose a blank layout.

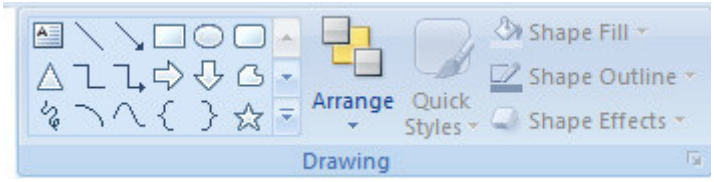
Using Auto Layout
Microsoft PowerPoint automatically adjusts the layout if you insert items that don't fit the original layout. For example, if you use a layout with only one placeholder for content such as a table, and you then insert a picture after inserting the table, the layout adjusts, adding a placeholder for the picture.

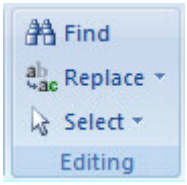
Rearranging the layout
You can move placeholders in a layout to different positions, make them different sizes, and format them with fill colors and borders. This applies to slides and notes pages; on handouts, you can only change the header and footer placeholders. Also, you can make these changes on individual slides or notes pages or on the slide master, notes master, or handout master. For consistency throughout a presentation, it may be best to make changes to the master.
If you adjust the placeholders on a notes page or slide and then you want the original layout back, you can reapply the original layout. If you delete placeholders on a master, you can restore the original placeholder on the master using the Master Layout command on the Format menu.



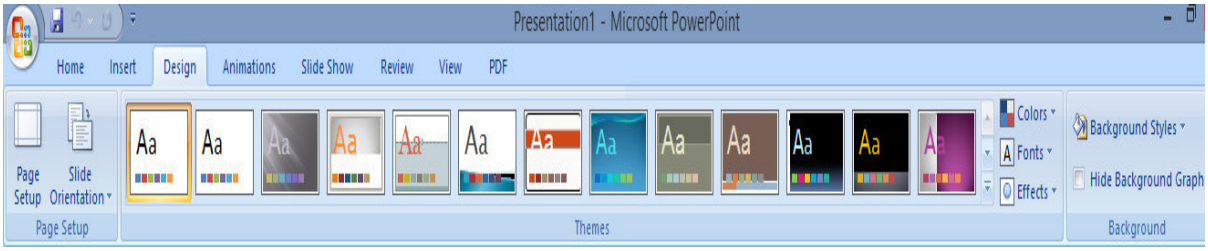


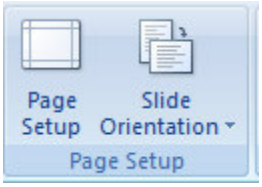


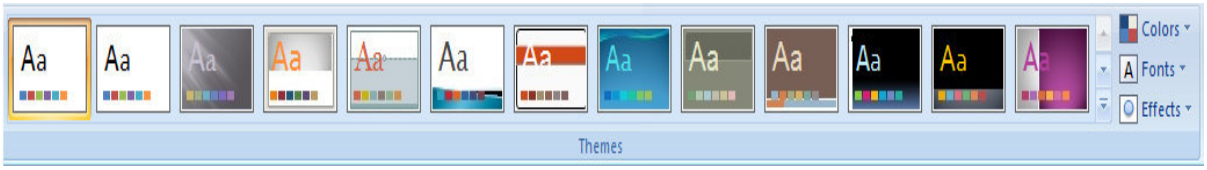




Insert command

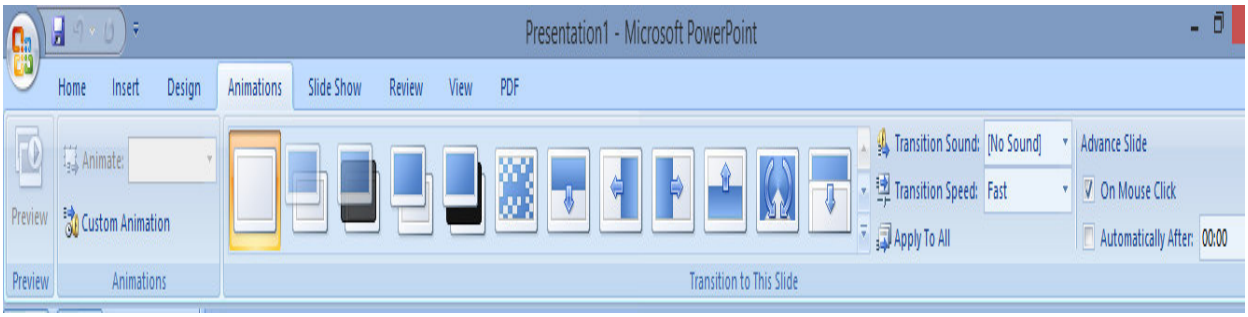




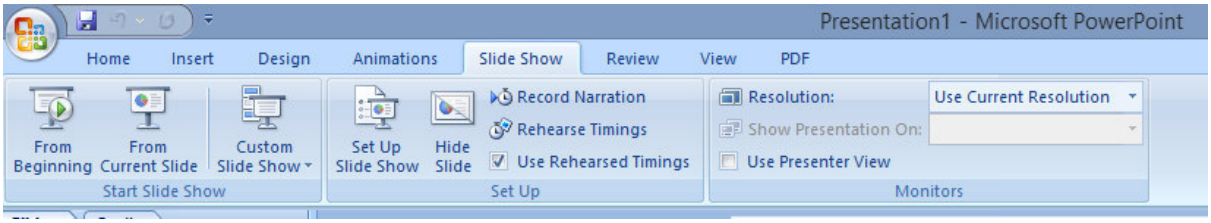




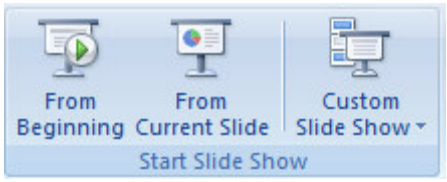
Also Try Animation in your presentations, following commands with options are shown in the figures shown below



following commands with options are shown in the figures shown below



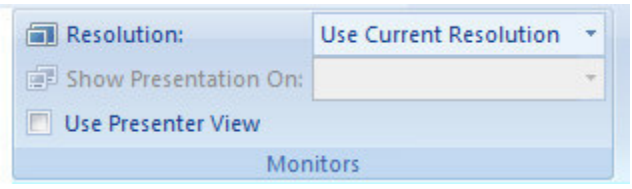
following commands with options are shown in the figures shown below

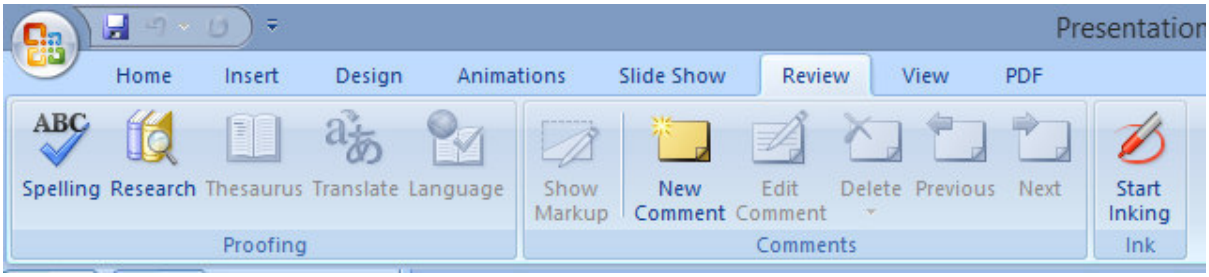


following commands with options are shown in the figures shown below

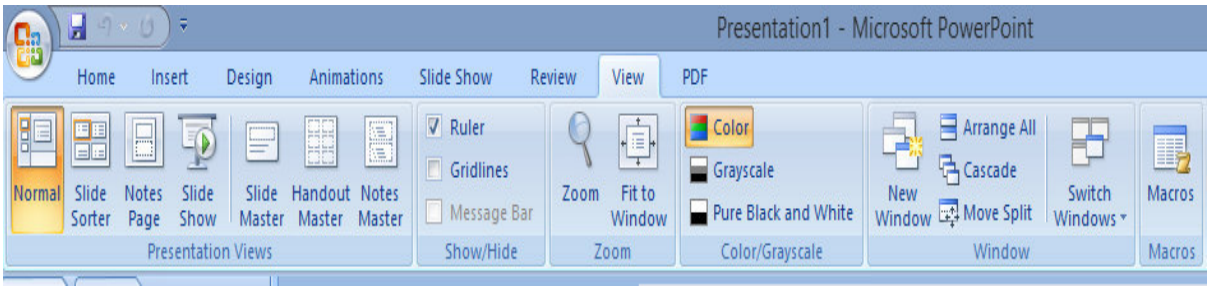


following commands with options are shown in the figures shown below

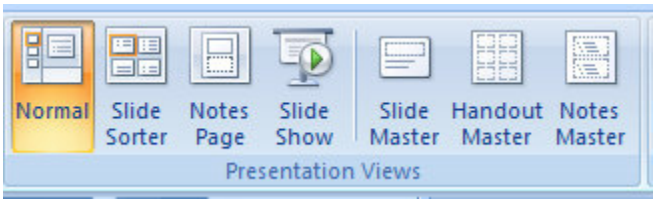


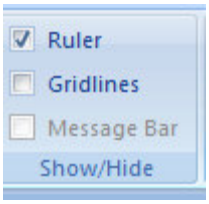


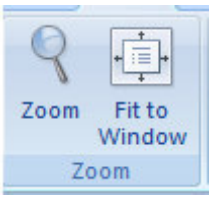
following commands with options are shown in the figures shown below



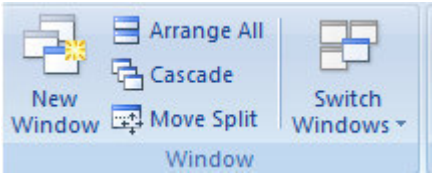
following commands with options are shown in the figures shown below

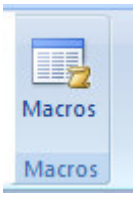











Macros
Macros


Prese
Home
Insert
Design
Animations
Slide Show
Review
View
PDF
Save
as PDF
Create PDF Document

7.11 Exercise

Check your progress

Exercise 1

QUESTIONS

Q.1. What is the Function of Microsoft PowerPoint? How can effective PowerPoint presentations delivered?

