



## BASIC COMPUTER TRAINING



Paint



Internet



Outlook



Word



Excel



Power Point

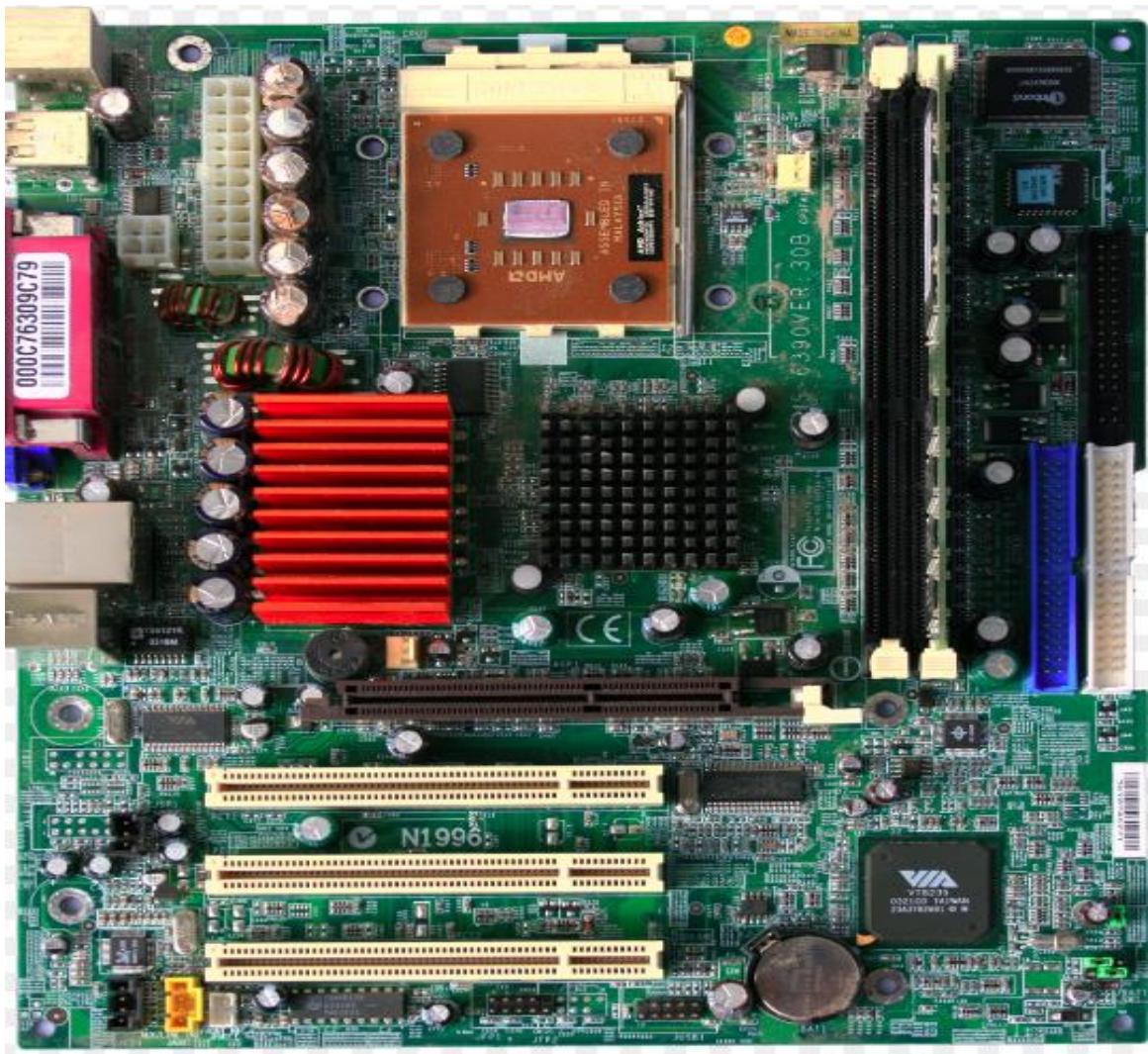


# Computer Packages

## TRAINING MANUAL.

**NABOTH RASTO O.**

**C - Commonly**  
**O - Operated**  
**M - Machine**  
**P - Particularly**  
**U - Used for**  
**T - Training**  
**E - Education**  
**R - Research**





## Lesson 1 INTRODUCTION TO COMPUTERS.

### **Objective**

1. Meaning of ICT
2. Uses of ICT in organizations
3. ICT equipment/facilities

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### **DIGITAL LITERACY**

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#### **Literacy**

The urge to read and learn

#### **Digital Literacy**

- The process of acquiring knowledge and skills to effectively use computer and other technology devices
- Digital literacy is the ability to access , process , understand and create information in digital environment

#### **Information Communication Technology (ICT)**

- Use of technology to manage, store, process and transmit information.
- Integration of computing, networking and, information processing technologies for gathering, processing, storing and disseminating information.

#### **ICT Technologies**

Provide access to information through telecommunications communication systems include.

##### **1. Internet and web technologies –**

- Web Browser,
- Search Engines,
- Email,
- Instant Messaging And
- Social Media

##### **2. Telecommunication**

- Telephone System,
- Mobile Phones
- Satellite

##### **3. Multimedia**

- Video
- Audio
- Graphics

##### **4. Computers hardware and software**

- Personal Computer,
- Servers,
- Storage Devices,
- Networking Equipment
- Software Application,

##### **5. Cyber security**

- Firewall
- Antivirus

- Intrusion Detection alarm Systems

## **Benefits of ICT**

### **1. Connectivity**

Ability to connect people and allow communication and information sharing eg email, video conferencing

### **2. Automation**

Automate monotonous jobs and procedures which help in boosting productivity, cost saving and efficiency

### **3. Data Storage and Management**

Offer a variety of systems and methods for storing managing and analyzing massive amounts of data

### **4. Remote Access**

Enable people to work and contribute from any location by enabling remote access to information and resources

### **5. Multimedia**

Facilitate production, dissemination and consumption of a variety of multimedia formats, including text, images, audio and video

### **6. Security and Privacy**

Offer a range of technologies and security measures to guard against unauthorized access to , modification of, and destruction of information and systems

### **7. Mobile and Wireless**

Enable the use of mobile and wireless devices

### **8. Better Customer Service**

Increase efficiency and better customer satisfaction through ICT tools that offer automation to customer service procedures and self-service choices

### **9. Increased Competitiveness**

Access to new market, clients and business models offered by ICt can provide firms with a competitive edge

## **Application of ICT**

### **1. Business**

Utilized for customer relationship management, internet marketing and e-commerce .

### **2. Education**

Enable remote learning, gives access to educational resources and improves the learning process through e-learning , online classes , educational films etc.

### **3. Healthcare**

Maintain patient information, provide telemedicine and enhance inter-professional communication and collaboration

### **4. Entertainment**

Help to produce digital materials, distribute it, sell it and interact with audience

### **5. Transport**

Control traffic, assist with navigation and boosts the effectiveness of transportation system

### **6. Government**

Enable e-governance and enhance coordination and cooperation among departments

## **7. Agriculture**

Improve Crop management, precision farming and agricultural system efficiency

## **8. Banking**

Used in banking and finance sector to manage and secure financial data , support online banking and automate financial transactions.

## **Function of ICT**

### **1. Data capture:**

Process of compiling information e.g. Amazon uses internet cookies to capture data about the customers' purchases via the website. So, it uses the data to suggest items to a user related to the previous orders via the website.

### **2. Data processing:**

This involves converting, analyzing, computing and producing all forms of data information.

### **3. Generation of information:**

Involves organizing information into a useful form.

### **4. Storage of information**

Involves retaining information for future use e.g. Facebook stores user registration details.

### **5. Retrieval of information:**

Process by which a computer device is used to find and copy data for future distribution and processing. A good example is Google or Yahoo who have data centers which store information which can be used at a later stage by the end user to search for information online.

## **CAREER OPPORTUNITY IN ICT**

### **1. Software developer**

Help in development and maintaining software systems and applications

### **2. System analyst**

Analyze the issues of an organization and then accordingly design a system that gives a practicable solution

### **3. Software tester**

Test if software made is appropriate or not for the purpose specified

### **4. Network engineer**

Designing , implementing and managing computer networks

### **5. IT Project Manager**

Planning and directing the delivery of IT projects

### **6. Business Analyst**

Enhancing decision making and business processes with technology

### **Objective**

- Meaning and importance of a computer
- Uses of computers (benefits, challenges).
- Safety precaution and practice

## Meaning and Importance of Computers

- **Computer**

An electronic device that operate under the control of programs stored in its own memory, it accepts user input (**data**) processes it under the influence of instructions (**programs**) to produce **output (information)**

- **Data**

A collection of **raw facts, figures** and **symbols** which may make no meaning to a user e.g. names of students and their marks in different subjects listed in random order

- **Program -**

Set of instructions written in a language of computer and is used to make computer to perform a task.

- **Information.**

Data presented in organized manner, has meaning, and is useful for decision making. E.g. Reports, newsletters, a receipt, a picture, an invoice

## Characteristics.

1. **Electronic Components**

A computer comprises of electronic elements like **transistors, resistors, diodes** and **ICs** etc

2. **Storage**

A computer has an **internal store (memory)** for storing both instructions and data being processed)

3. **Program**

A computer **uses a program** i.e. the set of instructions which specify the procedure of operation to be followed.

4. **Program Modification**

The program a computer uses can be **modified** when need arises. This is a distinguishing feature of a computer.

5. **Varying size**

Computers exist in **varying sizes, speed of processing, memory capacity, use and cost**

## Functions

1. **Store - Store information** much safer than physical storage like box file or file cabinet.

2. **Process control.**

Computer is used to control other devices like **robots, rockets, drones** and **bombers** accurately to a target

3. **Predict-** A computer is used in **weather forecasting** and sales projections in a company

4. **Data processing** - A computer is used in **converting data** into information.

5. **Retrieval of information**

A computer is used for quick, effective and accurate **retrieval of information** if the information is stored in a computer readable form. Eg **nemis, e-citizen,**

## **Advantages of Computers.**

### **1. Speed**

A computers operate at very **high speeds**, that allows it to tackle jobs with complicated procedures which may not be possible without it within a very short time.

### **2. Accuracy**

A computer performs all jobs with **100% accuracy** provided that correct input has been given. Errors may occur but most are always attributed to human error and computer has inbuilt self-checking features.

### **3. Storage Capability** – A computer can store large amount of data in very small space.

### **4. Diligence**

A computer can work continuously without any error or boredom doing repeated work with the same speed and accuracy.

### **5. Versatile (Flexible)**

A computer can be used to **solve many kind of problems** related to various fields as long as **there is a well-defined procedure of executing** the job.

### **6. Reliability**

A computer is reliable as it gives consistent result for similar set of data.

### **7. Volume** - A computer can tackle huge volume of data effectively eg (POS)

### **8. Better Performance**

The computer produces better information because its output is usually tidy, timely and error free

## **Disadvantages Of Computers**

### **1. Cost** – Computers are very costly in terms of purchase and maintenance.

### **2. Technology is full of changes**

The rapid change in the computer technology makes computers and related facilities to become **outdated very fast**, hence **posing a risk of capital loss**.

### **3. Jobloss**

The emergence of computers has increased the rate of unemployment since they are now being used to perform the jobs, which were done by human beings.

### **4. Cheated**

The computer system can be **cheated** by knowledgeable persons because it has no common sense and will always do what it is instructed to do no matter how wrong or right it could be.

### **5. Data loss**

Information stored in computers can easily get lost due to power interruptions or machine breakdown.

### **6. Dependency**

A computer doesn't have its own intelligence, i.e., it cannot do any useful job on its own, but can only work as per the set of instructions issued.

### **7. Health-Issues**

Prolonged use of personal computers results in many health-related issues such as **eye strain, headache, back pain, etc.**

## **8. Increase in crime**

Computers have led to increase in computer crimes as computer criminals steal large amounts of funds belonging to various companies by transferring them out of their bank accounts illegally

### **Computer Uses**

#### **1. Entertainment**

A computer can entertain persons of all ages i.e. when we feel tired, bored or disturbed. These games can give us relief by putting an end to tension, tiredness and stress.

#### **2. Education**

A computer can help the process of learning almost any subject in a much better and more interesting manner e.g. screen diagrams.

#### **3. Inventories** – We can use a computer to make inventories of all major items in homes and shops.

#### **4. Musician** – A musician can use a computer to set various notes and tunes accurately.

#### **5. Engineering**

Engineers can use computers to prepare correct technical drawings and even calculating minute measurements.

#### **6. Hospitals**

Computers are built inside different equipment in hospitals and help monitor the condition of patients and warn doctors and nurses of situations that call for their immediate attention.

#### **7. Defense**

Computers visualize top secrets of the enemy and their record of weapons. Modern missiles depend on a computer for reaching the target. To target a flying aircraft a computer calculates the speed, direction and escape action of the aircraft with help of the on board computer

### **SAFETY PRECAUTIONS AND PRACTICE.**

#### **A COMPUTER LABORATORY.**

A special room set aside and prepared specifically for safe installation and use of computers. The laboratory should be set up with **safety precautions in mind**.

Measures should be put in place to protect computers from **theft** and **destruction** and users from **accidents**.

### **Measures to Protect the Computers.**

#### **1. Burglar Proof the Room**

- a. **Fitting grills** on doors, windows and roof to deter forceful entry into the computer room,
- b. Install **intrusion detection alarm** system
- c. **Employ security guards** to increase the level of security alertness against theft of computers and their accessories.

#### **2. Fire Prevention and Control Equipment**

Installing fire prevention and control equipment such as:-

- a. Smoke detectors.
- b. Fire extinguishers.

### **3. Provide Stable Power Supply by installing**

- a. Surge protectors.
- b. Uninterruptible Power Supply (**UPS**)
- c. Power backup generator.

### **4. Lightning arrestors.**

Install **lightning arrestors** on the computer room roof to prevent lightening striking and burning the computer room.

### **5. Space**

The room should be **well laid out with enough space for movement**, and computers placed on **tables wide enough to avoid** accidental knocking them down.

### **6. Dust and Dump Proofing the Computer Room**

- Fitting good **window curtains** and **air conditioning system** that filters dust particles from the air entering the computer room.
- Cover computers with **dust covers** when not in use.

### **7. Cables and power sockets**

Cable should be **well insulated** and of the **correct power rating** to avoid short circuits that can damage computer components.

### **8. Drink and Food**

Users should not eat or drink in the computer laboratory because food particles may fall in moving computer parts like keyboard and clog them while liquids may pour into electrical circuits and cause short circuits.

## **Measures that protect the Computer Users**

### **1. Cables**

All cables should be insulated to avoid the danger of **electric shock** to the user and also the cables laid away from user paths to avoid tripping on them.

### **2. Furniture**

- a. Provide **standard furniture** to avoid **poor posture** during machine use which may lead to **strain, injury** and **limb fatigue**.
- b. The table should be of the right height relative to the seat to provide comfortable hand positioning.
- c. The seat should be upright backrest and should be high enough to allow the eyes of the user to be at the same level with the top of the screen.

### **3. Light filter**

Providing **antiglare screens** and **adjustable screens** to avoid **eye strain** and **fatigue** caused by over bright **cathode ray tube monitor (CRT)**.

### **4. Ventilation**

The rooms should be properly ventilated to avoid **dizziness** caused by lack of **adequate oxygen**.

### **5. Walls**

The walls of the computer room should not be painted with **over bright reflective oil paints** and the screens should face away from the window to avoid glare caused by bright backgrounds.

## **Review Question**

1. Define

- (a) Data
  - (b) Information
  - (c ) Program
2. Discuss the difference between
    - (a) Data processing and information processing
    - (b ) Computer system and data processing system
  3. A computer is a machine which can process data to produce information. Criticize this definition.
  4. State the functions of a computer
  5. What are the reasons which lead to change from either manual or mechanized processing to computer processing?
  6. What are the advantages and disadvantages of using a computer?
  7. Faida has a chain of supermarket and would like to introduce computer in his operations. Explain two possible uses of these computers
  8. Distinguish between computer hardware and computer software
  8. Define the term Information as used in ICT
  9. A secondary school intends to buy computers for its management staff. Explain two uses that the computers could be put into



## Lesson 2

### HISTORICAL EVOLUTION OF COMPUTERS.

#### Objective

- Historical evolution of computers
- Computer Generation
- Classification of computers

#### PRE-ELECTRONIC COMPUTER AGE

The development towards an electronic computer was so gradual and in fact took several centuries.

The following are the basic machines invented and used before the modern computer.

##### ▪ Abacus

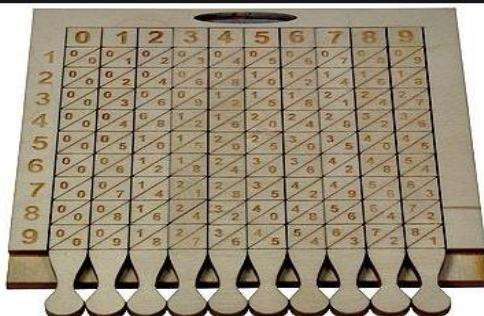
A Chinese counting instrument used primarily for performing arithmetic processes and dates back to 3000 BC. Abacus is made up of beads like parts that move along rods in a frame.