Q.2. What are the uses and features of Microsoft PowerPoint?

Q.3. How many slides can you have in a PowerPoint?

Q.4. What do you mean by handouts, speaker notes and outlines? Why are they used?

Q.5. What is the difference between animation and transition?

Exercise 2

PRACTICE QUESTIONS

1. What is PowerPoint presentation?

_____
_____

2. What is the purpose of creating the master slides?

_____
_____
_____
_____

3. Name the different types of views.

_____
_____
_____
_____

4. What are templates?

_____
_____
_____
_____
_____

5. How do you create a multilevel bulleted list?

_____
_____
_____
_____

6. How can you add slide transitions to a slide show?

_____
_____
_____
_____

7. Write the steps to embed an excel chat into the slide show.

_____
_____
_____
_____

8. What are handouts?

_____
_____
_____
_____

9. Explain the “Pack and Go” command and its utility

_____
_____
_____
_____

10. What is Layout? Explain various types of layouts in Presentation?

_____
_____
_____
_____

11. Write steps how to Import Excel data and charts into power point presentation?

_____
_____
_____
_____

Chapter 8:
Practical applications

1. INTRODUCTION

8.1 Objectives
8.2 Loan and Lease
8.3 Ratio Analysis
8.4 Graphical Representation of Data
8.5 Payroll Statement
8.6 Frequency Distribution and its statistical parameters
8.7 Regression
8.8 Exercise

8.1 Objectives

After studying this chapter, students are able to:

- Understand the use of Loan and Lease in applications
- Understand the various types of ratios, Current Ratio, liquidity ratio
- Understand the representation of data graphically
- Understand the statement of payroll
- Understand the distribution of statistical parameters
- Understand the analysis of regression

8.2 Loan and Lease Statement

8.2 LOAN AND LEASE STATEMENT

When an amount is borrowed or Loan taken against some assets such a transaction will require a settlement about the time during which the amount will be paid, the periodicity of payment like monthly, quarterly, half yearly or yearly), and rate of interest to be paid. Instalments payment may keeping these in mind an Equated Periodic Payment Installment is calculated using **PMT** function in **Excel** and a statement is prepared for a complete period of loan remains unpaid. This statement is called Loan and Lease Statement.
The problem of preparing loan & lease statement will be studied in three stages:

Stage one: where statement is for annual payment and for fixed number of years

Stage two: where statement is for one or more payments in a year and for fixed number of years.
Stage three: None of the parameters are fixed A totally genera l i ze d worsheet.
Preparing loan &

Lease Statement in three Stages are Various columns can be used for the calculation of the instalment

1. Instalment number.
This column refers to the installment number for which the calculations are being made in a particular row.

2. Opening Balance.
The outstanding loan amount in beginning of a period. This amount is normally the closing balance for the last period. For the first installment the opening balance will be the original loan amount.

3. Interest due.
Interest from the data of last the installment payment to the data of current installment payment. This can be directly calculated by using **IPMT** function in excel.

4. Equated Periodic Installment.
Periodic Payment Installment is calculated keeping in view the frequency or periodicity of payment (monthly, half yearly, quarterly, or yearly), and rate of interest to be paid and the time during which it is paid. This should cover the loan outstanding, as well as the interest on the outstanding amount, in a manner that all the installments are equal. **PMT** function in Excel is used for this purpose.

5. Closing Balance.
It is obtained by adding interest due in opening balance and deducting the installment paid. This will automatically become the opening balance for the next period.

6. Principal Component in Equated Periodic Installment.
This is found by deducting the interest due for that particular period (row) from the Equated Periodic Installment. It can also be directly calculated by using **PPMT** function in Excel.

8.2.1 BASIC INPUTS FOR LOAN & LEASE
1. Amount of Loan
2. Rate of Interest
3. Time of Loan (Period)
4. Periodicity

Question: Rs. 2,40,000/- borrowed at 24% p.a. rate of interest to be repaid in 24 instalments (Yearly) in 24 years.
Solution: The figure 1 gives the appearance of final work sheet. The figure 8.1 displays the formula and functions used in the work sheet.

	Loan Amount	2,40,000		
	Rate of Interest	24%		
	Time of loan	24	yearly	
	Installment	₹ 57,931.74		
installment	opening balance	Interest	EMI	Closing Balance
1	2,40,000	57600	₹ 57,931.74	₹ 2,39,668.26
2	2,39,668	57520.38272	₹ 57,931.74	₹ 2,39,256.91
3	2,39,257	57421.65728	₹ 57,931.74	₹ 2,38,746.82
4	2,38,747	57299.23775	₹ 57,931.74	₹ 2,38,114.32
5	2,38,114	57147.43752	₹ 57,931.74	₹ 2,37,330.02
6	2,37,330	56959.20524	₹ 57,931.74	₹ 2,36,357.49
7	2,36,357	56725.79721	₹ 57,931.74	₹ 2,35,151.55
8	2,35,152	56436.37126	₹ 57,931.74	₹ 2,33,656.18
9	2,33,656	56077.48308	₹ 57,931.74	₹ 2,31,801.92
10	2,31,802	55632.46174	₹ 57,931.74	₹ 2,29,502.65
11	2,29,503	55080.63527	₹ 57,931.74	₹ 2,26,651.54
12	2,26,652	54396.37045	₹ 57,931.74	₹ 2,23,116.18
13	2,23,116	53547.88207	₹ 57,931.74	₹ 2,18,732.32
14	2,18,732	52495.75648	₹ 57,931.74	₹ 2,13,296.34
15	2,13,296	51191.12075	₹ 57,931.74	₹ 2,06,555.72
16	2,06,556	49573.37245	₹ 57,931.74	₹ 1,98,197.35
17	1,98,197	47567.36455	₹ 57,931.74	₹ 1,87,832.98
18	1,87,833	45079.91476	₹ 57,931.74	₹ 1,74,981.15
19	1,74,981	41995.47702	₹ 57,931.74	₹ 1,59,044.89
20	1,59,045	38170.77422	₹ 57,931.74	₹ 1,39,283.93
21	1,39,284	33428.14275	₹ 57,931.74	₹ 1,14,780.33
22	1,14,780	27547.27972	₹ 57,931.74	₹ 84,395.87
23	84,396	20255.00957	₹ 57,931.74	₹ 46,719.14
24	46,719	11212.59458	₹ 57,931.74	₹ -0.00

Fig. 8.1

C5 f_x =PMT($C$3,$C$4,-$C$2)

	A	B	C	D
2		Loan Amount	2,40,000	
3		Rate of Interest	24%	
4		Time of loan	24	yearly
5		Installment	₹ 57,931.74	

Fig. 8.2. *Formula display of figure 1.*

C7 =(B7*$C$3*1)

	A	B	C	D	E
2		Loan Amount	2,40,000		
3		Rate of Interest	24%		
4		Time of loan	24	yearly	
5		Installment	₹ 57,931.74		
6	installment	opening balance	Interest	EMI	Closing Balance
7	1	2,40,000	57600	₹ 57,931.74	₹ 2,39,668.26

Fig. 8.2. *Formula display of figure 2.*

D7 =PMT($C$3,$C$4,-$C$2)

	A	B	C	D
2		Loan Amount	2,40,000	
3		Rate of Interest	24%	
4		Time of loan	24	yearly
5		Installment	₹ 57,931.74	
6	installment	opening balance	Interest	EMI
7	1	2,40,000	57600	₹ 57,931.74

Fig. 8.2a *Formula display of figure 3.*

E7 =B7-(D7-C7)

	A	B	C	D	E
2		Loan Amount	2,40,000		
3		Rate of Interest	24%		
4		Time of loan	24	yearly	
5		Installment	₹ 57,931.74		
6	installment	opening balance	Interest	EMI	Closing Balance
7	1	2,40,000	57600	₹ 57,931.74	₹ 2,39,668.26

Fig. 8.2b *Formula display of figure4 .*

Cell numbers C2, C3, C4 contains the information given in the question. Installment amount in C5 has been calculated using PMT function. **Look for all the formula in figure in the corresponding cell.** Since 24 installments are to paid, cells from A7 to A30 is filled with Installment (Year wise) 1 to 30. For payment number 1, the Opening Balance is normally the loan amount. Therefore a formula is entered in cell B7 (=C2). In C7, interest is calculated on the opening balance given in cell B7 (=B7*$C$3). $ Sign before C and 3 refers to absolute referencing, which is done to avoid the change during copy operation. The same way the D7 is filled with the installment calculated using PMT function. This same way the D7 is filled with (=$C$5), this too you do not want to change during copy operation, therefore, you put $ sign before C and Before 5. Closing balance is naturally Opening Balance, plus interest, minus installment. Therefore in cell E8 we enter (=B7+C7-D7). This completes the first row. In the second row, the opening balance the closing balance of previous period. Thus B8 will be replaced with =E7. This completes the formula entering. Copy from cell B8 to B9…B30,

Cell C7 to C8..C30, cell to D8..D30 and Cell E7 to E8..E30. Now it will appear exact in figure 2.

8.2.2 STAGE SECOND

At stage two, one more dimension is added. That is periodicity, meaning one or more than one installments paid in a year. This too is a generalized worksheet except for total number of installments paid/due during the loan period.

Question: Loan amount is Rs.60000/- borrowed at 12% p.a. rate of interest to be repaid in 12 equal **Half yearly** installment i.e. loan period is 6 years and two installments are paid in a year.

In Cell numbers E5 .. F8, we displays the various option of installments mode are available, with their respective codes. Code 1 stands for yearly payments, Code 2 stands for Half yearly payments, Code 3 stands for monthly payments, Code 4 stands for quarterly payment. In cell E4 we write the option selected, which is 2 in this particular question.

Now we add two more rows for information to be calculated from the provided information i.e. Effective rate and Total installments.

Effective rate is obtained by dividing rate of interest per annum with 1 for yearly, with 2 for half yearly, with 4 for quarterly and with 12 for monthly. The same way total installments is obtained by multiplying years period with 1 for yearly, with 2 for half yearly, with 4 for quarterly and with 12 for monthly.

Now installment amount will be calculated by using effective rate and total installment. Also every place where we use rate of interest we will use effective rate of interest, and for period total number of installments. Figure 7 gives the layout of worksheet and figure 8 gives the background printout of formula used in figure 7

STAGE 3 (stage2 with garbage cleaning):

If may be noted, that at stage 1and 2 the worksheet is a generalized, except for the change in period. We try to change the period from 6 to 4 in the worksheet at stage 2, keeping the payments at half yearly intervals. Thus the total payments will be equal to $4 \times 2 = 8$. The resultant worksheet is shown in figure 9. You will note that at installment number 8, the closing balance is zero. The worksheet should have ended at this point. But it continued with irrelevant information, for installment numbers 9, 10, 11 & 12. The information in cell number A 18 .. E 21 is referred as garbage. At stage 3 we will improve the worksheet in which such garbage does not appear, and the worksheet is truly generalized for all changes in the information provided. Figure number 10 shows a worksheet which takes care of garbage. In figure 11, the corresponding formula for each cell is displayed.

STAGE 3 worksheet with Formula.

The problem of garbage was encountered, because at no place in the sheet, we have instructed to stop. In a loan repayment, at least **one** installment will be paid. But more than one is not a certainty. On this assumption, on comparing figure number 8 and figure number 11, you will notice that row number 10 (showing payment number 1) is identical in both, and all changes are in subsequent rows where we are asking to stop, if the payment number has reached the limit of total installment to paid as shown on cell number **B8.** Now, in cell A11, we do not write 2 automatically, as done in figure 4. We check the value in cell A10 with the value in cell B8 (indicating total installments) and if the value in A10 is less that B8 (total installments), meaning by, that we have to continue and we fill the cell A11 with a value one larger than the value in A10 by entering the following formula in cell A11:

=IF(A 10 < B8,a10+1," ")

and we copy this formula from cell A11, to cells A12 to A250 (assuming that in a transaction there can be maximum of 240 installments) Now cells B11, C11, D11, and E11 will be dependent on the fact, whether A11 is blank or it contains any value. If A11 is blank, then B11, C11, D11, and E11 will also be blank otherwise they will contain the same value as calculated in figure 4. Thus the following formula will be entered in B11, C11, D11, and E11 respectively:

= IF(A11 = "" "",E10)
= IF(A11 = "" "",B11*$B$7)
= IF(A11 = "" "",$B$6)
= IF(A11 = "" "",B11+C11 – D11)
All these cells will be copied up to row number 250.

You will notice that later part of formula is the same as given in figure. This completes the preparation of a generalized loan and lease statement.

8.3 Ratio Analysis

8.3 RATIO ANALYSIS

In a financial statement, absolute figures, always, do not convey meaningful information. Ratio analysis is a technique under which relationship between figures of the financial statement is expressed as a ratio. For example a statement that profit of the company is Rs.30000/- may be correct, but does not give the picture of profitability of the company. If we state, that profits are 30% of sales, definitely it conveys that is the profitable one. There may be various ratios for various purposed. We will cover only two of the Financial Ratios like: See figure 4.3.

1. Current Ratio
2. Liquidity Ratio

	A	B	C	D
1	Ratio Analysis			
2	**Liabilities**	**Rs**	**Assets**	**Rs**
3	Equity Share capital	12,000	Machinary & equipments	1,00,000
4	Profit and loss account	24,000	Stock	24,000
5	10% debentures	30,000	Sundary debtors	8,000
6	sundary creditors	40,000	Cash at Bank	7,500
7	provision for taxation	2,500	Prepaid expenses	1,450
8				
9				
10				
11	current assets	0.963529		
12	Current liablities	0.364706		

Fig. 4.3

B11 =(D4+D5+D6+D7)/(B6+B7)

	A	B	C	D
1	Ratio Analysis			
2	**Liabilities**	**Rs**	**Assets**	**Rs**
3	Equity Share capital	12,000	Machinary & equipments	1,00,000
4	Profit and loss account	24,000	Stock	24,000
5	10% debentures	30,000	Sundary debtors	8,000
6	sundary creditors	40,000	Cash at Bank	7,500
7	provision for taxation	2,500	Prepaid expenses	1,450
8				
9				
10				
11	current assets	0.963529		
12	Current liablities	0.364706		

Fig. 4.4

B12 =(D5+D6)/(B6+B7)

	A	B	C	D
1	Ratio Analysis			
2	**Liabilities**	**Rs**	**Assets**	**Rs**
3	Equity Share capital	12,000	Machinary & equipments	1,00,000
4	Profit and loss account	24,000	Stock	24,000
5	10% debentures	30,000	Sundary debtors	8,000
6	sundary creditors	40,000	Cash at Bank	7,500
7	provision for taxation	2,500	Prepaid expenses	1,450
8				
9				
10				
11	current assets	0.963529		
12	Current liablities	0.364706		
13				

Fig. 4.4a

8.4 Graphical Representation of Data

8.4. GRAPHICAL REPRESENTATION OF DATA

Four different types of charts are shown in figure 13. These chart types are:

1. Clustered Column with 3-d effect.

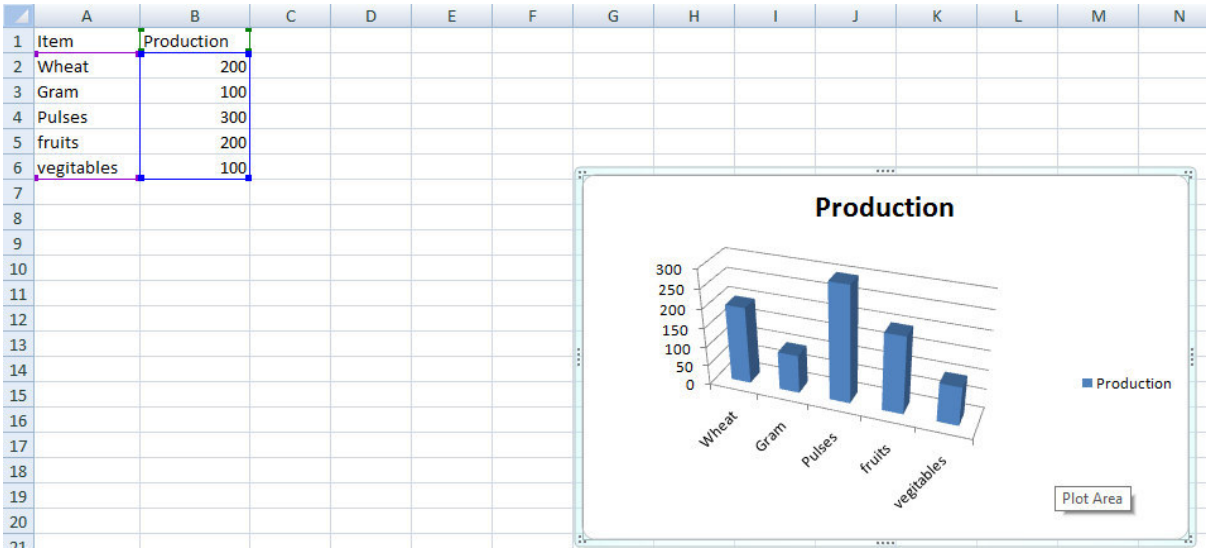


Fig. 4.5

2. Exploded Pie
3. Clustered column
4. Pie

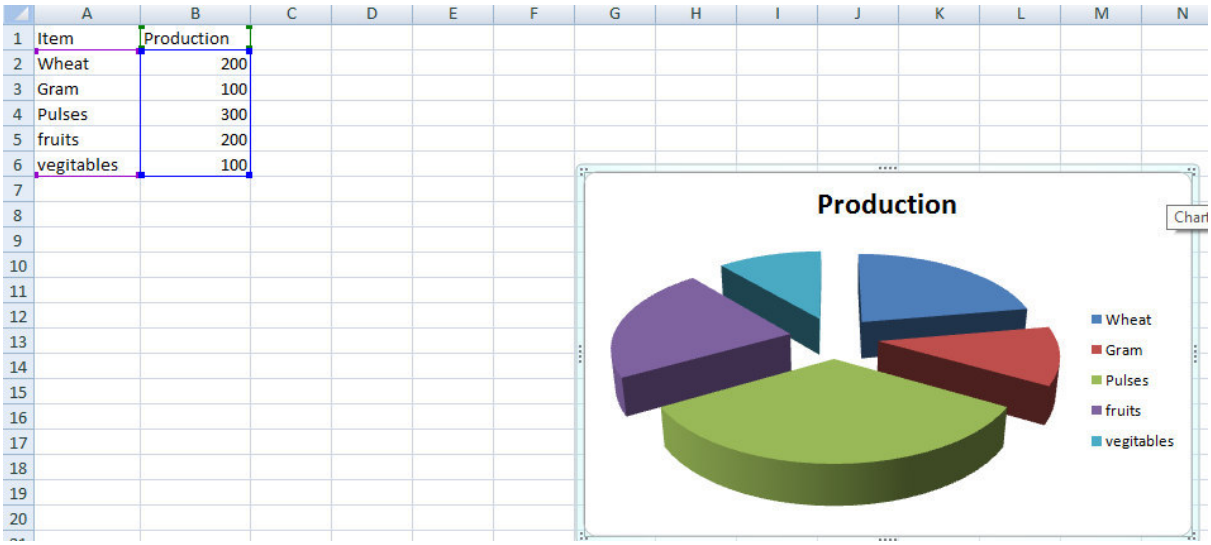


Fig. 4.6

We will create chart using the following steps:
1. Select the data range to be used for chart.
2. Click the chart button on the tool bar.
3. A dialog box will open showing the types of charts/graphs available. We will select any one type.
4. On hand side of dialog box, there will be may sub options. Click on the desired sub option.
5. Finally click on finish option. The chart is ready.
6. If you want to format the chart, instead clicking on FINISH, click on NEXT. A new dialog box asking for following will open.
(*a*) Title
(*b*) Axes
(*c*) Gridlines
(*d*) Legend
(*e*) Data Labels

(*f*) Data Tables
Give the requisite information and then click to complete the graph.

8.5 PAYROLL

Question: Prepare a generalized worksheet to produce a payroll statement in the format given below:

Emp. Name, Basic, Performance Dearness, House Rent, Provident Income, Gross, No Pay Grade, Allowance, Fund, Tax Pay, Net Salary

Employee is entitled Basic Pay, Dearness Allowance (DA), House Rent Allowance (HRA). A Gross salary is the total of these three. Out of Gross Salary employee contributes 10% of Basic pay + DA towards PF and pays 25% of Gross Salary as Income tax. Net Salary is found after deducting PF and ITAX from the Gross Salary. DA is calculated 150% of Basic Pay for those having basic up to Rs.16,000 and 100% for those having more than Rs. 16,000 with a condition that a person having basic more than Rs. 16,000 get a minimum DA of Rs. 24,000. HRA for employee of Performance Grade 'A' is Rs. 1,600, for B is Rs. 1,200 and for C Rs.1,000.

	A	B	C	D	E	F	G	H	I	J
1	EMP NO	NAME	BASIC PAY	PERFOR MANCE GRADE	D.A.	HRA	GROSS SALARY	PF	INCOME TAX	NET PAY
2	1	VANEETA	12000	A	18000	1600	31600	3000	7900	20700
3	2	AMIT	12000	B	18000	1200	31200	3000	7800	20400
4	3	ANJALI	12000	C	18000	1000	31000	3000	7750	20250
5	4	SUDESH	24000	D	24000	1000	49000	4800	12250	31950
6	5	TARA DEVI	25000	A	25000	1600	51600	5000	12900	33700
7	6	RAM NATH	16000	B	24000	1200	41200	4000	10300	26900
8	7	DAVENDER	17000	C	17000	1000	35000	3400	8750	22850
9	8	ASHA	11000	D	16500	1000	28500	2750	7125	18625
10	9	SABAD	9000	A	13500	1600	24100	2250	6025	15825
11	10	SIMRAN	6000	B	9000	1200	16200	1500	4050	10650
12	11	AARAV	25000	C	25000	1000	51000	5000	12750	33250
13	12	ARDHYA	25000	D	25000	1000	51000	5000	12750	33250
14	13	MOHAK	25000	A	25000	1600	51600	5000	12900	33700
15	14	NAMITA	25000	B	25000	1200	51200	5000	12800	33400
16	15	VARINDER	16500	C	16500	1000	34000	3300	8500	22200

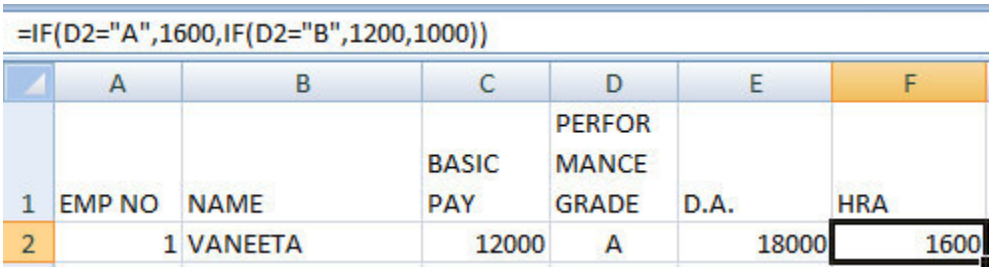
Solution : A worksheet incorporating the above information is shown in figure 1.

=IF(C2<=16000,C2*150%,C2*100%)

	A	B	C	D	E
1	EMP NO	NAME	BASIC PAY	PERFOR MANCE GRADE	D.A.
2	1	VANEETA	12000	A	18000

Figure 2

In Cells E2 formula to calculate DA is shown in figure

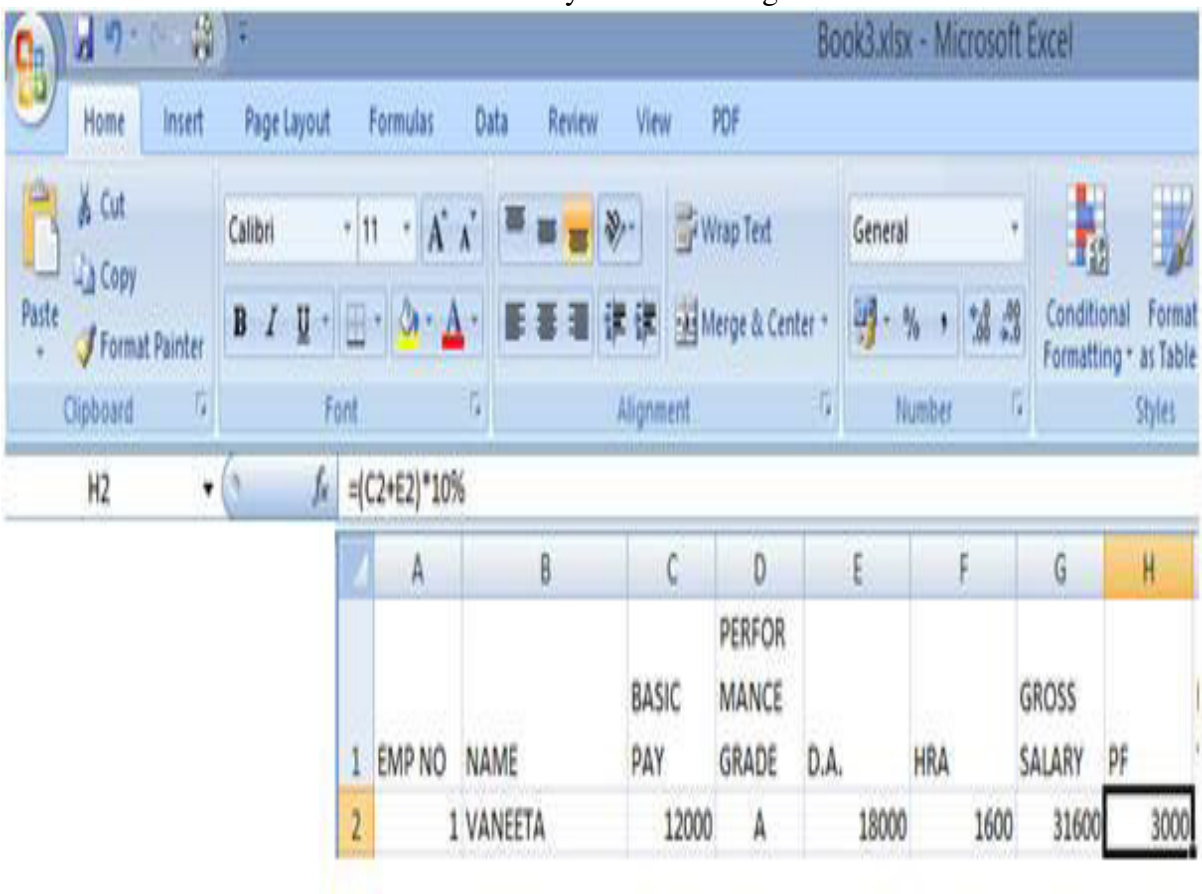


	A	B	C	D	E	F
1	EMP NO	NAME	BASIC PAY	PERFOR MANCE GRADE	D.A.	HRA
2	1	VANEETA	12000	A	18000	1600

Figure 3
In Cells F2 formula to calculate HRA is shown in figure 3

	A	B	C	D	E	F	G
1	EMP NO	NAME	BASIC PAY	PERFOR MANCE GRADE	D.A.	HRA	GROSS SALARY
2	1	VANEETA	12000	A	18000	1600	31600

Figure 4
In Cells G2 formula to calculate Gross Salary is shown in figure 4



	A	B	C	D	E	F	G	H
1	EMP NO	NAME	BASIC PAY	PERFOR MANCE GRADE	D.A.	HRA	GROSS SALARY	PF
2	1	VANEETA	12000	A	18000	1600	31600	3000