##### ▪ Napier Bones

Developed by John Napier, a Scottish mathematician in the 17th century to help in counting. Napier's bones is made up of marked strips of bones placed side by side to each other.

1	0	1	2	3	4	5	6	7	8	9
2	0	2	4	6	8	1	2	1	4	1
3	0	3	6	9	1	5	1	2	4	2
4	0	4	8	3	1	2	2	2	3	3
5	0	5	0	5	0	5	0	5	0	5
6	0	6	2	1	2	3	4	3	4	5
7	0	7	4	1	2	3	4	4	5	6
8	0	8	1	2	3	4	4	5	6	7
9	0	9	1	2	3	4	5	6	7	8



##### ▪ Slide Rule

Invented by William Oughtred in 17th century to perform arithmetic operation.



**Slide Rule**



**La Pascaline Machine**

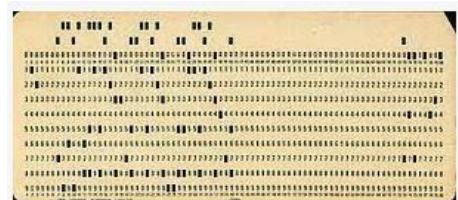
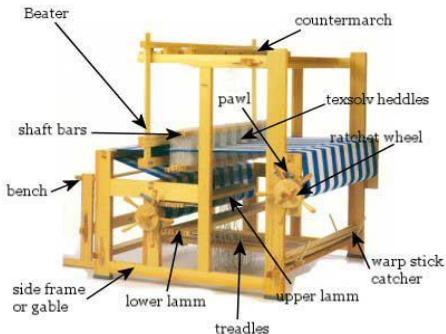
- **La Pascaline Machine**

Developed by Blaise Pascal in the 17th century to add and subtract numbers.

- **Weaving Loom**

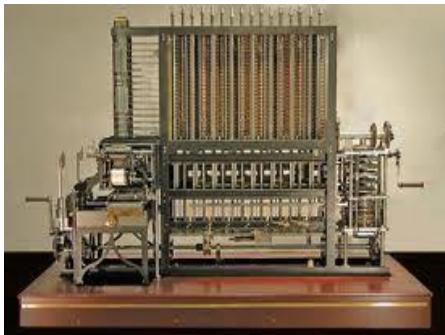
Built by Joseph Jacquard, which could be programmed using a **punched card** to pick out threads and weave them into pattern.

This idea of using **punched card** to control patterns helped later inventors to develop calculating machines that could follow simple instructions.



- **Difference Engine**

Invented by Charles Babbage an English mathematician and it could calculate a long series of numbers and print their outcome.



- **Analytical Engine**

Later in 1832, he improved the design of the machine by incorporating the idea of programming using punched cards. Analytical engine is recognized as the first real computer and Babbage as the father of computing.

## POST ELECTRONIC COMPUTER AGE.

The modern electronic computers can be traced back to 1951.

Electronic computers are classified into five generations depending on the technology.

### First Generation Computers - 1951 -1958

- Used **vacuum tube technology** to store and process information.
- Used **punched cards** for data input, and **paper tape** for output,
- Used **Magnetic drums memories** for external storage.
- Computers were **huge** and **large** in size
- The tubes **consumed** a lot of power and **emitted** a lot of heat as such required **air conditioning**.
- Used its own **machine language**.
- Maximum **memory size** was approximately (**2 KB**) of Ram

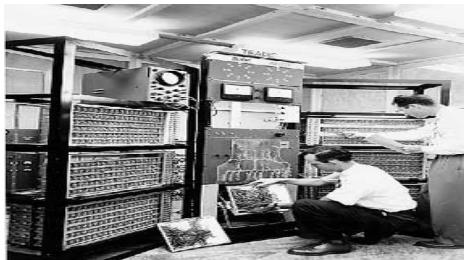
- A speed of 10 KIS (kilo instructions per second).

#### Examples

- **ENIAC** - Electronic Numerical Integrator and Calculator.
- **EDVAC** - Electronic Discrete Variable Automatic computer
- **UNIVAC** (Universal Automatic Computer).
- IBM 650.



Vacuum tube



ENIAC

#### Second Generation Computers 1958-1963

- Used tiny, solid-state electronic devices called **Transistors**.
- Computer **reduced in computer size**,
- Used **assembly language** used in place of **machine language**.
- Used **magnetic core memories**.
- Memory **size 32 KB of Ram memory**
- Speed of **200,000 to 300,000 instructions per second**

**Example:** - IBM 1401, IBM 7070 UNIVAC 1109

Honeywell 200 Atlas leo Mark III



Transistor



Magnetic core memories



Integrated circuit



Bubble Memory

#### Third Generation Computers 1964 -1969

- Used **Integrated circuits (ICs)** .
- Computer **significantly reduced in size**.
- Emitted **less heat**
- Users interacted through **keyboard and monitor**.
- Used **Magnetic disk** for storage purposes
- Development of **software industry** and **operating system (OS)**.
- Memories **size 2MB of Ram**.
- Speed **5 million instructions per second**

**Example:** - IBM 360, IBM 1401, 7070, ICL 19000 series,

NCR 501

#### Fourth Generation Computers 1970 – 1980

- Used very **large scale integrated circuits (VLSI)**.
- Emitted very little heat.
- Computer **drastically reduced in size**.
- Use of **mouse and handheld devices**
- Used **magnetic disks, bubble memories and optical disks**.
- Memory **size 100 MB of Ram**.
- Speed of **50 million instructions per second**.

**Example:** - IBM 370, IBM 4300, Burrough 7700,

APPLE II



VLSI



bubble memroy



ULSI

### Fifth Generation Computers - 1991-Present

- Used Ultra large scale integrated circuits (ULSI)
- Used Artificial Intelligence to simulate human intellect.
- Massive connectivity to internet and intranet.
- Used superior hardware and software products that are small in size
- Current technology used parallel architectures, three dimensional circuit design and super conducting materials.
- The goal of fifth-generation computing is to develop devices that can respond to natural language input and is capable of learning and self-organization.
- Speed ranges to 1 giga to 1 tetra instructions per second.

### CLASSIFICATION OF COMPUTERS.

Computers can be classified in many ways; however the three most common methods of classification are by:

1. Physical size / processing power,
2. Purpose.
3. Functionality.

#### 1. PHYSICAL SIZE/ PROCESSING POWER

##### **Supercomputers.**

- Huge and large in size.
- Perform complex mathematical calculations in a fraction of a second i.e. Fastest,..
- Only scientists and mathematicians can operate it.
- Have huge memories
- Support time sharing networks.
- High speed processing which ranges from 100 million-instruction-per-second to over 3 billion IPS.
- Use multiple processors where a single task is split among the processors for faster execution.
- Usually kept under special environmental conditions (i.e., in a special room).
- Operated by over 500 users at the same time.

##### **Areas**

Some of the applications that use supercomputers include;

- Weather forecasting.
- Petroleum research.
- Defense and weapon analysis.
- Aerodynamic design and simulation



### Mainframe Computer

- Large in size but smaller compared to Supercomputers.
- Perform mathematical calculations.
- Support a wide range of peripherals devices e.g. input, output and storage devices
- Support time sharing.
- Support multiprogramming.
- Not user friendly and requires highly qualified and competent computer profession to operate.
- Support large database applications.
- Sensitive to temperature, humidity and dust and requires a special room that is air conditioned.
- They can be operated by 200 users at a time.
- General-purpose computer which can handle all kinds of problems whether scientific or commercial.

### Areas

- Government departments, big organizations and companies
- Banks where they are used to provide online data of customer accounts to branch offices across geographical regions.
- Hospitals for preparing bills, Payrolls, etc.
- In communication networks such as the Internet where they act as Servers.
- By Airline reservation systems where information of all the flights is stored.



### Minicomputer

- Small scale down mainframe computer.
- Support time sharing
- Support multiprogramming
- Heat emission is low a factor which enables them to be installed in a less protected environment since they are not sensitive to the external environment.
- Used in process control systems e.g. chemical or mechanical possessing a factory
- Support several users at the same time, e.g., can be operated by 6 users at a time.
- Minicomputers are used to automate processes in manufacturing industries on the production line, in business and commerce and can be used for applications such as payroll, invoicing and stock control, and as autopilots in airplane



#### **Areas where minicomputers are used:**

- **Scientific laboratories** and research institutions.
- **Engineering plants, factories** to control of chemical or mechanical processes.
- **Space industry**.
- **Insurance companies** & Banks for accounting purposes.
- Smaller organizations as Network **Servers**

#### **Microcomputers**

- Also known as Personal Computers or simply **PC**.
- Developed for **use by one person at a time**
- Can be **linked** to very **large systems**.
- **Cheap** and **user friendly** and their operation can be easily learnt by anyone having logical aptitude.
- The main components are monitor, CPU, Keyboard, Mouse, Speakers, and Printer.
- They have **limited peripherals** attached to them.
- Use **wide range of software**.

#### **Areas where microcomputers are used:**

- **Training** and learning institutions such as schools.
- **Small business** enterprises,
- **Communication centres** as terminals

#### **Classification of Microcomputer**

i. **Desktop** – Called desktop computers because they are usually placed on a table or desk.



ii. **Notebook /Laptop Computers**

- Operates mainly on electricity or by rechargeable batteries powered,
- portable
- expensive compared to desktop PCs.
- Laptops normally have in-built disk drives & Flat screens (*Liquid Crystal Displays*).
- Can only support a limited number of peripheral devices.
- Have limited storage capacities.

iii. **Palm Note/Pocket Computers**

The smallest computers which can fit into a pocket eg **PDAs** (**Personal Digital Assistants**) and modern **smart phones**.



## 2. CLASSIFICATION BY PURPOSE

### a. Special Purpose Computers

A computer designed to perform a specific task only or a set of tasks. **Example calculators**, routers and robots, traffic signal, ATM, robots, mobile phones, digital watches

### b. General Purpose Computer

Computers designed to perform a wide variety of tasks and applications, rather than being limited to specific functions. Examples: Mainframes, Minicomputers, Microcomputers & Laptops

### c. Dedicated computer

A computer system capable of performing one specific task. Eg A dedicated server is a single computer in a network reserved for serving the needs of the network.

## 3. CLASSIFICATION BY FUNCTIONALITY

### a. Analog Computer

Computer that operate on numerical data which is represented by physical measurable variables.

**Examples:**- analog devices include speedometer, thermometer, weighing machine



Analog Computer



Digital Computer



### b. Digital Computers

Computer that process information represented in discrete form and expressed in binary code using either 0 or 1.

### c. Hybrid Computers

A computer that processes both analog and digital data. eg ATM or petrol pump machine .

### Review Questions.

1. Briefly describe the history of computers.
2. (a). What do you mean by computer generations?
  - (b). Describe the FIVE generations of computers in terms of technology used and give an example of a computer developed in each generation.
  - (c). Compare computer memory sizes during the Five computer generation periods.
3. What was the most remarkable discovery during the second computer generation?
4. (a). Technology is the basis of computer classification. Based on this, explain briefly the difference between the first three computer generations.  
(b). What is so peculiar in the fourth and fifth generation of computers?
5. Match the following generations of computers with the technology used to develop them.

Generation	Technology
First generation	A). Very Large Integrated Circuit
Second generation	B). Thermionic valves (Vacuum tubes)
Third generation	C). Transistors
Fourth generation	D). Integrated Circuits

6. Give four characteristics of First generation computer.

- Write the following abbreviations in full: ENIAC      VLSI      IC

## Lesson 3: COMPUTER HARDWARE AND ORGANIZATION

### Objective

- Components of a computer
- System unit
- Input devices
- Processor devices
- Output devices
- Storage devices

### COMPONENTS OF A COMPUTER

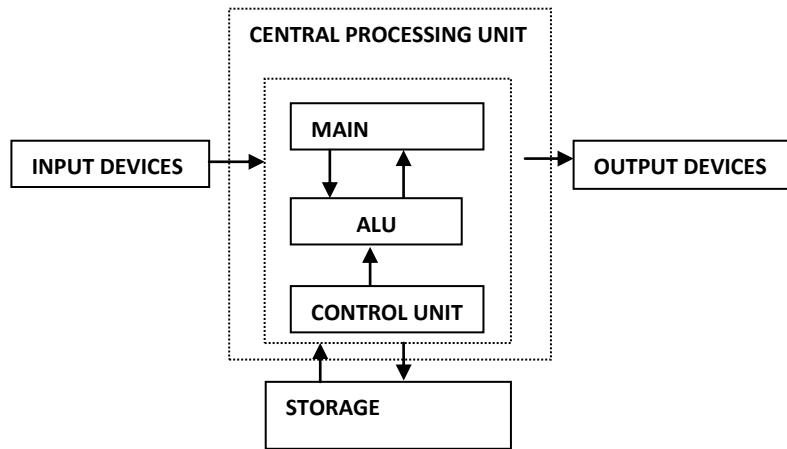
A collection of entities that are designed to receive, process, manage and present information in a meaningful format which include

1. **Computer hardware** - Physical parts /intangible parts of a computer
2. **Computer software** - Programs or applications
3. **Livewire** - Computer users who command the computer system to execute on instructions.

### COMPUTER HARDWARE.

A Computer hardware consists of the following parts/devices: -

1. The System Unit.
2. Input devices.
3. Processing devices,
4. Output devices.
5. Storage devices.



This is the casing (unit) that houses electronic components of a computer.

The components in the System unit include: -

- Central Processing Unit (CPU), which is also referred to as **Processor**.
- Motherboard.
- Power supply unit.
- Memory storage devices.
- Disk drives, which are used to store, record and read data.

Many of the system unit's components reside on a circuit board called the **motherboard**.

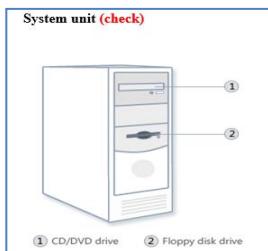
## **Types of System units**

There are two makes of System units:

### **a. Tower style system unit**

This system unit is made to stand alone. They are designed to be placed on the floor.

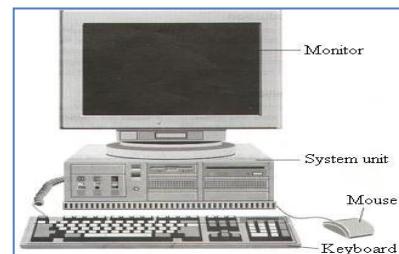
Tower style units have more space for expansion than the typical desktop units.



**Tower System Unit**



**Desktop System**



### **b. Desktop system units**

Desktop units lie on the desk with the monitor resting on top of the system unit

#### **Features of the System unit.**

- It houses the CPU.
- It connects to all peripheral devices using ports.
- It has the computer's Power switch.

## **INPUT DEVICES**

Devices used to provide data and instructions to a computer by converting user input which is in human language form into machine language that a computer can process.

## **Classification**

Input devices can be classified according to the methods they use to enter data namely:-

1. Keying,
2. Pointing,
3. Scanning
4. Other technologies

## **A. KEYING DEVICES**

Devices that converts typed numbers, letters and special characters into machine readable form before data processing takes place

### **Common types of Keying Devices include:-**

#### **1. Keyboard**

An input device with keys, usually depressed by fingers and each key inputs a special character. The keyboard is used to feed data and instructions into the computer. A keyboard has the following keys.

##### **1. Functional keys, -**

Ranges from **F1 – F12** arranged in a row at the top and each is used for specific purpose

##### **2. Numeric key - Used to enter numeric data e.g. digit key (0-9)**



3. **Alphabetic keys** - These keys include letters keys (**A-Z**)
  4. **Special Purpose keys.**  
Contains special purpose keys such as Enter, Shift, Cap Lock , Num Lock, Space bar, Tab , Print Screen.
  5. **Arrow keys**, These keys provide cursor and screen controls.
  6. **Keypad** – Quick entry of numeric data.
- 2. Keypad.**  
A small keyboard found on portable devices such as PDAs, laptops, calculator and mobile phones.



- 3. Braille Keyboard**  
A keyboard used by blind people to type and enter text or instructions for the computer in Braille. . It consist of characters represented by patterns of raised dots that are felt with the fingertips



## B. POINTING DEVICES

An input device used to control the movement of the cursor on the screen or to select or manipulate items on a display screen.

Common pointing devices include the mouse, trackball, touchpad, joystick, touch screen, light pen, and a stylus.

### 1. Mouse

An input device that controls the movement of the cursor on the screen or also select or manipulate items on the screen.

There are three types of mice available on the market namely:-

- a. **Mechanical Mouse** - Has a ball underneath, two buttons, an optional scroll wheel.



- b. **Optical Mouse**

Use light emitting diode (**LED**), an optional sensor and digital signal processing (**DSP**) in place of the traditional mouse ball and electron mechanical transducer

- c. **Cordless Mouse – Wireless mouse**

A battery powered mouse that uses radio of infrared waves instead of being physically connected to the system unit.

## 2. Track Ball.

Looks like a mouse only that it consists of a ball placed on top held in a socket containing sensors to detect the rotation of the ball about two axes.



## 3. Joystick

An input device used for controlling the movement of the cursor or used in playing computer games..



## 4. Light Pen

An input device used for selecting and displaying menu item on the screen



5. **Stylus** - An input device for personal digital assistant and smartphone

6. **Touchpad**- A flat surface on laptop computers that can detect finger contact.