Figure 5
In Cells H2 formula to calculate DA is shown in figure 5

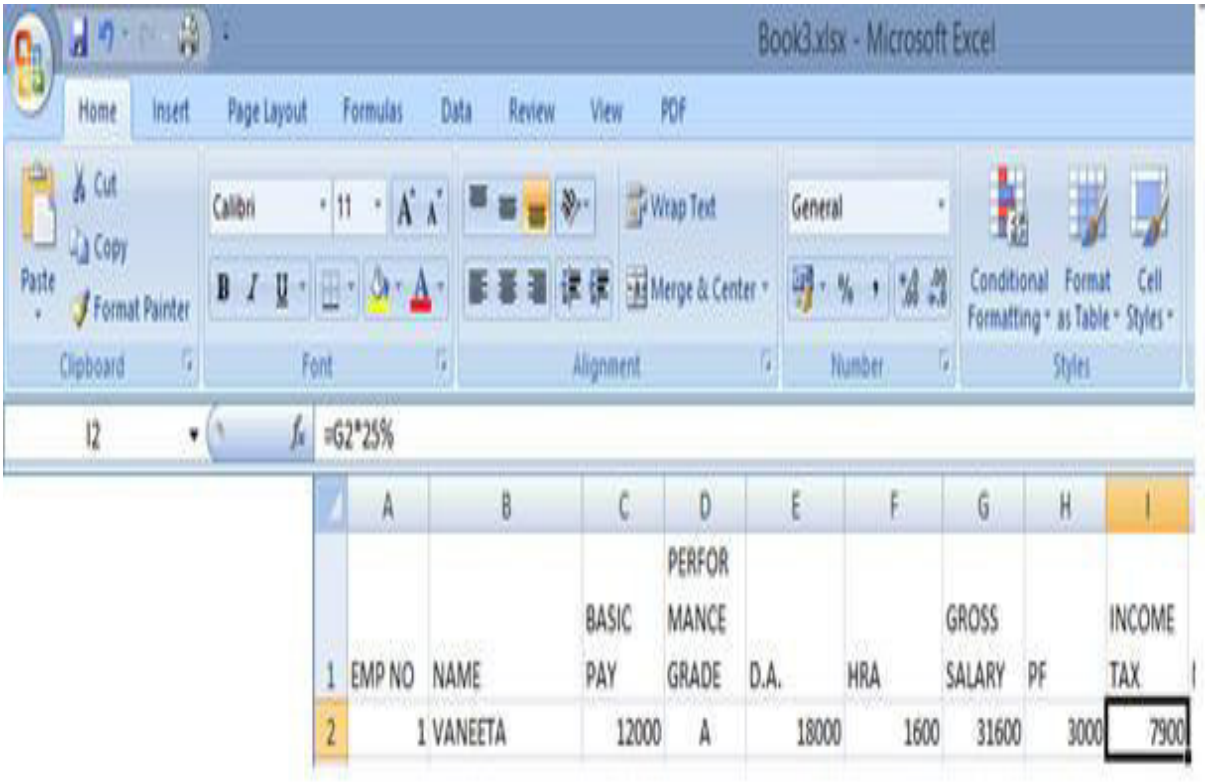


Figure 6 with formula
In Cells I2 formula to calculate Income Tax is shown in figure 6

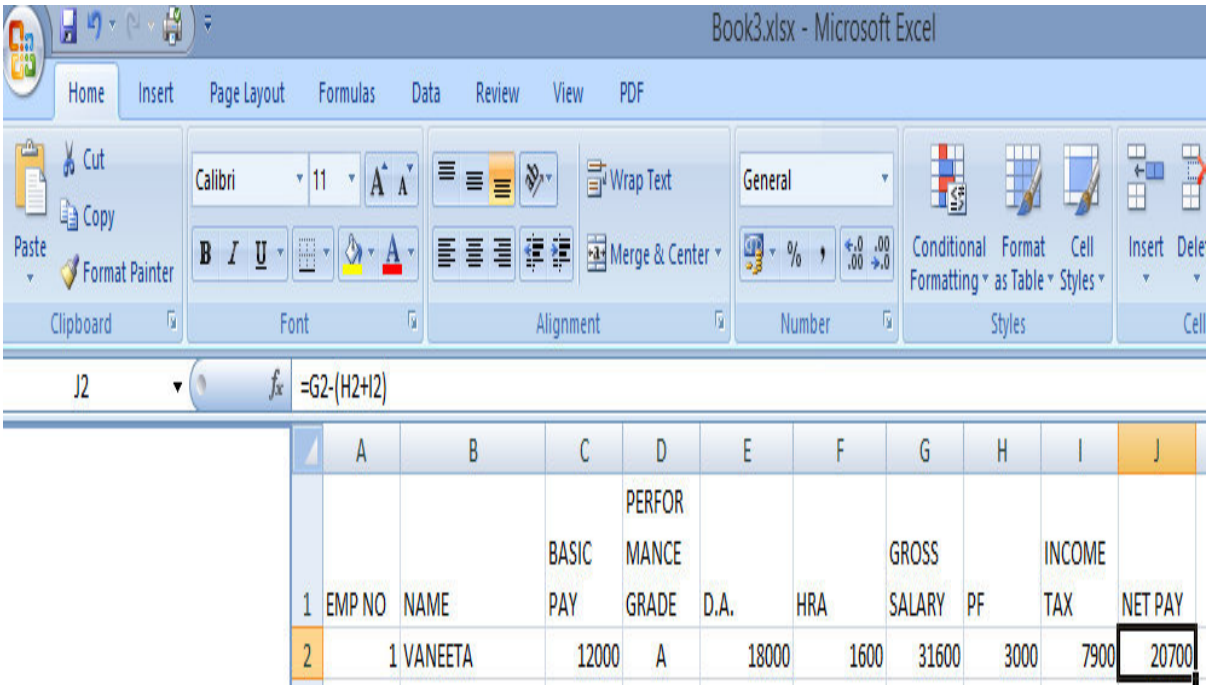


Figure 7 with formula
In Cells J2 formula to calculate Income Tax is shown in figure 7

8.6 Frequency distribution and its statistical parameters

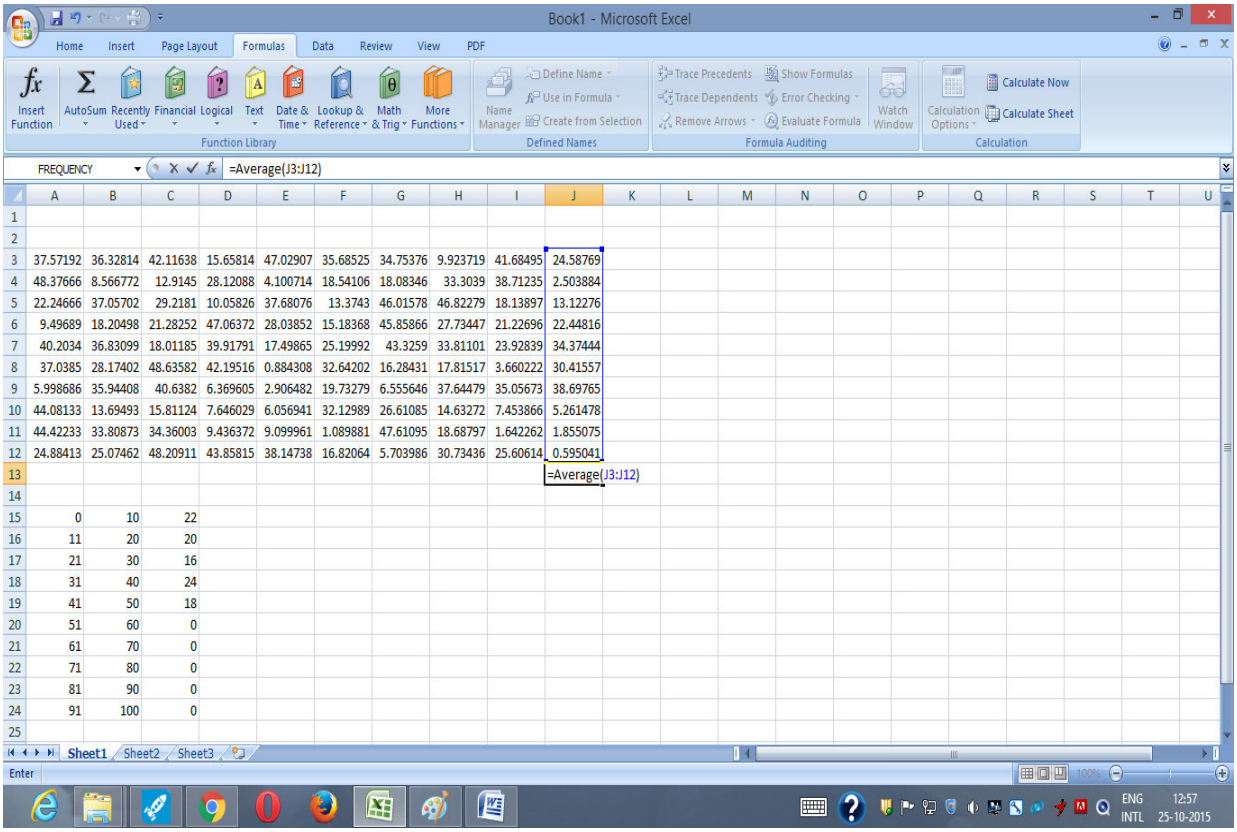
Frequency Distribution and its statistical parameters. Frequency distribution is a table in which number of times (called frequency), values for a variable occur within a range of values (known as class). The data tabulated in a frequency distribution is called grouped data.