## c. SCANNING DEVICES

An input device used for direct data entry from the source document into the computer system.

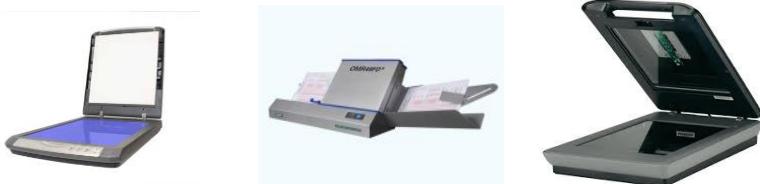
### **Types of Scanners**

1. Optical scanner
2. Magnetic scanner.

## **1. Optical Scanners**

An input device which use light beams to scan and convert images, codes, text in to a computer readable form.

Optical scanners include:-



### **1. Optical Mark Recognition (OMR) Scanner**

OMR detect a mark made on a piece of paper at pre-determined position by passing an infrared beam of light over them.

OMRs are used to:-

- Mark multiple choice questions.
- Analyse réponses in structure questionnaires.
- Select correct number combinations from lottery tickets.

### **2. Optical Bar Recognition (OBR) Scanner.**

OBR capture data coded as lines of varying thickness known as bar codes. Barcodes are common on consumer products and contain information such as *country of manufacturer, manufacturer* and *product code*.

Two types of bar code scanners are;

1. Hand held wand
2. Desktop bar code reader



### **3. Optical Character Recognition (OCR)**

OCR converts images of typed, handwritten or printed text into machine-encoded text.



## **2. Magnetic Scanners**

Used to capture data written using either magnetic ink or coded onto a magnetic **strip**.

### **a. Magnetic Ink Character Recognition (MICR) Scanner**

A technology used mainly by the banking industry to streamline the processing and clearance of cheques and other documents. MICR checks the three numbers, including the *bank routing number*, the *account number*, and the *check number*.



### b. Magnetic Card Reader (ATM)

A device that reads information stored within the magnetic stripe of special cards such as credit cards and ATM cards. These stripes may be used to gain entry to certain restricted areas.



### Evaluating direct data input devices:

It is very important to choose the best device based on the user's needs and consider the advantages and the drawbacks of it

### Important Considerations

1. Data entry method- Is the right device being used for the right task?
2. Security and accuracy of input – How important and detailed is data being read,?
3. Cost – Specialist equipment can be expensive
4. Relevance to application – Is the right device being used for the right task?

## OTHER TECHNOLOGIES:



### 1. Microphone

An input device that is used to receive sound vibrations and converts them into audio signals. The computer has an analog-digital converter to convert into digital data and store it in the computer. It is also used to add sound to presentations and with webcams for video conferencing.

### 2. Touch Screen

The screen consists of infrared light crisscrossing behind it, when the user touches a location on the screen the finger interrupt the infrared light and the command touched is executed. Enables the user to interact directly with what is displayed



### 3. Digitizers

Graphic tablet that allows the user to draw an image using a stylus and the image drawn does not appear on the tablet but on the computer screen



#### 4. Digital Cameras

A digital camera is used to take pictures and store the photographed images digitally on a memory card instead of on traditional film. The digital image taken can then be streamed directly into a computer, uploaded to internet using a **webcam** or printed using special **photo printer**.



#### Review Questions

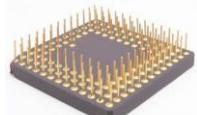
1. With the aid of an example describe a magnetic scanner as used in computer
2. With the aid of an example in each case describe each of the following computer devices
  - a. Pointing Devices
  - b. Keying Devices
5. James intends to buy a flatbed Scanner for office use. Outline two functions that the scanner could be used for
6. Outline two advantages of Magnetic Ink Character Reader (MICR) as used in ICT
7. Explain the function of each of the following computer keyboard keys
  - a. Print Screen
  - b. ESC
8. Explain one circumstance under which a wireless mouse would be of necessity as an input device
9. (a). Explain the term System unit.
  - (b). Name some of the components found in the System unit.
  - (c). Give three features of a computer's System Unit.

### CENTRAL PROCESSING UNIT (CPU).

The CPU is also referred to as processor or microprocessor and is the central part of the computer where data processing takes place. It's regarded as the brains of a computer.

Regardless of size, a processor consists of three functional elements namely:-

1. Arithmetic Logic Unit (ALU)
2. Control Unit (CU)
3. Main Memory Unit(MM)



#### 1. Arithmetic & Logic Unit (ALU)

It performs arithmetic and logical operations on data as directed by the control unit. Data to be executed by the ALU is temporarily held in special purpose memories located inside the processor called REGISTERS

#### 2. Control Unit

The CU is responsible for controlling all activities in a computer. It interprets instructions fetched from the main memory and send control signals to the arithmetic and logic unit instructing it on how to execute the instructions.

#### 3. Main Memory Unit

The MMU stores data, program, instructions, internal results and final output temporarily before it is sent to an appropriate output devices.

**N/B** Storage unit of a computer system is classified on the basis of the following criteria:  
a. Storage Access time:

- b. Capacity: The amount of data that can be stored in the storage unit.
- c. Cost per bit of storage.

## **COMPUTER MEMORY.**

The computer memory holds data and instructions needed to process raw data and produce output.

The computer memory is divided into two.

### **Types of Memory**

There are two types of memories in the computer. –

- Primary memory (Internal)
- Secondary memory. (External)

## **PRIMARY MEMORY.**

The primary memory is also referred to as internal memory. It holds only the instruction that a computer is currently working on. The stored data can be recalled instantly and correctly whenever desired by the CPU. It has limited capacity and data is lost when power is switched off.

### **Classification of Primary Memory**

Primary memory is further classified into two types:-

- RAM
- ROM.

## **RANDOM ACCESS MEMORY (RAM)**

- Temporarily store information that is currently being used by the computer.
- A read-write memory because it can be read from and written to and so the information stored in RAM can change at all the time
- Fast memory.
- Volatile Memory, this means that information stored in RAM is deleted as soon as the computer is turned off.

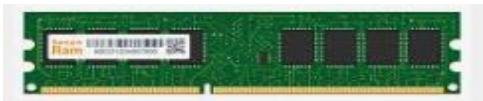
### **RAM is of two types**

#### **a. Static Ram (SRAM)**

- A fast type of memory found inside a microprocessor.
- Its known as cache memory.
- Its content does not require refreshing,
- Large in size and expensive.

#### **b. Dynamic Ram (DRAM)**

- DRAM must be continually be refreshed in order to maintain its data.
- DRAM is cheap and small.
- Its volatile



## **READ ONLY MEMORY (ROM)**

- ROM is used to permanently store instructions that tell the computer how to boot (startup). It also loads the operating system (e.g. Windows). These instructions are known as the BIOS (Basic input/output system) or the boot program.
- Information stored in ROM is known as READ ONLY. This means that the contents of ROM cannot be altered or added to by the user.

- ROM is fast memory. Data stored in ROM can be accessed and read very quickly.
- Non-Volatile memory. This means that stored information is not lost when the computer loses power.



## OTHER TYPES OF ROM

### 1. PROM (Programmable Read Only Memory)

An empty ROM which can be written on but once written on you cannot change its content.

### 2. EPROM (Erasable Programmable Read Only Memory)

An empty ROM that you can write and erase its content, unfortunate you have to detach it from the motherboard and end up destroying it.

### 3. EEPROM (Electrically Erasable Programmable Read Only Memory)

An empty ROM which can be written on and erased under software control without removing it from the motherboard. A BIOS chip found on a microcomputer's motherboard is an example of EEPROM

## SECONDARY STORAGE.

Secondary memory is referred to as auxiliary storage or external store. It's not directly accessed by the CPU; data is first transferred to primary memory then the CPU can access. It however offers a long term storage for data and information.

It is non-volatile, so permanently stores the data even when the computer is turned off or until this data is overwritten or deleted.

## TYPES OF ETERNAL MEMORY

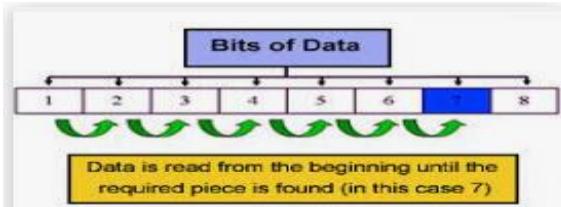
Some of the secondary memory or storage devices are described below:

### 1. Magnetic Tapes

A magnetic tape is made up of a thin ribbon of Mylar (plastic) coated with a thin layer of magnetic material composed of iron oxide. The tape may be housed inside a plastic cassette or coiled around an open wheel.



Magnetic tape uses 'serial access' to find a piece of specific data, the reader starts at the beginning of the tape and continue fast forwarding until it gets to the piece of data that is needed.



Serial access makes it fairly slow to find and retrieve data, so it would not be much use to store data that you need to use immediately. However, it's excellent for archiving large amount of data not needed instantly. Tape can store 1 TB of data without using compression.

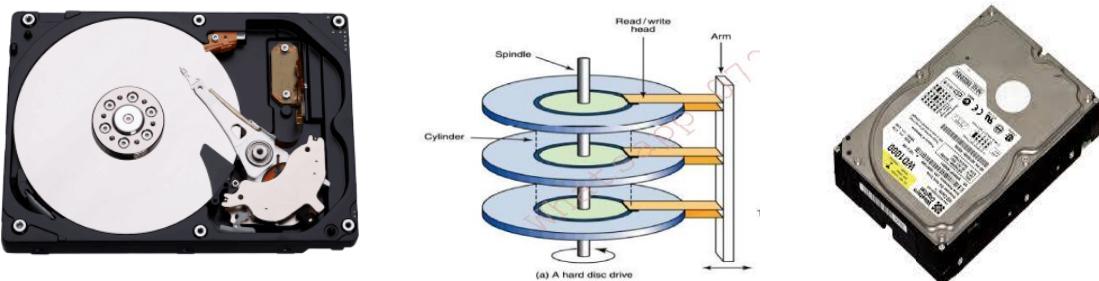
## 2. Floppy Diskette

- A removable magnetic storage medium used for moving information between computers, laptops, early digital cameras, electronic music instruments or other devices.
- It is made up of a plastic disk housed inside a plastic jacket.
- A floppy diskette is inserted in to a floppy disk drive to read or write data.
- A 3½ inch disk can store 1.44 MB of data.
- A special floppy disk emerged in the late 1980s and could store 2.88 MB of data although it did not become popular.
- Larger size floppy disks became available in the 1990s such as the Zip drive and the Jaz drive,
- Today, floppy disks have been replaced by USB flash drives.



## 3. Hard Disk Drive

Hard disks are flat, circular plates made of aluminum or glass and coated with a magnetic material. HDD uses magnetic recording to store information on rotating circular platters stacked on top of but not touching one another. Data is stored permanently on its concentric tracks.



To access data, the platters spin many thousands of times per second and a magnetic read and write head floating just above the surface of the platter reads and writes data.

It is a bad idea just to switch the computer off at the wall socket without shutting it down properly. This might cause '**hard disk crash**'; this refers to the read/write head crashing down onto the surface of the hard disk. There is a risk every time this happens and data stored in the section get damaged.

### **Components of Hard Drive:**

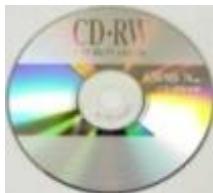
The main components of a hard drive include a head actuator, read/write actuator arm, read/write head, platter, and spindle. A circuit board, which is called the disk controller or interface board, is present on the back of a hard drive. It allows the hard drive to communicate with the computer.

### **4. CD ROM - Compact Disks Read Only Memory**

A CD is made up of a small plastic disk with a reflective aluminum coating on one side. CDs' can store data of approximately 700Mb.

Data is burned onto the surface of the disc using a laser beam in the CD drive. A laser beam is also used to read data stored on the CD.

Because CDs' have no protective covering its important to handle them with care. Scratches, dust or other materials on the CD surface can prevent data from being read correctly. Because data is located on the bottom side of the CD always lay the CD label side down



#### **Types of CD**

There are three common types of CDs namely:-

##### **(i.) CDROM - Compact Disk Read Only Memory**

Contains data that can only be read but cannot be written on.

##### **(ii) CD-R - Compact Disc Recordable:**

Data can be written onto it just once and cannot be erased.

##### **(iii) CD-RW - Compact Disc Rewritable:**

Data once written onto it can be erased to write or record new information many times.

##### **(iv) DVD - Digital Versatile Disk**

DVD resembles CD-ROM in every aspect only that they can store more data. DVDs can store up to **17GBs** of data. Because of their capacity, DVDs are used to store very large multimedia presentations and movies that combine high quality sound and graphics.

### **5. Flash Disk:**

A small, portable device used to store, access and transfer data. It's commonly called **Pen drive or USB drive**. It connects to a computer via a USB port. It comes in various storage capacities of **2GB, 4GB, and 8GB to 128GB** etc. it comprises an integrated circuit memory chip that stores the data. This chip is housed inside a plastic or aluminium casing. It is popular because it is easy to use and small enough to be carried in a pocket. This device is plugged into the USB port of the computer and the computer automatically detects this device.



## **6. SD Card: Secure Digital Card**

It is most often used in portable and mobile devices such as smartphones and digital cameras. You can remove it from your device and see the things stored in it using a computer with a card reader.



## **7. Solid-state Drive: (SSD)**

It is a non-volatile storage medium that is used to hold and access data. Unlike a hard drive, it does not have moving components, so it offers many advantages over SSD, such as faster access time, noiseless operation, less power consumption, and more.

### **Review Questions**

1. Aisha a computer technician would like to transfer a Ms Word document from her standalone computer to another computer. Outline two computer storage devices that she would use to achieve this objective

## **DATA REPRESENTATION IN COMPUTERS**

Data exists as electrical voltages in a computer in two states, **ON** or **OFF** ie binary digits used to represent data. A bits, can be “**0**” or “**1**”.

A bit is the basic unit of information or data represented in a digital computer. Hence the storage capacity of the computer is measured in the number of words it can store and is expressed in terms of bytes.

The different units of measurement are as follows:-

8 Bits	= 1 Byte
2 <sup>10</sup> (or) 1024 Bytes	= 1 Kilo Byte (KB)
2 <sup>10</sup> (or) 1024 KB	= 1 Mega Byte (MB)
2 <sup>10</sup> (or) 1024 MB	= 1 Giga Byte (GB)

### **Questions**

1. Explain the relationship between each of the following data storage unit
  - a. Byte and Bit
  - b. Kilobyte and Gigabyte
1. Outline two functions of the primary storage of a computer system

## OUTPUT DEVICES AND SOFTWARE .

### OUTPUT DEVICES

Output devices make it possible for the user to get information from the computer. Output devices translate data from a machine readable form into human readable form (**understandable**).

The most common types of output data include *text, pictures, sound and video*.

Output devices can be classified into two categories namely

1. Softcopy output devices
2. Hardcopy output devices.

### SOFTCOPY OUTPUT DEVICES

#### COMPUTER MONITOR

**Monitor** is also known as the **Visual Display unit (VDU)**, or **screen**, and is used to display information enabling the user to monitor what is going on in the computer.

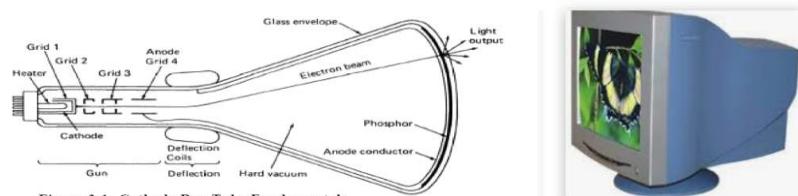
**There are two kinds of viewing screen used for monitors.**

- Cathode-Ray Tube (CRT)
- Flat- Panel Display

#### Basic Monitors

##### 1. CRT - Cathode Ray Tube Monitor

CRT consists of a long glass tube with an electron gun on one end and the screen on the other end. The screen is coated with tiny phosphorus dots that illuminate red, green, and blue to make a pixel.



##### 2. Flat-Panel Display

###### i ] LCD - Liquid Crystal Display

comprises two layers of polarized glass with a liquid crystal solution between them. When the light passes through the first layer, an electric current aligns the liquids crystals which allow a varying level of light to pass through the second layer to create images on the screen.



###### ii ] Gas Plasma Display

is a type of flat-panel display that uses small cells containing plasma: ionized gas that responds to electric fields.

Plasma displays are brighter than liquid crystal displays (LCD) and also offer a wide viewing angle than an LCD.

## HARDCOPIES DEVICES

### PRINTERS.

An output device for producing hardcopies such as *management reports, receipts, payrolls, checks and program listing etc.*

#### Categories of Printers

- i. **Serial Printer** - Print one character at a time across the line of print.
- ii. **Line Printer**- Print a complete line at a time in fraction of a second.
- iii. **Page Printer** - Printers a complete page at a time.

### Classification of Printer

#### 1. Impact Printer

Print by physically striking the paper through an inked ribbon to produce the desired output.

##### Example

###### i] Dot Matrix Printer

The print head contains pins that produce a pattern of dots by striking the ink soaked ribbon against the paper to form the individual characters.

To produce color output, the black ribbon can be changed with color stripes.

##### Advantages

1. Inexpensive
2. Widely Used
3. Multiple copies output
4. Print for long periods without breaking down.



##### Disadvantages

1. Slow Speed
2. Poor Quality prints

#### c. Non-Impact Printer

Print characters and images without direct physical contact between the paper and the printing machinery. They print by either using ink, thermal or light. **Examples**

###### i] Inkjet Printer

Prints images and characters by spraying fine, ionized drops of ink through a tiny nozzle on paper. These drops pass through an electric field that guides the ink onto the paper to print correct images and characters.



##### Advantages

- High quality printing
- More reliable

### **Disadvantages**

- Expensive as cost per page is high
- Slow as compared to laser printer

### **ii] Laser Printer**

Print by shining a laser beam to create an image on a rotating drum which ionizes some regions which attract ink toner particles. The toner is then fused onto the paper



### **Advantages**

1. Very high speed
2. Very high quality output
3. Give good graphics quality
4. Support many fonts and different character size

### **Disadvantages**

- Expensive.
- Cannot be used to produce multiple copies of a document in a single printing.

### **iii] The Thermal Printer (electro-thermal printer)**

Print by embossing a heated print head against a chemically treated paper to produce prints. They are used in **point of sale** terminals to print receipts and bar codes. They are very quiet and this gives them a big advantage for some applications e.g. in hospitals



## **OTHER OUTPUT**

### **1] Photo Printer** - print digital photographs.



### **2] Microfilm** storing data on a film by Transferring digital data produced by computer into human readable form and recording it in reduced physical size onto a photographic film.



### 3] Plotter

Printer used by architecture to print technical drawings or graphs through pens which are filled with different colors'. Plotter print wide format printouts mainly photographs, maps and architectural designs.



### 4] Speakers

Speakers are built into the system unit or connected with cables. Speakers allow you to listen to music and hear sound effects from your computer. The purpose of speakers is to produce audio output that can be heard by the listener



### 5] Projector

Takes the image on a computer screen and projects it onto a large screen so that an audience of people can see the image



Review question

1. Name two output devices.
2. Why the screen is also called a Monitor?
3. What is a Mouse in relation to computing

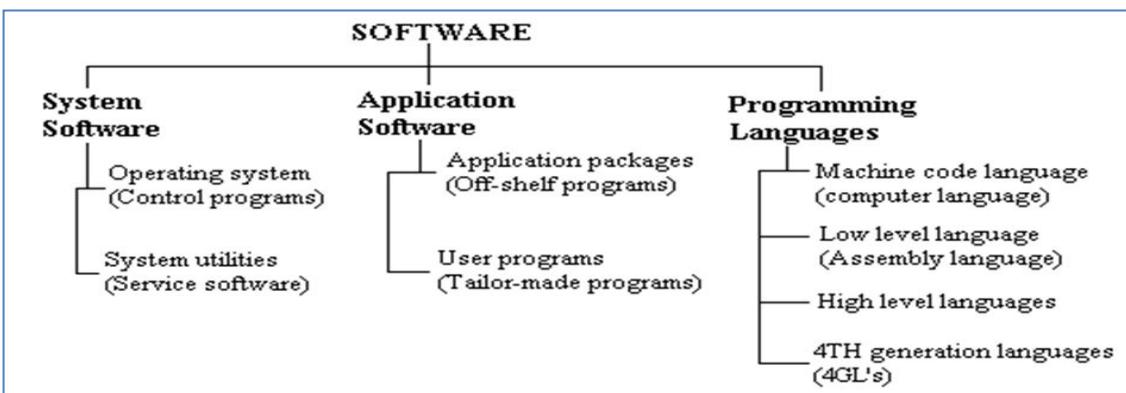
## Lesson 4. COMPUTERSOFTWARE

### Objective

1. Meaning and importance of computer software
2. Classification of computer software
3. Software installation

### SOFTWARE

- A set of programs designed to perform a well-defined function.
- A program is a sequence of instructions written to solve a particular problem.



### Classification of software

There are two types of software

1. System Software
2. Application Software

### 1. SYSTEM SOFTWARE

- A program designed to run a computer's hardware and provides a platform for applications software to run on top of it.
- System software is provided by the computer manufacturer and aid in the development of other programs.
- System Software comprises of programs, procedures, and routines associated with the operation of a computer system.

#### Examples Of System Software are:

##### 1. Utility Programs

Programs designed to help to analyze, configure, optimize or maintain a computer.

###### a Antivirus

Detects and removes computer viruses, keep watch on the functioning of the computer system and If a virus is found it may alert the user, flag the infected program or kill the virus.

**b. Disk Defragmenter** – Scans the hard disk for fragmented files and brings them all together.

**c. Backup Utility** – Creates a backup copy of data stored on disk incase disk crushes or system failure, file can be restored

- 2. Device Driver** – Operate and control devices attached to a computer.
- 3. Language Translators** – Converts code from one computer language into another language
- 4. Operating System (OS)**

An organized collection of a suite of programs that direct, control; ensure proper, orderly and efficient use of hardware by applications programs.

(Software that manages computer hardware, software resources, and provides common services for computer programs. ) All these functions used to be performed by human operators.

### **FUNCTIONS OF OPERATING SYSTEM:**

- 1. Memory Management** - Keeps tracks of status of memory locations either allocated or free
- 2. Processor Management-** Allocates the processor (CPU) to a process and de-allocates when it is no longer required.
- 3. Device Management**  
Keeps track of all devices by deciding which process gets the device, when, and for how much time.
- 4. File Management-** Create, changed and modified files through the use of text editors
- 5. Security**  
Prevents unauthorized access to programs and data by means of **passwords** and **other techniques**.
- 6. Job accounting-**  
Keeps track of time and resources used by various jobs and/or users.
- 5. Control over system performance –**  
Records delays between request for a service and from the system.
- 6. Interaction with the operators**  
Operating System acknowledges by corresponding action and informs the operation by a display screen.
- 7. Error-detecting aids**  
Production of dumps, traces, error messages and other debugging and error-detecting methods.

### **EXAMPLES OPERATING SYSTEM**

- Ms Dos
- Unix
- Linux.
- Apple OS X
- Ms Windows
- Novell

### **CATEGORIES OF OS**

- 1. Embedded OS** - Used in portable devices
- 2. Network OS** - Allow networked computers to communicate and share resources
- 3. Standalone OS** - Run on standalone computers

## **2. APPLICATION SOFTWARE**

Programs designed to carry out operations for a specific application for end users. Application software cannot run on itself but is dependent on system software to execute.

**Classification: -.**

**a] User Program (Customized Software.)**

Programs developed by a programmer for specific process in the organization. The use of a programming language is required to develop such a program.

**b] Application Packages (Off-Self Software).**

A software packages tailor made to address specific business need.

**Can be categorized as:-**

**i] Special Application Packages**

Program with associated documentation designed specifically to carry out particular task..E.g.

1. Stock control software,
2. Financial accounting,
3. Petrol station pump software,
4. legal software,
5. payroll,
6. music

**ii] General Application Packages**

Program with associated documentation designed to perform many different related tasks. Usually available from manufacturer and software houses.

### **Examples**

**1. Ms Office Suite**

**a. Spreadsheet –**

An electronic worksheets that allow you to make calculations eg Ms Excel., Lotus 1-2-3., Quattro Pro.

**4. Database Management –**

An electronic filing system used to store records of staff, customers, suppliers, eg Ms. Access, , FoxPro., Dbase., Paradox.

**5. Word processor –**

A computer software used to prepare and produce letters, documents, books, articles, mailing lists and any material that involves text. Eg Microsoft Word., WordPerfect., Lotus Word Pro., WordStar., Wang writer.

**6. Presentation package-**

Software package used to display information in the form of a slide show eg Ms Power Point

**2. Desktop Publishers (DTP).**

Desktop publishing is used to create documents that look like typeset professional publications. Eg Adobe PageMaker. , FrameMaker., Microsoft Publisher.

**3. Graphic Software**

A program that manipulate visual images on a computer such as pie graphs, line drawing, company logos, maps e.g. coral draw, AutoCAD .

#### **4. Multimedia Programs.**

Multimedia refers to a combination of text, graphics, sound, animation and video. Eg Animation Master 99, 3D Studio Max., Extreme 3D. , Morpher.

#### **5. Communication Software.**

Communication software is used to exchange information, messages and ideas with people around the world who have PCs equipped with Modems & communications software. Eg WinFax Pro., Zoc., ProComm Plus. , HyperAccess.

#### **6. Accounting Programs.**

Used to keep track of how much a business makes and its worthiness by summarizing the financial transactions eg Point-of- sale, DAC Easy., Acc Pac. , Peachtree Accounting., Systematics, Pegasus.

### **3. PROGRAMMING LANGUAGES**

- A Computer program can be written in a variety of programming languages.
- A Programming **language** is a language used in writing a computer program. The languages must be understood by the computer for it to execute.

There are three types of programming languages.

#### **1. Machine Languages:**

Program written in binary form i.e. in terms of 0's and 1's. The computer can directly understand this form. The machine code binary digits are a one to one machine mapping. They occupy little space in the CPU.

#### **2. Assembly Languages:**

Uses symbolic codes (mnemonic), which represents various operations. Mnemonics is a shortened form of English word. Since the computer cannot understand assembly language a program called assembler is used to compile the codes into machine codes, which can be understood by the computer.

#### **3.. High Level Languages (HLL):**

Use words and symbols, which resemble ordinary English. It's machines (machine independent). High-level languages are translated into a machine language by a compiler program, which generates many machine language instructions for each statement. The compiler checks if the rules of the language are obeyed. High-level languages are problem oriented



## DATA SECURITY AND CONTROL

### Introduction

**Data and Information** must be protected against **unauthorized access, disclosure, modification or damage**. This is because; it is a **scarce and valuable resource** for any **business organization or government**. It is mostly used in transactions, it can be shared, and has **high value** attached to it.

### DATA AND INFORMATION SECURITY:

#### Data Security

The protection of data and information from accidental or intentional disclosure to unauthorized persons.

#### Data and Information Privacy:

##### Private data or information

Data that which belongs to an individual and must not be accessed by or disclosed to any other person, without direct permission from the owner.

##### Confidential data or information –

This is data or information held by a government or organization about people. This data and information may be seen by authorized persons without the knowledge of the owner. However, it should not be used for commercial gain or any other unofficial purpose without the owner being informed.

#### Review Questions

1. Differentiate between private and confidential data.
2. Why is information called a resource?
3. (a) Explain the term 'Information security'.  
(b) Recently, data and information security has become very important. Explain.

### SECURITY THREATS TO DATA AND INFORMATION

#### COMPUTER VIRUSES

- A computer virus is a destructive program that attaches itself to other files when the files are opened for use, and installs itself on the computer, without the knowledge of the user.
- A *computer virus* is a program designed specifically to **damage other programs** or interfere with the **proper functioning of the computer system**.
- A virus is a computer code usually designed to carry out 2 tasks:
- To **copy itself from one computer system to another**.
- To **locate itself within a computer system enabling it to amend/destroy program & data files**, by interfering with the normal processes of the operating system.

#### TYPES OF COMPUTER VIRUSES.

1. **Boot sector viruses** – they destroy the booting information on storage devices.
2. **File viruses** – they attach themselves to files either erasing or modifying them.
3. **Hoax viruses** – they come as e-mails with an attractive subject and activate themselves when the e-mail is opened.

4. **Trojans horse**— they appear to perform necessary functions, but perform other undesirable activities in the background without the knowledge of the user.
5. **Worms** – viruses that stick in the computer memory.
6. **Backdoors** – may be a Trojan or Worm that allows hidden access to a computer system.

### **TYPES OF DESTRUCTIONS/DAMAGES CAUSED BY A VIRUS ATTACK**

1. Delete or modify data, information and files on storage devices (disks) or memory during normal program execution, e.g., may attack the format of a disk making any program or data on it impossible to recover.
2. Systematically destroy all the data in the computer memory.
3. Might lock the keyboard.
4. Can change keystroke values or data from other I/O devices, e.g., change the effect of SHIFT key.
5. Delete characters displayed on a visual display.
6. Uses up computer memory/space, hence slowing down its performance or causing the system to crash.
7. Changes colour of the display.
8. Cause boot failure.

### **SOURCES OF VIRUSES.**

#### **1. Contact with contaminated systems:**

If a diskette is used on a virus infected computer, it could become contaminated. If the same diskette is used on another computer, then the virus will spread.

#### **2. Use of pirated software:**

Pirated software may be contaminated by a virus code or it may have been amended to perform some destructive functions which may affect your computer.

#### **3. Infected proprietary software:**

A virus could be introduced when the software is being developed in laboratories, and then copied onto diskettes containing the finished software product.

#### **4. Fake games:**

Some virus programs behave like games software. Since many people like playing games on computers, the virus can spread very fast.

#### **5. Freeware and Shareware:**

Both freeware & shareware programs are commonly available in Bulletin board systems.

Such programs should first be used in controlled environment until it is clear that the program does not contain either a virus or a destructive code.

#### **6. Updates of software distributed via networks:**

Viruses programs can be spread through software distributed via networks.

### **SYMPTOMS OF VIRUSES IN A COMPUTER SYSTEM.**

The following symptoms indicate the presence of a virus in your computer:

- Boot failure.
- Files & programs disappearing mysteriously.
- Unfamiliar graphics or messages appearing on the screen, e.g., the virus might flash a harmless message such as “*Merry Christmas*” on the computer terminal.
- Slow booting.
- Gradual filling of the free space on the hard disk.
- Corruption of files and programs.

- Programs taking longer than usual to load.
- Disk access time seeming too long for simple tasks.
- Unusual error messages occurring more frequently.
- Frequent read/write errors.
- Disk access lights turning on for non-referenced devices.
- Computer hangs anytime when running a program.
- Less memory available than usual, e.g., Base memory may read less than 640KB.
- Size of executable files changing for no obvious reason.

### **Control Measures Against Viruses.**

- Install up-to-date (or the latest) antivirus software on the computers.
- Restrict the movement of foreign storage media, e.g., diskettes in the computer room.
- If they have to be used, they must be scanned for viruses.
- Avoid opening mail attachments before scanning them for viruses.
- Write-protect disks after using them.
- Disable floppy disk drives, if there is no need to use disks in the course of normal operation.
- Backup all software & data files at regular intervals.
- Do not boot your computer from disks which you are not sure are free from viruses.
- Avoid pirated software. If possible, use the software from the major software houses.
- Programs downloaded from Bulletin Boards & those obtained from computer clubs should be carefully evaluated & examined for any destructive code.

## **UNAUTHORIZED ACCESS**

Data and information is always under constant threat from people who may want to access it without permission. Such persons will usually have a bad intention, either to commit fraud, steal the information and destroy or corrupt the data.

### **Unauthorized access may take the following forms:**

#### **1. Eavesdropping:**

This is tapping into communication channels to get information, e.g., Hackers mainly use eavesdropping to obtain credit card numbers.

#### **2. Surveillance (monitoring):**

This is where a person may monitor all computer activities done by another person or people. The information gathered may be used for different purposes, e.g., for spreading propaganda or sabotage.

#### **3. Industrial espionage:**

Industrial espionage involves spying on a competitor so as to get or steal information that can be used to finish the competitor or for commercial gain.

The main aim of espionage is to get ideas on how to counter by developing similar approach or sabotage.

- An employee who is not supposed to see some sensitive data gets it, either by mistake or design.
- Strangers who may stray into the computer room when nobody is using the computers.
- Forced entry into the computer room through weak access points.
- Network access in case the computers are networked & connected to the external world.

### **Control Measures Against Unauthorized Access.**

- Enforce data and information access **control policies** on all employees to control access to data.
- Keep the computer room **closed when nobody is using it**.
- **Reinforce weak access points**, e.g., doors & windows with metallic grills & **burglar alarms**.
- Use file **passwords** to prevent any person from getting access to the electronic files.
- Enforce **network security measures**, e.g., use of **firewalls**.
- **Encrypt the data** & information during transmission.
- Perform frequent **Audit trails to identify threats** to data & information.

### **COMPUTER ERRORS & ACCIDENTAL ACCESS**

Errors and accidental access to data & information may be as a result of:

- Mistakes made by people, e.g., one may print sensitive reports & unsuspectingly give them to unauthorized persons.
- People experimenting with features they are not familiar with. g., a person may innocently download a file without knowing that it is self-installing or it may be dangerous to the system.

### **Control Measures Against Computer Errors & Accidents.**

- Restrict file access to the end-users and technical staff in the organization, i.e., deny access of certain files & computers to certain groups of end-users.

This is because; accidental access mistakes occur if the end-users have too much privilege that allows them to access or change sensitive files on the computer.

- Set up a comprehensive error-recovery strategy in the organization.

### **THEFT**

The threat of theft of data, information, hardware and software is real. Some information is so valuable such that business competitors or some governments can decide to pay somebody a fortune so as to steal the information for them to use.

### **Control measures against theft of information, hardware, & software.**

- Create backups & store them in locations away from the main computing centre.
- Reinforce weak access points, e.g., the windows, doors, & roofing with metallic grills and strong padlocks.
- Put burglar proofs in the computer room.
- Employ guards to keep watch over data & information centres and backups.

### **Review Questions**

Explain any three threats to data and information.