Question: In cells A3 …J12(100 cells) enter positive numbers randomly as values of certain observation. Group this data into 10 classes. Calculate:
(*i*) Mean from individual observation
(*ii*) Standard Deviation from individual observation.
(*iii*) Smallest observed value.
(*iv*) Largest observed value.
(*v*) Frequencies.
(*vi*) Mean from grouped data.
(*vii*) Standard Deviation from grouped data.
Solution: below Figure shows the final worksheet for the above problem.
Cell A1…J12 show title of worksheet and observations. In cells A3…J12 (100cells) observation values are entered.

3	3.27919	25.91871	6.847861	16.63561	14.23378	16.10396	8.062735	5.86584	24.23105	17.05052
4	39.94368	34.02063	35.75538	3.956643	47.60317	26.91106	33.07703	11.21478	26.39405	18.74669
5	12.99829	18.65948	8.60482	30.78507	37.6535	48.25752	39.26829	5.228242	19.6768	3.671078
6	7.27009	26.14842	30.63503	19.80382	28.27112	3.55835	1.513605	32.21207	39.14525	1.424483
7	47.83044	27.82794	21.42495	32.78226	40.05655	47.68703	17.83174	20.15485	24.51765	17.67553
8	16.39179	28.77762	13.13541	45.56226	17.01031	17.28445	20.16248	30.10944	26.17801	46.29594
9	13.95771	38.53192	20.04022	28.24017	44.41543	18.86369	34.59687	41.55157	23.45373	15.10281
10	3.461407	47.65692	12.48509	47.31544	9.351517	13.19736	32.78374	3.146555	24.20816	46.00839
11	37.97949	28.56898	44.76066	41.83604	34.09447	3.534187	23.10437	25.66299	40.61594	22.61606
12	48.65045	10.99688	45.4312	6.31207	2.276378	18.35729	0.931736	41.31676	34.81726	15.19449
13									AVERAGE	20.3786
14										
15	0	10	19							
16	11	20	24							
17	21	30	21							
18	31	40	18							
19	41	50	18							
20	51	60	0							
21	61	70	0							
22	71	80	0							
23	81	90	0							
24	91	100	0							
25			=SUM(C15:C24)							

	A	B	C	D	E	F	G	H	I	J
2										
3	25.64363	5.507213	16.07184	6.355757	20.90779	29.72322	34.98339	48.00956	17.87166	30.18275
4	25.94079	11.77341	18.08125	26.66141	40.96297	35.88053	18.93903	10.60657	45.75706	10.991
5	30.77061	7.855744	44.90544	32.41341	45.2671	34.031	5.767309	28.18593	7.08171	27.87629
6	36.41119	27.16655	1.207473	1.742495	16.95379	8.861756	7.132559	30.09617	19.0144	2.292343
7	8.189947	48.84445	34.46083	11.70516	48.29029	34.85972	34.96818	35.62024	40.799	2.160562
8	41.29492	36.78599	34.48568	34.25103	39.90408	41.55897	45.55077	19.3456	17.31772	31.91842
9	3.394158	25.15217	9.950987	39.27291	33.09115	0.706948	14.34788	31.93608	20.94424	47.06388
10	45.30519	46.13368	24.89478	39.77556	36.95519	45.81596	41.02269	35.0201	49.37931	34.44048
11	15.84531	27.15549	45.50774	2.51504	21.31073	10.50511	6.468927	29.41199	24.65018	45.69194
12	35.1698	11.83784	20.88241	32.57224	10.24753	24.00747	7.333667	23.8915	15.89273	8.227543
13									AVERAGE	24.08452
14										
15	0	10	19							
16	11	20	18							
17	21	30	18							
18	31	40	26							
19	41	50	19							
20	51	60	0							
21	61	70	0							
22	71	80	0							
23	81	90	0							
24	91	100	0							
25			100							

(*i*) In cell J13, mean from individual observation is calculated using function Average. Formula entered in cell J13, is =AVERAGE(A3:J12),returned answer is 20.97023



	A	B	C	D	E	F	G	H	I	J
1										
2										
3	4.027397	37.02159	28.49579	14.36404	39.04261	44.30409	48.65597	33.11524	3.788771	12.99608
4	15.90641	26.16799	0.142485	36.27577	11.57455	13.47166	19.86098	20.81443	26.96573	20.54818
5	21.33129	1.260399	38.54598	36.0212	33.08409	25.25375	25.4058	28.70058	16.00379	28.28166
6	18.31157	33.35297	36.14165	41.54061	28.32884	44.10006	12.32753	20.52293	44.99919	2.977234
7	23.22206	12.96246	32.78617	21.89977	4.077053	29.96755	17.65627	8.238419	24.08918	34.34242
8	5.623527	3.45599	47.50379	1.923599	34.19626	18.6115	10.2338	18.89015	35.95563	41.62643
9	43.15493	43.57281	16.96188	47.1605	13.63461	28.10944	28.98533	41.79909	26.19268	18.79522
10	28.97562	0.080012	19.67142	4.233203	38.21861	40.44964	0.991149	47.01181	24.51397	8.989764
11	28.72684	12.90308	15.65904	15.10633	14.04856	30.7852	42.24746	10.36482	19.06041	5.891492
12	3.056047	4.783007	37.09457	49.3906	46.98648	0.016868	15.96649	18.98073	23.56059	35.25379
13									AVERAGE	20.97023
14										
15	0	10	18							
16	11	20	26							
17	21	30	23							
18	31	40	17							
19	41	50	16							
20	51	60	0							
21	61	70	0							
22	71	80	0							
23	81	90	0							
24	91	100	0							

(*ii*) In cell H13, standard deviation from individual observation is calculated using function STDEV. Formula entered in cell H13, is =STDEV(A3:J12),

which returned answer as 20.97023.

	A	B	C	D	E	F	G	H	I	J
2										
3	28.47598	15.67633	39.96431	29.54816	16.77091	41.72394	47.48429	47.71937	33.60107	3.114648
4	40.64987	13.66663	35.95835	33.65341	29.57315	31.64052	8.003976	5.827354	13.74019	31.25443
5	5.782534	36.09327	41.24033	41.04659	3.179171	7.898277	20.97426	45.98288	10.50816	24.37576
6	1.581781	41.775	5.054865	44.30063	17.06183	0.517058	0.957154	22.63387	28.5834	15.33601
7	27.91619	19.06947	37.80541	46.41398	38.70023	8.031724	1.135005	11.59357	38.45501	29.59597
8	40.65986	22.93272	39.66236	22.26719	47.13853	5.343153	10.26628	20.14849	6.164516	38.65641
9	38.74558	15.60888	17.81133	30.04719	20.16951	23.03841	33.26659	26.42932	40.55491	47.56575
10	17.63243	20.59781	45.80301	44.74272	46.59203	10.13772	12.45603	49.71791	17.20085	5.210187
11	10.15898	8.33505	45.81996	0.386254	3.566847	15.59077	29.5952	26.47046	16.60929	17.03115
12	7.961982	27.48984	21.17408	41.09772	29.18603	30.05536	12.99893	27.41569	23.802	41.94555
13							STDEV	=STDEV(A3:J12)		25.40859
14										
15	0	10	19							
16	11	20	21							
17	21	30	23							
18	31	40	16							
19	41	50	21							
20	51	60	0							
21	61	70	0							
22	71	80	0							
23	81	90	0							
24	91	100	0							

3	15.58217	24.62815	19.19311	45.4023	45.20189	16.20269	2.09888	21.48249	37.43362	35.88649
4	17.84854	21.81483	0.959192	5.718549	10.94806	4.585302	23.11629	11.35984	2.502875	39.11294
5	27.23885	42.05001	9.463153	21.07978	27.62722	40.88762	12.75444	29.36144	1.933231	0.069615
6	8.229343	32.01958	5.317436	20.54261	26.28637	30.27271	31.9372	2.174905	44.61629	23.4653
7	32.39598	36.17058	10.10977	17.94438	29.26305	39.80506	49.52443	42.95968	45.40546	24.48496
8	7.17394	9.117701	32.57031	42.06812	47.34617	11.0313	30.41879	16.28207	7.734707	30.02643
9	1.614088	37.44109	5.512075	43.82589	22.03988	6.908466	9.284255	31.76555	44.87541	2.23252
10	9.469531	32.91962	36.6129	29.17694	40.92371	35.84442	33.85222	31.7044	34.15777	22.11919
11	27.79511	11.26594	32.78543	12.3682	7.605201	31.49442	44.81557	20.70104	11.13131	30.52315
12	28.42352	31.28934	27.08129	4.763765	9.858216	30.83677	37.39758	42.57174	34.54244	2.904345
13							STDEV	13.98211	AVERAGE	21.08249
14										
15	0	10	24							
16	11	20	14							
17	21	30	20							
18	31	40	27							
19	41	50	15							
20	51	60	0							
21	61	70	0							
22	71	80	0							
23	81	90	0							
24	91	100	0							
25			100							

(*iii*) In cell f13 largest observed value is found using formula:

3	36.87645	34.49964	43.91119	1.358884	19.39784	18.33322	39.99598	21.98258	6.500488	19.59312
4	25.91715	19.70119	42.41268	14.35826	36.89964	23.76464	31.93118	30.89245	10.32649	22.80837
5	48.87768	19.51559	9.516197	3.600653	23.19677	19.93149	28.90833	21.33306	46.09056	1.426709
6	0.479775	6.248288	21.66785	46.13012	36.54934	25.47417	45.96817	5.983564	11.69135	9.01889
7	12.49953	38.97952	40.00282	17.24585	42.77276	28.68274	7.412674	16.1266	7.509109	33.68106
8	1.032167	27.73837	44.94648	36.87405	48.99262	44.66369	35.3003	32.40617	32.17151	28.7951
9	14.50106	14.42889	18.27201	7.609547	47.67571	27.39119	11.43873	42.97012	25.02349	19.736
10	42.62361	49.95361	2.103945	47.70882	38.60736	21.71124	35.52612	21.34872	18.78173	45.82914
11	22.02829	27.54509	9.171022	30.98596	16.42182	44.1587	7.291692	20.5075	38.03996	3.635073
12	16.04556	30.96323	15.62066	18.67858	1.613433	26.15143	39.75537	4.189498	32.76407	22.93895
13					MAX	=MAX(A3:J12)		14.03433	AVERAGE	20.74624
14										
15	0	10	19							
16	11	20	22							
17	21	30	21							
18	31	40	20							
19	41	50	18							
20	51	60	0							
21	61	70	0							
22	71	80	0							
23	81	90	0							
24	91	100	0							
25			100							

(*iv*) =MAX(A3:J12)

3	22.92471	3.277361	5.825542	18.18253	33.53173	2.163439	27.31455	13.15696	39.51539	2.893936
4	47.13771	34.19536	37.95171	20.97901	38.33143	15.91578	2.203182	7.715704	38.68272	45.2717
5	11.91348	20.61313	4.423172	30.95506	7.908331	26.78399	42.98074	48.98805	30.07779	46.61882
6	8.047616	23.36131	23.66064	15.93646	26.63739	8.627466	28.96667	48.13216	28.90514	32.36581
7	1.329561	12.11266	30.03153	4.506361	4.530504	25.93943	47.14764	34.57521	30.80464	10.01541
8	41.03831	34.20438	29.38351	42.041	37.25424	46.98672	32.32262	27.89752	28.68188	30.17376
9	43.49531	4.180722	7.2659	42.57931	32.14632	40.85586	20.24858	47.14496	22.30127	25.87166
10	25.32569	31.57556	30.39207	27.30273	37.27997	20.38759	13.05757	25.10745	48.12403	49.3381
11	20.85783	11.63983	34.50587	36.92957	15.31617	18.8506	3.758111	37.07646	32.95019	47.77733
12	13.90415	32.02788	17.68587	38.29335	11.77725	7.880838	49.79603	42.19163	20.77271	4.678785
13					MAX	49.79603	STDEV	14.1217	AVERAGE	29.50053
14										

(*v*) **Frequencies:** To find the frequencies, first we have to group the data. For grouping, class interval, is the first thing is to be decided. The class interval are calculated by dividing the difference in the largest and smallest value by number of classes desired.
Approximate interval= (largest value-Smallest value)/ no of classes
In our question since we desire to have 10 classes:
Approximate interval = (99 – 1) / 10 = 9.8

	A	B	C	D	E	F	G	H	I	J
2										
3	22.92471	3.277361	5.825542	18.18253	33.53173	2.163439	27.31455	13.15696	39.51539	2.893936
4	47.13771	34.19536	37.95171	20.97901	38.33143	15.91578	2.203182	7.715704	38.68272	45.2717
5	11.91348	20.61313	4.423172	30.95506	7.908331	26.78399	42.98074	48.98805	30.07779	46.61882
6	8.047616	23.36131	23.66064	15.93646	26.63739	8.627466	28.96667	48.13216	28.90514	32.36581
7	1.329561	12.11266	30.03153	4.506361	4.530504	25.93943	47.14764	34.57521	30.80464	10.01541
8	41.03831	34.20438	29.38351	42.041	37.25424	46.98672	32.32262	27.89752	28.68188	30.17376
9	43.49531	4.180722	7.2659	42.57931	32.14632	40.85586	20.24858	47.14496	22.30127	25.87166
10	25.32569	31.57556	30.39207	27.30273	37.27997	20.38759	13.05757	25.10745	48.12403	49.3381
11	20.85783	11.63983	34.50587	36.92957	15.31617	18.8506	3.758111	37.07646	32.95019	47.77733
12	13.90415	32.02788	17.68587	38.29335	11.77725	7.880838	49.79603	42.19163	20.77271	4.678785
13					MAX	49.79603	STDEV	14.1217	AVERAGE	29.50053
14										
15	0	10	18							
16	11	20	14							
17	21	30	23							
18	31	40	26							
19	41	50	19							
20	51	60	0							
21	61	70	0							
22	71	80	0							
23	81	90	0							
24	91	100	0							
25			100							

15	0	10	18
16	11	20	14
17	21	30	23
18	31	40	26
19	41	50	19
20	51	60	0
21	61	70	0
22	71	80	0
23	81	90	0
24	91	100	0
25			100

Thus we decide our group interval as 10 starting with 1 out groups are entered in cells A15…B24 (column ‘A’ having the lower limits and column ‘B’ having the upper limits). We reserve the cells C15…C24 to show corresponding frequencies.

HOW TO CALCULATE FREQUENCY

Frequency function is used to calculate, the number of time, the values are falling with in a particular group. **Frequency returns a vertical array, as an answer, as a answer, therefore must be entered as an array formula. We** have already reserved cells C15…C24 to show the output (frequencies).

Steps in entering the Formula

1. Select the cells C15…C24. You will find cells C16..C24 have changed color and C15 remains white ***(at this stage, till the frequencies appear in cell C15..C4, please*** do not tough mouse or change the current cell in any manner).
2. **Enter formula.** When you enter formula, it will show in cell C15, but is valid for the full array of cells i.e. C15 .. C24. Formula requires the reference to cells containing data (referred as data array) and also the range containing the upper limits (referred as bins array). The following formula will be entered:

=FREQUENCY(A3:J12, B15:B24)

3. Press CTRL+SHIFT+ENTER. ***You have to strike on ENTER keeping the SHIFT and CTRL keys pressed.*** Please note that **Enter key** will be the last in the above sequence.

Mean from grouped data. For calculating mean we require the total of the product of mid values of the group with frequencies.

Steps:

1. To find the mid values of group, in cells D15, we enter formula as :

= (A15+B15)/2

Which is copied to cells A16 .. A24.

2. To find the product of mid values with frequency, in cells E15, we enter formula as :

= **(D15*C15)**

which copied to cells E16..E24

3. To find total observations, we sum up the cells C15..C24, in cell C25 we Enter formula:

= sum(C15:C24)

4. To find sum of product of frequency and mid-value we enter, in cell E25 the following formula:

= sum (E15:E24)

5. To find the MEAN in cell I18 we enter formula as:

= E25/C25

6. Standard Deviation from grouped data. For calculating S.D. we require, additionally, sum of product of frequency with square of mid values. In cell number C15, we enter the formula as given below to find the product of frequency with square of mid values:

= C15*D15*D15

This is copied to cell F16….F24. In cell F25 we have obtained the sum of F15..F24 with the formula **=sum(F15:F24). S.D.** is obtained by entering following formula In cell **117**:

=SQRT((F25/C25)-(E25/C25)^2)

8.7 Linear Regression Analysis

8.7.Linear Regression Analysis (use of intercept and slops): Regression analysis helps in estimating a dependent variable, the value of which is associated with other variable known as independent variable. For fitting a regression line, the method of lease square criterion is followed. The linear equation that represents the simple linear regression model is:
Y=a + bx
Where 'y' is the value of dependent variable, 'a' represent the value of 'y' when 'x' is zero. In other words, it is constant and in EXCEL is calculated by INTERCEPT function. 'b' represent the angle of regression line and in EXCEL is calculated by slope function. It is also called regression coefficient.

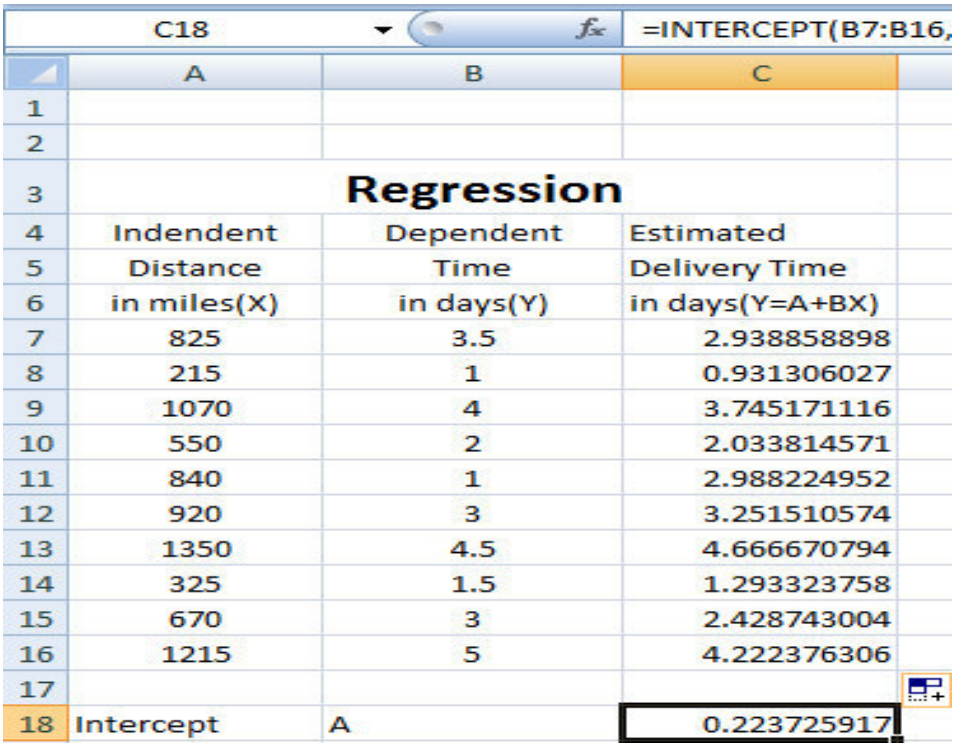
QUESTION

Given data for 10 recent shipment made by the company. A record of distance in miles and time taken was made. Draw a regression line after finding the estimated time of delivery, from the given information:

1			
2			
3		**Regression**	
4	Indendent	Dependent	Estimated
5	Distance	Time	Delivery Time
6	in miles(X)	in days(Y)	in days(Y=A+BX)
7	825	3.5	2.938858898
8	215	1	0.931306027
9	1070	4	3.745171116
10	550	2	2.033814571
11	840	1	2.988224952
12	920	3	3.251510574
13	1350	4.5	4.666670794
14	325	1.5	1.293323758
15	670	3	2.428743004
16	1215	5	4.222376306
17			
18	Intercept	A	0.223725917
19	Slope	B	0.00329107

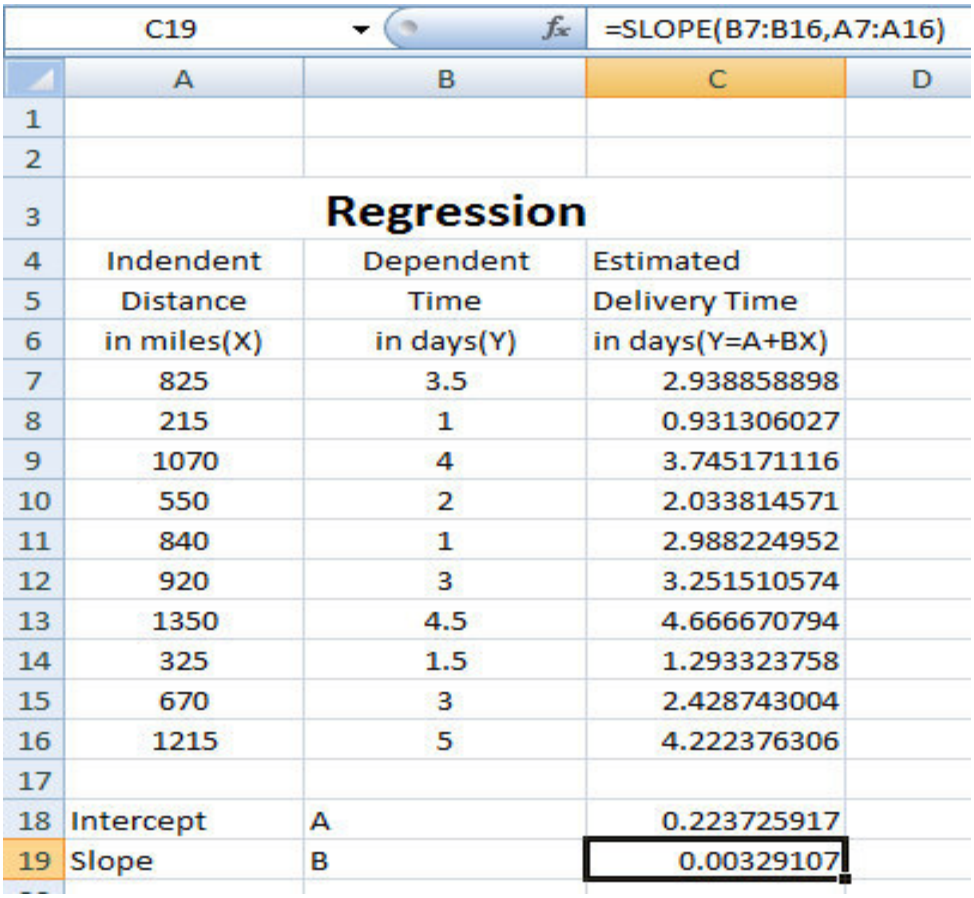
Fig 8.9 A

The worksheet given in figure 8.9A, 8.9 B and 8.9C shows original data (for distance in miles) in cells A11…A20, and data for delivery time in cells B11…B20. In cell E8 intercept is calculated using the formula in cell C18
=INTERCEPT(B7:B16,A7:A16).



C18 =INTERCEPT(B7:B16,

	A	B	C
1			
2			
3	**Regression**		
4	Indendent	Dependent	Estimated
5	Distance	Time	Delivery Time
6	in miles(X)	in days(Y)	in days(Y=A+BX)
7	825	3.5	2.938858898
8	215	1	0.931306027
9	1070	4	3.745171116
10	550	2	2.033814571
11	840	1	2.988224952
12	920	3	3.251510574
13	1350	4.5	4.666670794
14	325	1.5	1.293323758
15	670	3	2.428743004
16	1215	5	4.222376306
17			
18	Intercept	A	0.223725917



C19 =SLOPE(B7:B16,A7:A16)

	A	B	C	D
1				
2				
3	**Regression**			
4	Indendent	Dependent	Estimated	
5	Distance	Time	Delivery Time	
6	in miles(X)	in days(Y)	in days(Y=A+BX)	
7	825	3.5	2.938858898	
8	215	1	0.931306027	
9	1070	4	3.745171116	
10	550	2	2.033814571	
11	840	1	2.988224952	
12	920	3	3.251510574	
13	1350	4.5	4.666670794	
14	325	1.5	1.293323758	
15	670	3	2.428743004	
16	1215	5	4.222376306	
17				
18	Intercept	A	0.223725917	
19	Slope	B	0.00329107	

Fig 8.9 **B**

Likewise in cell slope is calculated using the formula in cell
C19 (**=SLOPE(B7:B16,A7:A16)**). With the help of calculated intercept and slope, we have estimated the value of 'y' for all values of 'x',

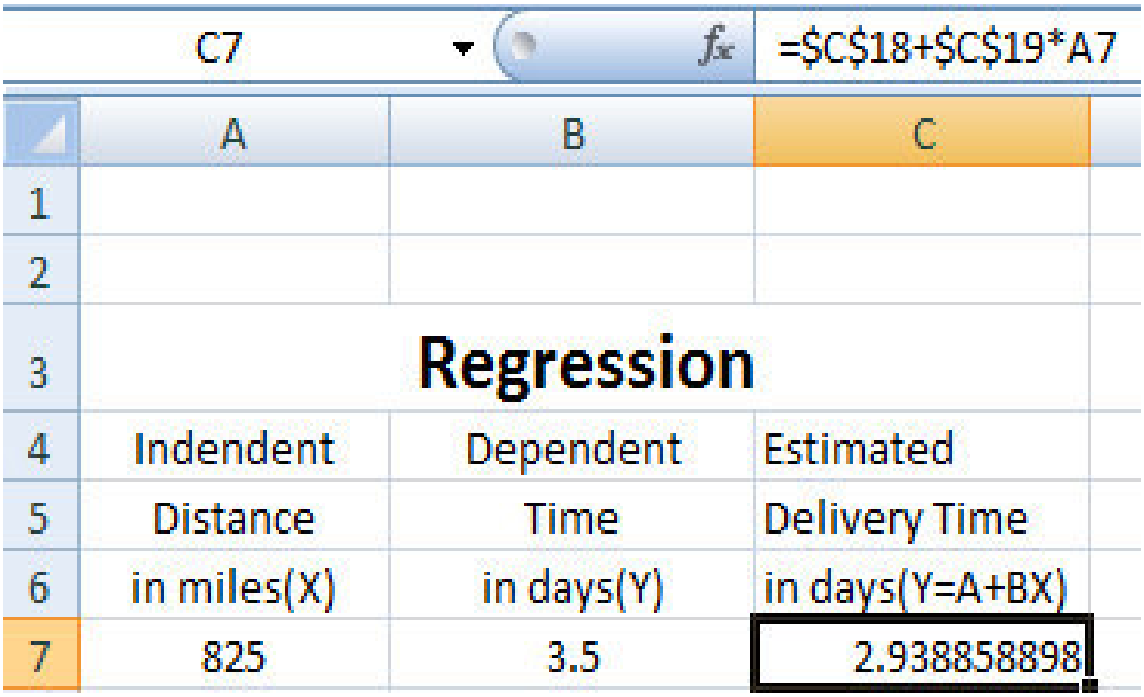


Fig 8.9 C

by putting in cell C7 the formula **=$C$18+$C$19*A7,** then copying it to cells C7…C16.

Exercise 1: Practice questions

1. Rs. 4,80,000/- borrowed at 12% p.a. rate of interest to be repaid in 48 instalments (Yearly) in 48 years.
2. Employee is entitled Basic Pay, Dearness Allowance (DA), House Rent Allowance (HRA). A Gross salary is the total of these three. Out of Gross Salary employee contributes 20% of Basic pay + DA towards PF and pays 25% of Gross Salary as Income tax. Net Salary is found after deducting PF and ITAX from the Gross Salary. DA is calculated 150% of Basic Pay for those having basic up to Rs.16,000 and 100% for those having more than Rs. 16,000 with a condition that a person having basic more than Rs. 16,000 get a minimum DA of Rs. 42,000. HRA for employee of Performance Grade 'A' is Rs. 10,600, for B is Rs. 10,200 and for C Rs.10,000.
3. Enter positive numbers randomly as values of certain observation from 0 to 100 and frequency between 0-10, 11-20, 21-30, 31-40, 41-50, 51-60, 61-70, 71-80, 81-90, 91-100. Group this data into 10 classes.