1. Give two control measures one would take to avoid unauthorized access to data and information.
2. Explain the meaning of 'industrial espionage'.
3. (a) Define a computer virus.  
(b) Give and explain two types of computer viruses.  
(c) List three types of risks that computer viruses pose.  
(d) List and explain five sources of computer viruses.  
(e) Outline four symptoms of computer viruses.  
(f) Explain the measures one would take to protect computers from virus attacks
5. How can one control the threat of user's errors to data and information?

## COMPUTER CRIMES

- A **computer crime** is a deliberate theft or criminal destruction of computerized data.
- The use of computer hardware, software, or data for illegal activities, e.g., stealing, forgery, defrauding, etc.
- Committing of illegal acts using a computer or against a computer system.

### Types of computer crimes.

The following are the major types of computer crimes:

- Fraud (Theft of money)
- Alteration of data.
- Theft of computer time / Theft of service.
- Theft of data, information or programs.
- Damage of software.

### 1. TRESPASS.

- **Trespass** refers to the illegal physical entry to restricted places where computer hardware, software & backed up data is kept.
- It can also refer to the act of accessing information illegally on a local or remote computer over a network.

Trespass is not allowed and should be discouraged.

### 2. HACKING.

**Hacking** is an attempt to invade the privacy of a system, either by tapping messages being transmitted along a public telephone line, or through breaking security codes & passwords to gain unauthorized entry to the system data and information files in a computer.

#### Reasons for hacking.

- To copy or corrupt the information.
- As a hobby to test their expertise. Some people like the challenge & they feel great after successful hacking.
- Some do it for computer & software producing companies that want to secure their systems by reducing weaknesses discovered after professional hacking.

Hacking is done by skilled programmers referred to as **Hackers**. **Hacker** is a person who gains unauthorised access to a computer network for profit, criminal mischief, or personal gain.

Such people are able to break through passwords or find weak access points in software. They are involved in propagating computer viruses.

### 3. TAPPING.

**Tapping** involves listening to a transmission line to gain a copy of the message being transmitted.

Tapping may take place through the following ways:

1. A person may send an intelligent program to a host computer that sends him/her information from the computer.
2. Spying on a networked computer using special programs that are able to intercept messages being sent & received by the unsuspecting computer.

## 4. CRACKING.

**Cracking** is the use of guesswork by a person trying to look for a weakness in the security codes of a software in order to get access to data & information.

These weak access points can only be sealed using special corrective programs called *Patches*, which are prepared by the manufacturing company.

A **program patch** is a software update that when incorporated in the current software makes it better.

**NB:** Cracking is usually done by people who have some idea of passwords or user names of the authorized staff.

## 5. PIRACY.

Software, information & data are protected by copyright laws. **Piracy** means making illegal copies of copyrighted software, data, or information either for personal use or for re-sale.

### Ways of reducing piracy:

1. Enact & enforce copyright laws that protect the owners of data & information against piracy.
2. Make software cheap enough to increase affordability.
- Use licenses and certificates of authenticity to identify originals.
1. Set installation passwords that prevent illegal installation of software.

## 6. FRAUD.

**Fraud** is the use of computers to conceal information or cheat other people with the intention of gaining money or information.

Fraud may take the following forms:

- **Input manipulation:**

Data input clerks can manipulate input transactions, e.g., they can create dummy (ghost) employees on the Salary file or a ghost supplier on the Purchases file.

- **Production & use of fake documents:**

E.g., a person created an intelligent program in the Tax department that could credit his account with cents from all the tax payers. He ended up becoming very rich before he was discovered.

Fraudsters can either be employees in the company or outsiders who are smart enough to defraud unsuspecting people.

### Reasons that may lead to computer fraud.

- For economic gain (i.e., to gain money or information).
- To gain respect (self-worth)

### Security measures to prevent fraud:

- Careful recruitment of staff.
- Set up a clear & firm management policy on crimes & frauds.
- Restrict access to computer room or terminal.
- Use transaction & fill logs to monitor access to sensitive areas of the system.
- Monitor & investigate error logs and reports on regular basis.
- Carry out risk analysis to examine the exposure of the organization to possible fraud.

## **7. SABOTAGE.**

**Sabotage** is the illegal or malicious destruction of the system, data or information by employees or other people with grudges with the aim of crippling service delivery or causing great loss to an organization.

Sabotage is usually carried out by discontented employees or those sent by competitors to cause harm to the organization.

The following are some acts of saboteurs which can result in great damage to the computer centres:

- Using Magnets to mix up (mess up) codes on tapes.
- Planting of bombs.
- Cutting of communication lines.

## **8. ALTERATION.**

**Alteration** is the illegal changing of stored data & information without permission with the aim of gaining or misinforming the authorized users.

Alteration is usually done by those people who wish to hide the truth. It makes the data irrelevant and unreliable.

Alteration may take place through the following ways:

- **Program alteration:**

This is done by people with excellent programming skills. They do this out of malice or they may liaise with others for selfish gains.

- **Alteration of data in a database:**

This is normally done by authorized database users, e.g., one can adjust prices on Invoices, increase prices on selling products, etc, and then pocket the surplus amounts.

**Security measures to prevent alteration:**

1. Do not give data editing capabilities to anybody without vetting.
2. The person altering the data may be forced to sign in order for the system to accept altering the information.

## **9. THEFT OF COMPUTER TIME.**

Employees may use the computers of an organization to do their own work, e.g., they may produce publications for selling using the computers of the company.

## **10. THEFT OF DATA (I.E., COMMERCIAL ESPIONAGE).**

Employees steal sensitive information or copy packages and sell them to outsiders or competitors for profit.

This may lead to a leakage of important information, e.g., information on marketing strategies used by the organization, research information, or medical reports.

### **Review Questions**

1. (a) Define the term 'Computer crime'.  
(b) State and explain various types of computer crimes.
2. Differentiate between Hacking and Cracking with reference to computer crimes.
3. What is a program patch? Why are patches important?
4. Give two reasons that may lead to computer fraud.
5. How can piracy be prevented in regard to data and information.

6. What is data alteration? Explain its effects on data.
7. Explain the meaning of Tapping while dealing with computer crimes.

## DETECTION & PROTECTION AGAINST COMPUTER CRIMES

The following measures can be taken to detect & prevent computer crimes, and also seal security loopholes.

### 1. AUDIT TRAILS

This is a careful study of an information system by experts in order to establish (or, find out) all the weaknesses in the system that could lead to security threats or act as weak access points for criminals.

An audit of the information system may seek to answer the following questions: –

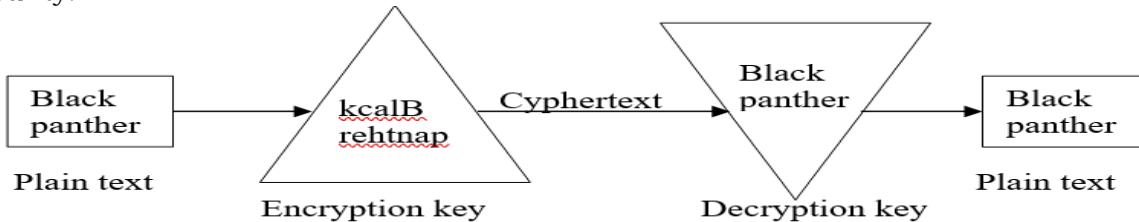
1. Is the information system meeting all the design objectives as originally intended?
2. Have all the security measures been put in place to reduce the risk of computer crimes?
3. Are the computers secured in physically restricted areas?
4. Is there backup for data & information of the system that can ensure continuity of services even when something serious happens to the current system?
5. What real risks face the system at present or in future?

### 2. DATA ENCRYPTION

Data being transmitted over a network faces the dangers of being tapped, listened to, or copied to unauthorized destinations.

To protect such data, it is mixed up into a form that only the sender & the receiver can be able to understand by reconstructing the original message from the mix. This is called **Data encryption**.

The flow diagram below shows how a message can be encrypted and decrypted to enhance security.



The message to be encrypted is called the *Plain text* document. After encryption using a particular order (or, algorithm) called *encryption key*, it is sent as *Cyphertext* on the network.

After the recipient receives the message, he/she decrypts it using a reverse algorithm to the one used during encryption called *decryption key* to get the original plain text document.

This means that, without the decryption key, it is not possible to reconstruct the original message.

### 3. LOG FILES

These are special system files that keep a record (log) of events on the use of the computers and resources of the information system.

Each user is usually assigned a *username* & *password* or account. The information system administrator can therefore easily track who accessed the system, when and what they did on

the system. This information can help monitor & track people who are likely to violate system security policies.

#### 4. FIREWALLS

A **Firewall** is a device or software system that filters the data & information exchanged between different networks by enforcing the access control policy of the host network.

A firewall monitors & controls access to or from protected networks. People (remote users) who do not have permission cannot access the network, and those within cannot access sites outside the network restricted by firewalls.

#### LAWS GOVERNING PROTECTION OF INFORMATION

Laws have been developed that govern the handling of data & information in order to ensure that there is 'right of privacy' for all people.

The following rules must be observed in order to keep within the law when working with data and information.

1. Data & information should be kept secure against loss or exposure.
2. Data & information should not be kept longer than necessary.
3. Data & information should be accurate and up-to-date.
4. Data & information should be collected, used & kept for specified lawful purposes (i.e., it should not be used for unlawful gain).
5. The owner of the data has a right to know what data is held by the person or organization having it.
6. Data should not be transferred to other countries without the owner's permission.
7. Do not collect irrelevant and overly too much information for a purpose.

#### Review Questions

1. What do the following control measures against computer crimes involve?
  - Audit trail.
  - Data encryption.
  - Log files.
2. Give four rules that must be observed to keep within the law when working with data and information.

#### COMPUTER SECURITY

##### What is Computer security?

- Safeguarding the computer & the related equipment from the risk of damage or fraud.
- Protection of data & information against accidental or deliberate threats which might cause unauthorized modification, disclosure, or destruction.

A computer system can only be claimed to be secure if precautions are taken to safeguard it against damage or threats such as accidents, errors & omissions.

The security measures to be undertaken by the organization should be able to protect:

1. Computer hardware against damage.
2. Data, information & programs against accidental alteration or deletion.
  - Data & information against hazards.

1. The computer against unauthorized use.
2. Data, information & programs against piracy or unauthorized copying.
3. Data & programs used by the computer system against illegal or unauthorized modification.
  - Storage media, e.g., diskettes, tapes, etc against accidental destruction.
  - Policies of the organization.
1. Accidental interruption of power supply or communication lines.
2. Disclosure of confidential data or information.
  - Ensure that both hardware & software have longer life span.

## **ENVIRONMENTAL THREATS TO COMPUTERS & INFORMATION SYSTEMS.**

### **1. Fire**

Fire destroys data, information, software & hardware.

#### **Security measures against fire:**

- Use fire-proof cabinets & lockable metal boxes for floppy disks.
- Use of backups.
- Install fire fighting equipments, e.g., fire extinguishers.
- Have some detectors.
- Training of fire-fighting officers.
- Observe safety procedures, e.g., avoid smoking in the computer rooms.
- Have well placed exit signs.
- Contingency plans.

### **2. Water, floods & moisture.**

This causes rusting of the metallic components of the computer.

#### **Security measures against water, floods & moisture:**

- Set up computer rooms on higher grounds to avoid floods & humidity.
- Avoid installing computer components in the basement.
- There should be adequate drainage system.
- Use water-proof ceilings & floors.

### **3. Lightening, electricity & electrical storms.**

This causes power failure that can cause damage to data, which has not been transferred to permanent storage devices.

#### **Security measures:**

- Install facilities to control power fluctuations, e.g., use of Uninterrupted power source (UPS)
- Use power stabilizers.
- Have standby power generators/sources.
- Have lightening arresters in the building.

### **4. Excessive Heat or Temperature.**

Excessive heat or temperature from the computer itself or from the surrounding environment can destroy computer storage media or devices.

#### **Security measures:**

- There should be efficient ventilation system.
- Use a cooling system in the computer rooms, e.g., cooling fans & air conditioners.

## **COMPUTER VIRUS ATTACK.**

A **virus** is a rogue software program that spreads rampantly through computer systems, destroying data or causing the system to break down.

### **Security measures against computer virus:**

- Make backup copies of software, and store the copies off-site.
- Restrict access to programs and data on a 'need-to-use' basis.
- Check all programs regularly for change of size, as this could be a sign of virus infiltration.
- Be careful with 'Shareware' and 'Freeware' programs, as they are the major entry points for viruses.
- Make sure all purchased software is in its original sealed-disk containers.

## **Smoke and Dust.**

Dust and Smoke particles settle on storage devices and may scratch them during Read/write operation.

### **Security measures:**

- Have dust mats or carpets to prevent entry of dust.
- Fit the computer room with special Curtains to reduce entry of dust particles.
- Cover the devices with Dust covers when cleaning the room.
- Remove shoes before entering the room to prevent dust.

## **Terrorist attack.**

This includes activities such as:

- Political terrorists,
- Criminal type of activities,
- Individuals with grudges, or
- People intending to cause general destruction.

### **Security measures:**

- Hiring of security guards to control physical access to the building housing the computer room.
- Activities that can cause terrorism should be avoided, e.g., exploitation of workers.
- Have double door & monitoring devices.
- Use of policies.
- System auditing / use of log files.
- Use of passwords.
- Punitive measures.
- Encryption of data.
- Use of firewalls.
- Consult & co-operate with the Police and Fire authorities on potential risks.

## **People threats include:**

- Accidental deletion of data, information or programs.
- Vandalism, i.e., theft or destruction of data, information or programs & hardware.
- Piracy of copyrighted data & software.

### **Security measures against Carelessness & Clumsiness:**

- Better selection of personnel.
- Have a good office layout.
- Improve employee training and education.
- Limit access to data and computers.
- Regular backups.
- Use of Undelete & Unformat utilities.

### **Security measures against Vandalism:**

- Should have a sensitive attitude to office behaviour.
- Tighten security measures, e.g., install alarm systems, burglar-proof doors/windows, & roofs).
- Limit access to sensitive company information.
- Use Keyboard lock on terminals used by authorised users.
- Use of disk locks.
- Punitive measures.

### **Review Questions**

1. (a) What is Computer security?  
(b) Mention various threats to computer security.
2. Discuss the environmental problems affecting the operation of computers.

### **Power failure:**

Momentary interruptions or fluctuations of electrical power may cause:

- Crashing of computers.
- Loss of data or information that had not been saved before the power disruption.
- Damage to computer's secondary storage media. This may result to loss of data & Application software stored on the media.

### **The main cause of power disruptions are:**

- Amplitude fluctuations,
- Power line noise,
- Low voltage sags,
- High voltage surges,
- Voltage outages,
- Voltage spikes,
- Waveform distortions,
- Power frequency variations.

### **Precautions against data loss due to Power failure:**

#### **1. Regular saving of documents.**

Frequent saving of documents ensures that minimum data is lost in case of any power failure.

Some application packages have an **AutoSave** feature, which should be activated to automatically save work after a specified time interval.

#### **2. Use of Uninterruptible Power Supply (UPS).**

To eliminate any power quality defects or fluctuation, use power correction equipment such as a Stabilizer or Uninterruptible Power Supply (UPS). These equipments ensure a steady flow of input power to the computer system.

### **Computer viruses:**

A computer virus destroys all the data files & programs in the computer memory by interfering with the normal processes of the operating system.

### **Precautions against computer viruses:**

#### **1. Anti-virus software.**

Use Antivirus software to detect & remove known viruses from infected files.

Some of the commonly used Antivirus software are:

- Dr. Solomon's Toolkit,

- Norton Antivirus,
- AVG Antivirus,
- PC-Cillin, etc

**NB:** The best way to prevent virus is to have a memory-resident antivirus software, which will detect the virus before it can affect the system. This can be achieved by installing a GUARD program in the RAM every time the computer boots up. Once in the RAM, the antivirus software will automatically check diskettes inserted in the drives & warn the user immediately if a disk is found to have a virus.

- For an antivirus to be able to detect a virus, it must know its signature. Since virus writers keep writing new viruses with new signatures all the time, it is recommended that you update your antivirus product regularly so as to include the latest virus signatures in the industry.
- The Antivirus software installed in your computer should be enabled/activated at all times.
- You should also perform virus scans of your disks on a regular basis.
- Evaluate the security procedures to ensure that the risk of future virus attack is minimized.

### Review Questions

1. Describe two ways of preventing data loss due to power outage.
2. (a) What is a Computer virus?  
(b) What are Anti-viruses? Explain how they detect and remove viruses.

### Accidental Erasure:

Commands such as DELETE & FORMAT can be dangerous to the computer if used wrongly.

Both commands wipe out the information stored on the specified secondary storage media, e.g., formatting the Hard disk (drive C:) will destroy all the software on that system.

#### Precautions against Accidental erasure:

##### 1. Use of Undelete utilities.

Use the Undelete facilities in case you accidentally delete your files.

There are two Undelete facilities depending on the operating system you are using.

##### • MS-DOS 6.0 Undelete facility:

To undelete at the DOS prompt, change to the drive & directory whose files were deleted, then type, e.g.,

*C:\>UNDELETE <directory that contain the deleted file>*

A list of all deleted files will be displayed with the first letter missing. Type in the first letter and the file will be recovered.

##### • Norton utilities & PC Tools:

Norton utilities & PC Tools also have an undelete facility, which is similar to the DOS Undelete facility.

##### • Windows Recycle Bin:

The Recycle Bin temporarily stores all deleted files & can be used to recover your files.

1. Double-click the Recycle Bin on the desktop.
2. Click on the files you want to undelete.

3. Click on **File**, choose **Restore**.

The Recycle Bin will restore all selected files to their original folders and disks.

**NB:** If you delete a file accidentally, don't copy any files or install any applications to the disk that contains the deleted file. If you write anything to the disk, you might destroy parts of the deleted file, making it unrecoverable.

**1. Use of Unformat utilities.**

MS-DOS 6.0 has an Unformat facility which can be used to recover information stored on disks that have been accidentally formatted.

**1. Use of Backups.**

All data must be backed up periodically either on diskettes, tapes or CDs so that in case of any accidental loss, the backed up copy can be used to recover the data.

For small files, use the **Copy** command to make a copy of the data on a diskette. For larger amounts of data, use the **Backup** command to copy the data to several diskettes or to a tape drive.

**Review Questions**

1. Name two commands that can erase the information from a disk.
2. Define 'Data backup' and state its importance.

**Crashing of hard disks:**

When a hard disk crashes, the data or information on the disk cannot be accessed. The effect is the same as formatting the hard disk.

Crashing of a hard disk can occur due to the following reasons:

**1. Mishandling of the computer system, e.g.,**

- Moving the system unit while the computer is on.
- Accumulation of dust.

**1. Computer virus attack.**

- Physical damage to the System unit caused by dropping or banging when being moved.

**Precautions against crashing of Hard disks:**

**1. Use of Backups.**

All data must be backed up regularly. In addition, all application programs & operating system software should also be kept safely so that in case of a complete system crash, everything can be re-installed/restored.

**1. Use of Recovery tools.**

System tools such as Norton Utilities, PC Tools, QAPlus, etc can be used to revive a disk that has crashed.

**Review Questions**

1. List two possible causes of a hard disk crash.

**Unauthorised access:**

*Unauthorised access* refers to access to data & information without permission.

Computer criminals can do the following harms:

- Steal large amounts of funds belonging to various companies by transferring them out of their computer accounts illegally.
- Steal or destroy data & information from companies, bringing their operations to a standstill.

- Spread destruction from one computer to another using virus programs. This can cripple the entire system of computer networks.
- Spread computer worm programs. Worm programs are less harmful in the beginning, but render the computer almost useless in the long-run.

#### **Precautions against Unauthorised access:**

##### **1. Restrict physical access.**

Physical access to computer systems should be restricted to ensure that no unauthorised person gets access to the system.

Some of the ways of restricting physical access include:

- Locking of doors.
- Use of personal identification cards.
- Use of fingerprint identification.
- Use of special voice-recorders. They analyse the voice of a trespasser & checks against the database containing the voice patterns of valid users.

##### **1. Password protection.**

Install a password to restrict access to the computer system.

A **Password** is a secret code that can be used to prevent unauthorised access of data in a computer.

Passwords can be put in at various levels:

- At the point of switching on the computer – to restrict access to the computer.
- On folders/directories – to restrict access to entire folders/directories.
- On files – to restrict access to individual files within a directory.
- On database systems – to restrict access to individual data elements.

When a valid password is entered, the user gets access to the computer system. Usually, the user is allowed three (3) attempts to get the password correct. If an invalid password is entered, access is denied after the 3 attempts.

Some computer security systems may generate an alarm if someone tries to use a fake password.

**NB:** You should never use passwords that can easily be linked to you, e.g., your name, birth date, or names of people close to you.

#### **Review Questions**

1. State and discuss four causes of data loss in a computer system.
2. (a) Discuss two methods used to restrict unauthorised access to computer systems.  
(b) What is a Password? Give its main importance.



## Lesson 1. OPERATING SYSTEM

### MS WINDOWS

A **graphic user interface (GUI)** Operating System that allows a user to give a computer instruction by touching pictures using a mouse.

#### Comparison between MsWindows and Ms Dos :

1. It converts plain **character based user interface (commands)** provided by Ms DOS into **Graphical User Interface (GUI) (icon)** provided by Ms Windows.
2. It provides **multitasking** capabilities to the PC.
3. **Support long file name** of up to **255 characters** long rather than **8 characters with 3 letter** file name extension used by DOS.
4. Each application program runs in its own separate **window**.
5. If a **program crashes**, it **displays a fault error message about the crash** and the program can be eliminated from the task list without affecting other running applications.
6. It provides **plug and play standard** that allows user to simply plug a new device such as a video card, audio card or network card into the computer without having to set switches or make other settings.

#### Advantages & Disadvantages

##### Advantages

1. A user-friendly environment.
2. they have a consistent command structure for all applications programs that runs in windows.
3. The use of a mouse or other pointing devices.

##### Disadvantages

1. Writing software in windows is **hectic** and **sophisticated**.
2. Windows programming requires **huge sum of money** and **time**.
3. Windows requires **hefty hardware requirement**.
4. Windows is a **very slow package**.

### STARTING MS WINDOWS OPERATING SYSTEM.

#### BOOTING

1. Before switching on a computer, make sure that all the components are properly connected, and that the computer is connected to an active power source.
2. Turn on the switch at the **source of the power supply**. If your computer is connected to a constant voltage **Stabilizer** or an **uninterrupted power supply (UPS)**, turn it on after switching the main supply.
3. Switch on the power button on the Monitor first, then followed by that of the System unit.
4. After the power is on the computer automatically goes through a process called **booting**. Booting is a term used to describe the starting up of a micro-computer. It's the entire process that makes the computer ready for use.

## **Types of booting**

There are essentially two forms of booting – the soft boot and the hard boot.

### **1. Cold Booting or hard boot**

It is the process when we first start the computer from its initial state by pressing the power button it. The instructions are read from the ROM and the operating system is loaded in the main memory.

### **2. Warm Booting or soft boot.**

It refers to **restart** the computer. Here, the computer does not start from the initial state. When the system gets stuck sometimes it is required to restart it while it is ON. Therefore, in this condition the warm boot takes place. Restart button or **CTRL+ALT+DELETE** keys are used for warm boot.

## **Boot process**

We can describe the boot process in six steps:

### **1. The Startup**

It involves switching the power ON to supply electricity to the main components like BIOS and processor.

### **2. BIOS: POWER ON SELF TEST**

BIOS- test performs an initial check on the input/output devices, computer's main memory, disk drives, etc. Moreover, if any error occurs, the system produces a beep sound.

### **3. Loading of OS**

Operating system is loaded into the main memory and starts working and executes all the initial files and instructions.

### **4. System Configuration**

The drivers which help in the functioning of the peripheral devices are loaded into the main memory.

### **5. Loading System Utilities**

System utilities are loaded into the memory for example, volume control, antivirus, etc.

### **6. User Authentication**

If any password has been set up in the computer system, the system checks for user authentication. Once the user enters the login Id and password correctly the system finally starts.

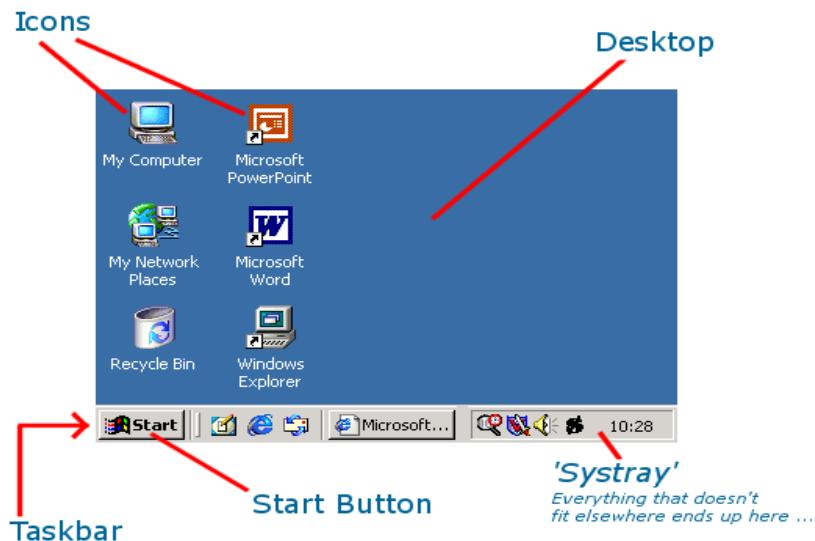
After a few seconds the message starting Windows (**95, 98, , 2000, XP, or Windows 7, windows 10**) will appear. It takes windows about a minute to start up. During this time you may see several pages of text flash on your screen. You will also see a picture of a tiny egg timer. This means that Windows is busy starting up. After the opening screen of windows a colored patterned display called desktop will appear.

## **Desktop**

- The **working area** of a computer screen (An area where you use the program on your computer).
- Desktop is a **workspace** that containing many different tools (**pictures**) to help you work. These pictures called **ICONS** and they which represent a particular program.

## PARTS OF THE DESKTOP

Include **Icons** & the **taskbar**.



### 1. Icons

An icon is a graphic image Or a small picture that represents a file, program, or command etc. Icons help you execute commands, open programs or documents quickly by click or double-click on the icon

#### (i) My Computer/PC:

Provides access to the resources on your computer eg disk drives and other peripherals..

#### (ii) My Network

your control center for network resource. It Provides access to resources on another computer if the two computers are inter-connected.

#### (iii) Recycle bin:

A **temporal storage place for deleted objects**. You can restore objects in the Recycle Bin or you can permanently delete them by emptying the recycle bin.

#### (iv) Internet Explorer/MS Edge:

- It is used launches the Internet Explorer browser.

### 2. Taskbar:

- A rectangular bar running horizontally at the bottom of the screen. It displays the **START** button on the left side and the **Notification** area on the right side.
- It is used to **keep track of all programs opened** on your desktop and each program is represented by a **button** on the taskbar.
- The taskbar can help control the different windows that are open and to keep your desktop organized. If you have several windows open on your desktop it looks messy. **To tidy up** any open window do the following:-
  - a. **Cascade** – Arranges windows so that their **titles overlap one another neatly**.
  - b. **Tile** - Arrange windows **side by side** by choosing either horizontally or vertically

To arrange windows click on a blank part of the taskbar with the right mouse button. From the menu that appears choose **Cascade** or **tile** .

- **Switching Windows**

To click the button of a window on the taskbar to bring it to the top of a pile of open windows ready to use.

- **Active Window**

A window that is **currently being used** and sits on top of the other windows. Its button looks pressed down and has different color title from the other windows

## START BUTTON

Provides you with access to almost everything you need to use in Windows.

When you rest the mouse pointer over the start button it for a few seconds, a message which reads **Click here to begin** or **start** will appear. Clicking on the start button will display the start menu i.e. a list of standard menu options.

- **All Program** - Display a list of programs that can be started on a computer.
- **Documents** - Track a list of 15 files names opened or used on a computer.
- **Control Panel** - Displays a list of system components whose settings can be changed.
- **Search** - Used to search for files and folders on a computer.
- **Shut down** - Used to log out a user or shut down or restart a computer.

## LAUNCHING A PROGRAM

### Ms WordPad

To launching a program called WordPad.

- Start button.
- All Programs
- Accessories.
- WordPad

Word Pad application program window will appear on your desktop.

### Window

A rectangular space in which a particular program runs. When a program is running in a window the window is said to be open.

## WORDPAD APPLICATION WINDOW

1. **Title bar** - Displays the name of the document and the title of the currently running application.

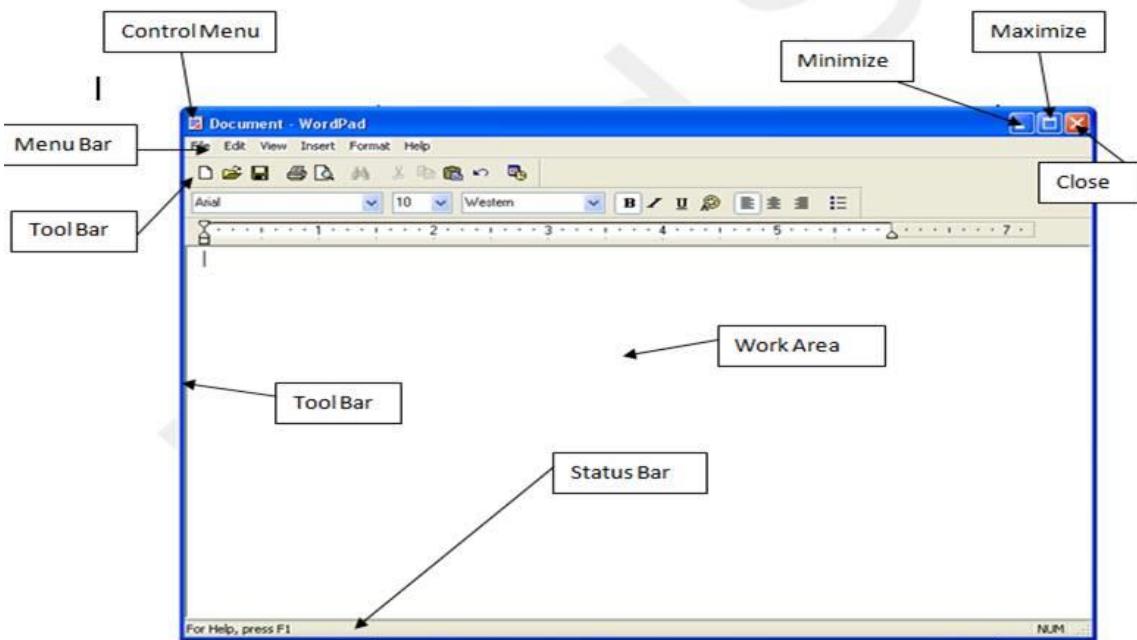
**The title bar enables the user to :-**

- i. **To Resize A Window**

To increase or reduce size of a window by dragging the edge of the window or its corners.

- ii. **To Moving a window,**

To move a window around your desktop by dragging the title bar..



## 2. Window Control Buttons

- Minimize Button** - Reduces a window to a button on the taskbar.
- Restore/Maximize**
  - Maximize button** stretches the window to cover the entire desktop
  - Restore button** restores a window back to its original size.
- Close button** - Closes the running application window

## 3. File Menu

- Provide a drop down list of commands.

## 4. Ribbon

A command bar that organizes a program's commands into a series of tabs at the top of a window eg Home, and View.

## 5. Ruler

- horizontal and vertical scales reflect the width and height of your typing area.

## 6. Scrollbars

- Allows you to move the window viewing area up, down, left, or right

## 7. Text area (Work area)

- Displays the information you want to view, edit or add.

## 8. Status bar

- It displays information about a document being edited or a program running.

## THE MOUSE

One of the most important tools you need to use MS Windows effectively is a mouse. Ms. Windows uses pictures to present information and you give your computer instructions by touching these pictures using a mouse.

When you move your mouse a round on a flat surface it sends signals to a pointer on the screen. The pointer follows the movement of your mouse.

The main pointer symbol you will come across is the **simple arrow**. As you move the pointer around the display you will notice that it sometimes changes shape according to the tasks for which you can use it

## **Mouse Techniques.**

The following are the mouse techniques:-

### **1. Clicking -**

**Pressing the left mouse button once.** Clicking on My Computer icon it changes color. You have told the computer that you want to do something to the icon. To deselect click on any blank part of the desktop.

### **2. Double clicking - Pressing the left mouse button twice in quickly succession.** Double click on My Computer icon, a window appears. Close it by clicking once on the close button.

### **3. Right Click -** Pressing the right mouse button once. Right clicking on my computer icon a short cut menu appears. Click on a blank part of the desktop to make the list disappear.

### **4. Drag and Drop -** "Grab" an object and drag it to a different location.

## **MAKING CHOICES**

To give a computer instructions by selecting from certain options inside a window. There are many different ways of doing this:-.

### **1. Menu Bar**

Appears along the top of a window and contains a list of options that represent different kinds of instructions. *To open a menu click on its name and to close it click on its name again or press the **ESC** key on the keyboard*

### **2. Dialog Boxes**

A small window that a program pops open to request input from the user.

#### **i. Drop down list box**

A list box, that allows the user to choose one value from a list. Have a small downward-pointing arrow next to them. You can also open the drop-down menu by holding down the **Alt key** and pressing the down arrow. You can also move to an item by typing the first few letters of the option.

#### **ii. A list box**

Displays a list of options to choice from. To choose more than one item, hold down the **Ctrl** key while you make your selections. If there are more options displayed in the box, a scrollbar appears on the list box. Use it to view the additional choices.

#### **iii. An option button**

A graphical control element that **allows the user to choose only one option** from a group. When you select an option a black dot appears in the button next to it. Clicking on a different option switches the first off

#### **iv. A check box**

A graphical control element that **allows the user to choose more than one choice**.

When you select an item an **X** or a **checkmark** appears in a selected box. You toggle checkboxes on and off by clicking in the box.

#### **v. Command Button**

Execute a simple task. The most common command buttons are OK or CANCEL button.

- OK button** - tells computer to put the changes into effect.

- **CANCEL button** -to close a dialog box without making any changes.

#### **vi. Dividers**

Some dialog boxes are divided into different sections called properties sheets. Each section is represented by a sheet with a tab at the top. To look at the content of a particular sheet click on the relevant tab. Each sheet is like a separate dialog box.

### **3. Keyboard**

- Using a keyboard commands can be a quicker way of giving instructions once you remember which key to press. Most keyboard commands include the **CTRL**, **Alt** or **shift** keys followed by a letter
- Some menu options have codes called **keyboard commands** besides them which can be pressed to tell your computer what to do.

- Copy      CTRL + C    Select All      CTRL + A
- Cut      CTRL + X    Save      CTRL + S
- Paste      CTRL + V    Print      CTRL + P

## **Lesson 2.** **WRITING WITH WORDPAD**

### **WORDPAD**

A basic word processor that comes along with all versions of Microsoft Windows. It's used to type in, organize and change the way the text looks. This is called word processing.

#### **Write On**

When you launch WordPad a flashing vertical line called **CURSOR** appears in the top left hand corner of the page area. It shows where text will appear when you start to type.

- As you type text automatically **WRAPs** onto the next line when it reaches to the end of the line.
- BUT You can make it start a new line yourself by pressing the **RETURN** or **ENTER key**.

#### **Moving the Cursor**

When you move the pointer over the page area it changes into an **I shaped** pointer. Use this to position the cursor. Before you move cursor to any area of the page where there is no text, use the **return key**.

Point to where you want the cursor to go and click with the mouse button. It jumps to the point where you clicked. When you start typing the text will appear at that point.

#### **To Open an Existing Document**

To open an existing document, follow one of the following methods:

- Click the Open command on File menu.
- Select drive or folder where the file is saved.
- In file name box , type a unique name for the document you want to open.
- Click the open button

#### **To Close a Document**

To unload the current active document from memory so that the user can create or open another without necessarily existing from word.

1. Click the File menu
2. Choose close

## **Existing files**

If you type a file name that is the same as a file already on the disk, a message appears asking whether you want to replace the existing file with the one you are trying to save. Click on the Yes button to replace it or click on NO and then choose a different name for the file.

## **SAVING A DOCUMENT**

When you have created a document, windows allow you to store it. This is called saving a document.

### **About Disk**

The main places you can store a file is your computer hard disk or flash disk.

#### **To save a file**

- File
- Save As - Save As dialogue box appears
- Save in – tells computer where to store a file. Eg **C drive**
- File Name - enter a name for your file.  
It can be up to 255 characters long and can include spaces but none of these characters:- \* , < , > , ? , " , \ , / , + . Always give files descriptive names so that you remember what they contain.
- Save button- Now click on the save button to store your document.

While the computer is saving the file your pointer will change to an egg timer. This tells you that the computer is busy carrying out an instruction

### **N/B**

- You only need to use the **Save As** command if you are saving a **new file name** .
- Use **Save** if you are saving changes made on an existing document

## **EDITING TEXT**

Editing text is making changes to an existing text.

Editing include selecting text, deleting, copy, cut & paste and find & replace

### **(a) Selecting Text - To mark a section of text that you want to change.**

#### i. **Character**

Position the pointer to the left of the character, hold down the left mouse button drag across the character and release the mouse button

#### ii. **A word :-** Place the insertion pointer on the word and double click.

#### iii. **To select a sentence: -**

Position the mouse pointer in left margin until it changes to an arrow head and then click once.

#### iv. **To select a paragraph:-**

Position the pointer at the beginning paragraph; hold down the left mouse button drag the pointer to the end of this section

#### v. **To select a Page –** Press CTRL + A

#### **Warning.**

When text is **selected**, anything you type will replace it. If you replace something by mistake, click on the **UNDO** button to make it reappear.

## (b) Deleting Text

If you make a mistake while typing in text you can correct it. Text is made up of letters, numbers and symbols called **Characters**. Delete text with respect to the position of cursor

- **Delete key** deletes the characters to the right of the cursor.
- **Backspace key** deletes the characters to the left of the cursor.
- **Selected text** use space bar

## (c) Copying, Cutting and Pasting

### i. Copy/Paste or Cut/Paste

You can **duplicate** text from one part of a document to another.

- Select the text you want to copy/Move
- Click on **Copy button or Cut button**. The text remains where it's but a copy of it is sent to the clipboard.
- Click location where you want to copy the text to
- Click on the **paste button**. Pastes the text from clipboard into your document.

#### **Warning.**

WordPad can only store one section of text at a time. As soon as you copy something new it replaces whatever was on the clipboard before.

## (d) Finding and Replacing Text

### Finding Text

WordPad has a feature called FIND, which allows you to **search** for a particular word in your document.

- Click on the find button to open the Find dialog box or Find from the Home ribbon.
- Click in the FIND WHAT box and enter the word you want to search for.
- Select MATCH WHOLE word only tells the computer not to look for the word inside longer words .
- Selecting MATCH CASE tells the computer to look only for words that have the same capital and small letters.
- Click on the **FIND NEXT** button to start the search. The program searches for the first time the word occurs and highlights it.

### Replacing Text(substitute test)

You can find and replace a particular word.

- Selecting Replace from the Home ribbon.
- Type the word you are looking for in the Find What box.
- Then type the word which you want to replace it with in the Replace With box.
- Click on the Replace button to search and replace the next matching word or Replace All to replace the word every time it occurs in your document.

## FORMATTING

### FORMATTING TEXT

To applying a style to an existing text to enhance it.

WordPad has lots of tools for improving the way a document looks. Use these tools to change the shape, position and style of your text.

#### (a) Font

Shape of character. **Use font to alter the shape of characters** that make up your text. Eg Times New Roman

### **(b) Font size**

Size of characters To change the size of characters use font size. Font is measures in **points**. One point equal **1/72** of an inch.

### **(c) Font Style**

Used to emphasize text. WordPad offers several different styles for changing the way text look.

**B** Makes text bold (**make text look more darker than the other text**)

**U** Underlines text (**put a line below a word**)

**I** Puts text in italic (**slant text /bent text in front**)

### **(d) Color** - Apply color to text

### **(e) Alignment** - To position text relative to **left**, **Centre** or **right** of the margins.

The buttons on the home tab under paragraph group allows you to change the position of your text on the page.

(i) **Left alignment** - Lines text up against the left hand side of the margins

(ii) **Right alignment** - Lines text up against the right hand side of the margins

(iii) **Centre** - Positions text in the middle of the page.

## **PAGE SETUP**

Define parameters used to specify the size of a page you want to use. When you create a document in WordPad you need to tell your computer what **size page** you want and where you want to position the text on the page.

### **To do this**

- Page Layout .
- Page setup
- Margins section to tell your computer how much space to leave between the edge of the page and the edge of your text.
- Orientation Section select **Portrait** or **Landscape** .
- Paper section - . **A4 or letter**

## **PRINTING**

You can print out a copy of your file on paper. Before you print a file you need to check that your computer and printer are properly connected and that you have loaded the printer with the paper.

### **Print Preview**

Check that your document **looks the way you want it to before you print it**. Click on the print preview button to see the whole document at once.

### **To preview a document select**

- File ,
- Print
- Print preview

### **To print a document**

- File
- **Print** -Print dialogue box appear

- **Select Printer** - Select the name of the printer you want to use .
- **Page Range** - If a document has several pages you can choose which ones you want to print in the print range section of the print dialog.
- **Number of Copies**  
You can choose how many copies you want to print in the copies section of the print dialog box.
- Click on Print to start printing. A message confirming that your document is being printed will appear briefly in a box on your desktop

### Printing

When a file is being printed you will see a printer icon at the end of the Taskbar. Double click on it to open the **Print Manager window**. A printer can only print one file at a time. If you want to print a second one Print Manager holds it in a Queue until the printer is ready. The print manager window shows the order in which files will be printed.

To cancel a print command click on the name of the file you want to cancel with right mouse button. Then from the menu that appears select cancel printing.

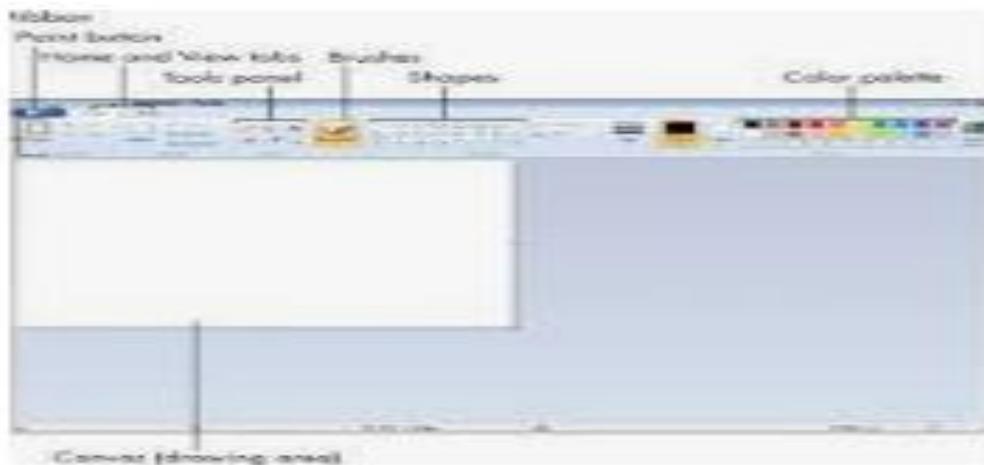
## PAINT PROGRAM

Ms Windows package contains a program called Paint which you can use to create pictures on your computer screen.

### Launch Paint Program

- Start Button
- All Program
- Accessories program group.
- Click on Paint to launch it and then maximize its window.

## THE PAINT APPLICATION WINDOW



### Drawing and Paint Tools

These buttons represent drawing and painting tools.

- **Selecting Color**  
Before you start drawing, you need to select
  - **Background** color to draw on
  - **Foreground** color to draw with.
- **Shape tools** - Tools that enable you to draw different shapes.
- **Painting tool** - Tools used to paint drawing, painting and shading.

- **Line tools**  
Tools used to draw straight or curved lines vertically, horizontally or at 45° angles by holding down the shift key as you drag.
- **Text tool** – Used to add text on a page
- **Selection tool**  
Uses to select a specific area using the rectangle selection tool or freeform tool.
  - a. **Rectangle selection tool** - select rectangular regions.
  - b. **Freeform selection tool**- To select an irregularly shaped area of your picture.

## IMAGES AND OBJECTS

### About Objects

An object can be text, picture or even a sound or video file.

You can easily combine work created in different programs. Windows offers several different ways of inserting an object into a file.

#### 1. Cut, Copy & Paste

You can move and copy a section of a picture called an image within the Paint program using the **cut and paste method**. When you have pasted an object into a file , you can make changes to it by double clicking on it. A paint window containing the picture will open. Make the alterations you want and then close the paint window.

#### 2. Object embedding

To insert a file into another file such as sounds that are best inserted into other file.

Embed or link to a file in Word

1. Go to Insert > Object.
2. Select Create from File./Select Browse and choose the file you want to use.
3. Select Insert./ Choose Display as icon to embed, or Link to file for a link.
4. Select OK.

#### 7. Object linking

To create a connection between an object and the file it came from. This means that whenever you make changes to the file and save it, the object will be changed too. The link option is useful for objects that need to be updated.

## MIRROR IMAGES

The image command in Paint program allows you to turn section of your picture around, or flip them over. To use the image command selects the area of the picture you want to alter.

Then choose a command from the Image menu.

- Rotate - Revolve the image by an angle
- Flip vertical - Turns the image over from top to bottom
- Flip horizontal - Turns the image over from left to right
- Stretch horizontal - Drag out the shape of the image horizontally
- Skew horizontal - Slant the image
- Invert colors - Swaps the colors for their opposites.

## **Lesson. FILES AND FOLDERS**

### **FILES**

A file is a collection of related data given a unique name for ease of access, manipulation and storage on a backing storage.

#### **File Name**

Every file has a unique name and an optional extension. The name and extension are separated by a period (.). Extensions are used to identify the type of file in use.e.g **Command .com**

<b>Extension</b>	<b>File Type</b>	<b>Description</b>
<b>.doc</b>	Data	A Microsoft word document file
<b>.txt</b>	Data	A plain file created using notepad or Ms Dos
<b>.tif</b>	Data	A graphic file created using Adobe Photoshop
<b>.exe</b>	App file	Application files holding programs that are executable
<b>.sys</b>	System file	Contain information that is critical for the operation of the computer

### **FOLDER**

- A folder is named storage location where related files can be stored.
- All folders originate from a special directory called the **root directory** and is represented by a **back slash (\)**.
- A folder may be subdivided into smaller units call **subfolders**. I.e. a folder within folder.

#### **Drive**

- The OS views **storage media devices as drives**.
- The user can access either **a physical or logical** drive to store their data.
- Drives may be given **labels** such as letter **A – Z** to identify them. Eg **D:\**

### **CREATING FOLDERS**

Windows has two programs called **My Computer** and **Explorer**, which allows you to see what files you have stored on your computer.

#### **My Computer**

- Contains icons for each of your **disk drives**.
- It also contains two different types of icons one for representing **files** and another for representing **folders**.

**Launch My Computer** - Double clicking on its icon on the desktop.

#### **Windows Explorer**

- Offers an alternative way of looking at the information you viewed using my computer. Explorer replaces the **Windows 3.1** program called **File Manager**.
- It provides **detailed information about your files**, folders, and drives
- It also shows how your **files are organized** so that you can **copy, move, and rename** files. Windows Explorer displays the contents of the entire system in a hierarchical manner.

**Windows Explorer is divided into 2 panels.**

- The left pane - Displays the list of drives and folders on the computer.

- The right pane - Displays the contents of the selected drive or folder.

By using these two panes, you can browse through the contents of your computer in a single window.

### **Exploring**

To open particular folders **click on its name in the left hand panel of the window**. The folder icon changes to an open folder and its content are displayed in the right hand panel section of the window

### **Branching Out**

An arrow head sign next to a folder tell you that it contains sub-folder. To see the sub-folders displayed as branches on the tree click on the arrow head. Click on the arrow head again to close the folder again. If a folder doesn't have a arrow head next to it, this means that it doesn't contain any sub-folder.

### **Launch Windows Explore**

Click Start button ->All programs->, Accessories-> Windows Explorer

### **To Create a Folder**

- Open My Computer or Windows Explorer
- Double click on **C:\** drive
- Select new folder button.
- Type in name for the folder and press Enter key

### **Opening folders**

To open a folder double clicks on its icon. This displays the content of the previous folder or disk drive.

### **Opening a file**

You can open a file from the my computer window by double clicking on its icon.

## **ORGANIZING YOUR FILES**

It's easy to re-organize your files by **moving** and **copying** them using the explorer program.

### **1. Moving Files**

#### **a. To move a file to a folder(Drag and drop)**

You need to be able to see the destination to which you want to drag the file to.

**Drag a file's icon over to the folder icon in the left hand side of the window and drop it.** The file has now been moved to the folder

#### **b. To Copy a File to a Folder**

- Right Click on the file's name and select Copy
- Right click on the destination folder and select paste.

#### **c. To Copy a file to a Flash Disk**

Right click on the file you want to copy and from the short cut menu select SEND TO flash disk. As a file is copied you will see a picture of it flying between two folders

### **2. To Rename a file**

When you have copied a file you can give the second copy a different name so that you don't get the two confused.

Find the icon of the file you want to rename and click on it with the right mouse button and Select Rename from the menu that appears. A box will appear around the name. Type in a name and press the return key. The new name will replace the old one.

**Warning.** Only rename files and folders that you have created yourself. Renaming files and folders could stop a program from working.

### 3. Searching for Files

However well-organized your filing system is you may occasionally forget where you have put a file. Windows has a program called Search to help you locate any lost files.

Click on the search tool from the task bar, a text box appears, type in the name of the file to search. The names of any matching files will be displayed.

### 4. Deleting a File

To avoid cluttering up your hard disk you should delete any file that you no longer need. Right click the file you want to delete. From the shortcut menu select delete.

You can do this using the

- i. Explorer
- ii. My Computer programs
- iii. Recycle bin.

#### a. In Explorer/My Computer

In the left hand side of the explorer window double click on the C drive icon. Open the window folder and select the file icon you want to delete. Then press delete key on your keyboard. A dialog box appears asking you to confirm that you really want to delete the file. Check that the box contains the name and details of the file you want to delete. If its correct click on the Yes button

You can delete whole folder using the same method. Be careful though because deleting a folder deletes all its contents.

#### N/B

Files and folders deleted from removable drives such as diskettes and flash disks are not held in the recycle bin but are completely lost

#### b. Recycle Bin

Another way of getting rid of files is simply to throw them into the recycle bin.

##### 1. Restore

If you accidentally deleted something important, do not panic. Any file that you delete from your computer hard disk are kept in the recycle bin for a while which means that it's possible to get them back again.

##### To retrieve files

- Double click on the recycle bin icon. A list of deleted files will appear.
- Select the name of any file you want to retrieve and then select Restore button. The file will be transferred from the recycle bin back to its original location.

##### Alternatively,

You can drag the file to a folder in the explorer or my computer window. Unfortunately, this does not work for floppy disks. If you delete a file from a floppy disk it's gone for good.

##### Warning.

The recycle Bin doesn't keep your files forever. Normally windows start to get rid of the oldest files for good when the deleted files take up more than 10% of your computer's hard disk.

##### 2. Emptying the Recycle Bin

When you have dropped your files into the recycle bin they still take up space on your hard disk. You can make more space by deleting the files once and for all.

To do this:-

- Click on the recycle bin with the right mouse button
- Select Empty Recycle Bin.
- When the computer asks if you are sure click on the Yes button. This will delete all the files in the recycle bin from the hard disk.

## 5. Selecting Files/ Grabbing Groups

1. In Windows Explorer and My Computer you can select several files at once by holding down the **CTRL key** and **clicking** on the file you want to select.
- (b) To select group of files click on the first file you want to grab and then press the **SHIFT key** while you click on the last file.
- (c) You can also use **the mouse** to grab a group of files. Position the pointer at one corner of the group of files you want to grab. Holding down the left mouse button drag the mouse across until all the files you want are selected.

## PERSONAL TOUCH

Making changes to windows to give it a more personal feel. You can change the colors scheme and patterns used in your display.

### 1. Color Scheme

Colors used for the desktop and for windows parts such as the title bars and menu bars. You can choose from entire color scheme or create your own.

- Right click on the desktop
- Personalize
- color

### 2. Wallpaper

To brighten up your desktop by adding a patterned layer. Windows has a selection of wallpaper design to choose from.

To look at them select the Desktop tab in the display properties box. Click on a name from the wallpaper list to see a design on the example screen.

### 3. Screen Savers

A program that protects the screen from burning by replacing the image on it with a moving picture after a certain amount of time. When the same image is left on the screen for a long time, it can damage the screen by causing screen burns. This means that the image is permanently imprinted on the screen.

- Right desktop
- personalize
- lock screen
- screen saver setting

## WINDOWS WORKSHOP

A collection of programs that helps you look after your computer.

### 1. Formatting Drives

Writing tracks and sectors on a disk to make it ready for data storage. **N/B** Don't format your computer.

### 2. Scanning a drive

Scandisk check for any damage to the hard disk itself or for any problems with the way files are organized.

After a long period of time parts of your computer hard disk may wear out or become damaged.

1. Right-click Start, select File Explorer in Windows 11/10/8.
  2. Select PC>Right-click drive> Select Properties > Tools > Check > Scan drive.
  3. Wait for the scan to complete. Follow any instructions given. You may be instructed to restart
- 3. Disk Defragmenting**
- Files are stored on hard disk, by slotting them anywhere there is space. This causes the hard disk to become disorganized and may take the computer longer to find things. Disk defragmenter tiding up hard disk by gathers all bits of each file together so that they can easily be found. Use it once every three or four months to keep your hard disk in good order.
- 4. Scanning for malware**

Malware are harmful programs deliberately intended to make a computer fail or malfunction.

Scanning for malware is to prevent, detect, and remove malware from infecting a computer.

Three common types of malicious programs are viruses, Spyware and worms. A computer must be installed with the latest anti-virus program such as Norton, Mcfee, Kaspersky and AVG.

#### **To scan for malware**

1. In my computer window, right click the drive
2. From the shortcut menu click scan with <antivirus name>
3. The scan process is initialized
4. Heal, delete or quarantine the infected files.

## **OTHER USEFUL PROGRAMS**

The Accessories program group contains many useful programs

### **Character Map**

All kinds of arrows, mathematical symbols and other characters that you can use in windows but don't appear on your keyboard.

In character map window select a Font from the drop down list. The grid or map displays the character available in that font. You can copy any of these characters to use in a document.

### **Notepad**

Another word processor program in Ms Windows. Notepad is a useful program because when you launch it its window appears very quickly. This means that it's handy for simple documents or for jotting down notes or shopping list. However you can't insert pictures into a notepad document or use different font and text style.

### **Calculator**

Windows has its own handy calculator which can be used for calculations. You can choose between a **standard** or a **scientific calculator**.

- To launch calculator click on its name on the Accessories menu. The windows that open contain a picture of a calculator.
- To use it click on its buttons using your mouse or use the keys on your keyboard to enter information. These options are available on the view menu.

## **Lesson 3. WORD PROCESSING**

### **TERMINOLOGIES**

#### **Word Processing**

Creating, editing, storage and printing of text by electronic means using computer hardware and software.

#### **A word Processor.**

Historically a word processor used to be a machine that performed word processing functions. Nowadays the term refers to the computer software.

Typical Word Processors on the Market.

- Ms Word
- Word Perfect
- Word Star
- MultiMate
- AmiPro
- Professional writes
- Manuscript

#### **Who need a word processor?**

Anybody whose work involves writing letters, memos, reports such as project reports, proposals , resumes , scientific papers, and preparing book manuscript in public or private institutions . Word processing will certainly increase their productivity.

#### **Factors To Consider When Choosing A Word Processor**

1. Type of **operating system** e.g. ( **GUI**)graphic user interface program
2. Users friendly for. ease of use.
3. Varied formatting and editing features.

#### **Uses**

- Business/General correspondence
- Curriculum Vitae/Resumes
- Weekly news letters/Sports and Entertainment
- Lease agreement/Legal documents
- Research papers

#### **Features Of A Good Word Processor**

All word processor let you:-

1. Enter text
2. Make changes and corrections
3. Add, insert, delete characters , word line, or block of text
4. Copy and Move parts or all of a document to another to make it easier to manipulate a document
5. Allow user to produce multiple copies more easily on your printer
6. Superior formatting features that make a document more appealing to the reader
7. Superior editing tools such as In-built dictionary for checking spelling, the Thesaurus etc
8. Automated features such as word wrap, autocorrect and auto complete
9. Ability to handle headers and footers, columns, tables, text boxes and graphics, the user can achieve complex layouts very similar to desktop publishing packages

## Advantages of Word Processor Over a Typewriter.

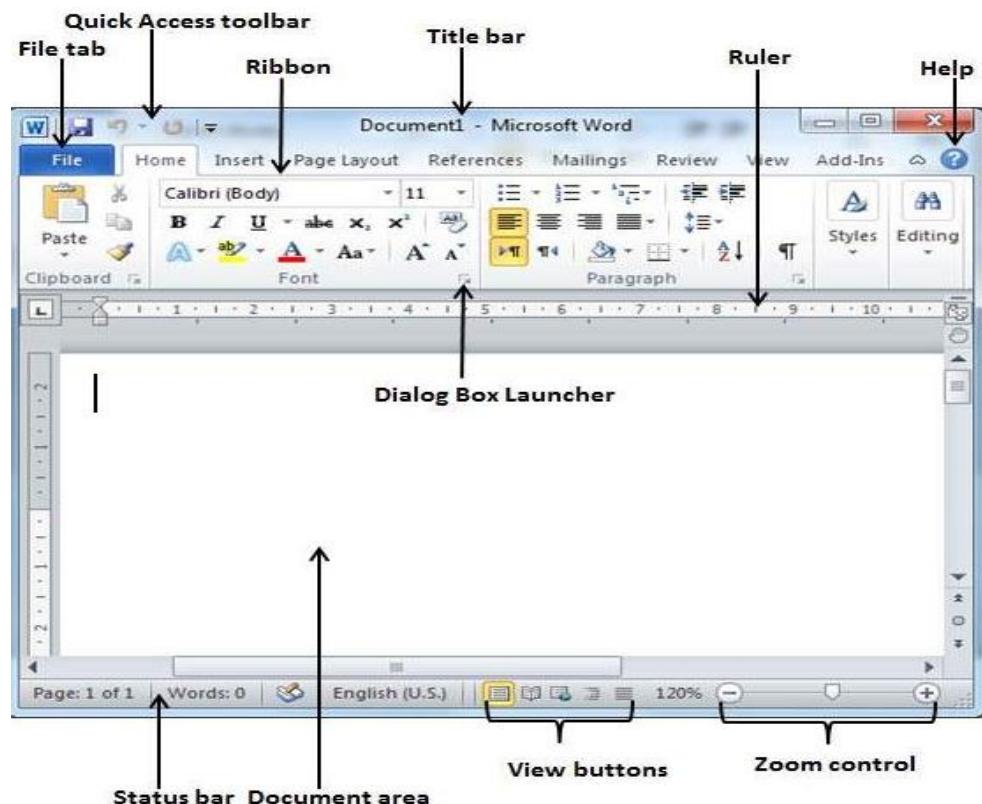
Word Processor	Typewriter
1 Create and save your work to use later.	You can't store your work for future use
2 An application program.	A machine (tool).
3 Easier to make corrections before printing because text appears on the screen	It's difficult to make any corrections once text has been typed.
4 Once a document has been created you can print as many times as you can.	You will have to recreate a whole document again.
5 You can make a draft copy, change the order of paragraphs, add, delete, and change the layout of text before printing	You have to retype everything again.
6 Documents that required regular updating do not have to be retyped whenever changes are made e.g. internal telephone number directories, price lists etc	You have to retype a whole directory.

## STARTING MS WORD PROGRAM

Ms Word runs in Ms Windows's environment. You can start the WORD program as follows:-

1. Start button.
2. All Programs
3. Microsoft Office
4. Microsoft Office Word 2007 or 2010.

## THE MS WORD 2010 APPLICATION WINDOW



**Title bar** - Displays the name of the document and the title of the currently running application.

**File Menu** – Displays a drop down list of File related command

### **Ribbon**

A command bar that organizes a program's commands into a series of tabs at the top of a window eg Home, Insert, Page layout, References, Mailing, Review and View.

**Rulers** - The horizontal and vertical ruler scales reflect the width and height of your typing area

The horizontal scale is invaluable when you want to quickly set tabs, margins, and indents.

**Document Area** - Blank section of a Word processor that allows the user to create content.

There are certain objects that are a permanent part of the typing area.

These are:

- (a) Insertion Point,
- (b) Mouse Pointer

a. **Insertion Point:**

The black vertical blinking line is the cursor and place where it is blinking is insertion point that is initially at the top left side of the typing area i.e., at the beginning of the document.

It indicates the place where your typing is inserted into the document. As you type, the blinking line continuously moves along towards right.

b. **Mouse Pointer:**

When you move the mouse around in the typing area, the mouse pointer is in the shape of a thin **I beam**. As you move the mouse near the menu bar and toolbars, the mouse pointer becomes a pointing arrow. .

### **Scrollbars**

The vertical and horizontal bars that allows you to move the window viewing area up, down, left, or right

### **Status bar:**

Displays various kinds of status information such as current page number, line number, column, etc

### **View Buttons:**

Located directly above the status bar and provide a quick way to move between views.

## **CREATE A DOCUMENT**

When you start Ms Word a blank document appears ready for you to start typing.

If you don't have a blank document selects New from File menu.

Or

- Press CTRL+N keys on the keyboard.

### **TYPING TEXT**

Ms Word assumes certain settings for margins, page length, line spacing, tab stops and several other document attributes known as default settings.

You can begin typing without specifying these settings yourself.

To enter text, just start typing in the text area. As you type, the text will appear where the blinking cursor is located and will move from left to right.

You need not to press **ENTER key** at the end of each line, because the text automatically shifts to next line. This is referred to as **word wrap**.

### **Save a Document**

When you create a document Ms Word allows you to store it which is called saving a document.

- Click on Save As from the File menu.
- From the save as dialog box Select the folder where you want to place your document in Save In: box,
- Type the name of the document in File Name: box, a
- Click on the save button.

Or

Press **CTRL+ S** on the keyboard dialog box.

### **Close a Document**

To unload the current active document from memory so that the user can create or open another without necessarily existing from word.

1. Click the File menu
2. Choose close

### **Open an Existing Document**

- Click the Open command on File menu.
- Select drive or folder where the file is saved.
- In file name box , type a unique name for the document you want to open.
- Click one open button Or Press **CTRL+O** keys on the keyboard.

### **Exit Word**

1. Click the File menu
2. Choose Exit

## **EDITING A DOCUMENT**

Making changes to an existing document.

### **1. NAVIGATION IN MS. WORD**

By default the active document window can display only about half a page of text.

#### **a. Scrollbars**

You can use the vertical and horizontal scroll bar to view different portions of the document by adjusting the view up and down.

**N/B** The insertion point does not move when you use the scroll bar remembers to place the insertion point where you want to insert text.

- b. To display different parts of a document and move the insertion point use the following techniques

**i. Page up, keys** - Moves cursor to the top of the page.

**Page down** - Moves cursor to the bottom of the page

**ii. End** - Moves the cursor to the end of a line.

**iii. Home** - Moves the cursor to the start of a line

**iv. (Cursor keys) Left, right, up, down** arrow keys

To move cursor character by character or line by line at a time.

### **2. TYPING MODES**

There are two modes in a word processor that assists the user in typing or editing text documents.

i. **Insert Mode**

When text is inserted between words or characters it pushes the existing text away without replacing it

ii. **Typeover Mode**

When text is typed between existing words or characters, then new text automatically replaces the existing text by deleting it.

1. Choose Office, Word Options.
2. Click Advanced.
3. Under Editing Options, mark or clear the Use Overtake Mode check box.
4. Click OK.

### **3. BLOCK OPERATION**

Selecting (highlighting) a block of text

You can either select a block of text by using the **mouse** or **keyboard**.

i. **Selecting using a Mouse**

(a) **To select a word :-**

Place the insertion pointer on the word then double click it

(b) **To select a sentence: -**

Position the mouse pointer at the left margin until it changes to a right arrow and then clicks once.

(c) **To select a paragraph:-**

Place the mouse pointer at the of paragraph, it changes to an I beam. Drag the I beam over the text to be selected and release the mouse button. .

ii. **Selecting using a Keyboard**

(a) **To select a word :-**

Place Move the insertion pointer to the beginning of the word then press **SHIFT + CTRL + RIGHT** or **LEFT arrow**

(b) **To select a sentence: -**

Press **SHIFT + UP** or **SHIFT + DOWN** arrow key

(c) **To select a paragraph:-**

Press **CTRL + A** or place the cursor at the beginning of the document then press **SHIFT + CTRL + END**

### **4. SPELLING AND GRAMMAR**

Word has built-in **Spelling** and **Grammar** checker functions used to check for misspelled words or grammar errors.

- When you misspell a word you will see a **squiggly** red line appear under that word.
- If you make a grammatical error you will see a **green squiggly** line instead.

**To use the spelling and grammar checker, follow these steps:**

- a. Select Spelling & Grammar from the Review tab or press **F7** button on the key board.
- b. The Spelling & Grammar dialog box will notify you of the first mistake in the document and misspelled words will be highlighted in red.
- c. If the word is spelled correctly, click the **Ignore** button or **Ignore All** otherwise change to correct it from the suggested word..

## **Thesaurus**

Allows the user to automatically find words or phrases with similar meaning (**synonyms**) or opposite meaning (**antonyms**) to the one selected

1. Highlight text
2. Click on Review tab, on proofing ribbon click Thesaurus
3. Select a synonym or an antonym

## **Autocorrect and Auto-Complete**

### **Autocorrect**

Detects wrongly spelled or capitalized words and replaces them with the correct words. Auto text is used to automatically correct a common misspelled word and insert a predefined text when creating a document.

### **Auto complete**

Displays a complete word when the user types the first few characters of the word.

This enables the user to type faster by simply accepting the suggested word if indeed he/she intends to type it. To accept the suggestion simply press the Enter key and continue typing other words or phrases.

## **5. COPYING, CUTTING AND PASTING TEXT**

### **Copying Text:**

Copying means creating a duplicate of text

- i. Highlight the text
- ii. Click on the Copy button on the home tab
- iii. Position the insertion pointer where you want to copy the text
- iv. Click the Paste on the home tab.

**N/B** To use the keyboard shortcut press CTRL + C to copy then CTRL + V to paste

### **Move Text:**

Moving means changing the position of text or an object in a document.

**N/B** - To use the keyboard shortcut press CTRL + X to copy then CTRL + V to paste

## **6. DELETING**

To delete a character, a word or a block of text

- Delete key - Deletes the character to the right of the insertion point.
- Backspace key- Delete the character to the left of the insertion point.

### **Undo and Redo** CTRL + Z

Reverses the most recently executed command

### **Redo** CTRL + Y

Reverts to the cancelled action.

## **7. FINDING AND REPLACING**

Find and replace is used to locate a word or phrase and replaces it with another.

1. On the Editing ribbon click Find or Replace
2. In the Find what box, type the word or phrase to find
3. Click Replace tab. In the Replace with box, type the word or phrase to replace the target word.

## FORMATING A DOCUMENT

### FORMATTING

To apply a style to an existing text to enhance the document's appearance and improve readability.

#### 1. TEXT FORMATTING

We format text by applying different font types, style, size, color and other attributes

##### (a) Font Types

Shape of characters e.g. Times New Romans.

###### To format text Font

- Highlight the text to be formatted
- On the Home tab, select font ribbon
- In the Font dialog box, select the Font.

##### (b). Font styles

Used to emphasizing text

###### i. Bold

**Make text look** darker than the other text. Bold is used for headings and to emphasize individual words.

###### ii. Underline - Placing a line at the base or bottom of a word.

###### iii. Italic - To make character to slant forward.

##### (c ) Changing color -

Font default is black. You can change the color of text in your document.

- Select the text that you want to change.
- On the Home tab, in the Font group, choose the arrow next to Font Color, and then select a color.

##### (d) Font Size

You can change the size of selected text. Font is measures in points. One point equal  $1/72$  of an inch. The largest font is 72 points

##### (e) Case

The cases applied to text are

- **Lowercase**,- small letters
- **UPPERCASE**, - capital letters
- **Sentence case** - capitalizing only the first word and any proper nouns,
- **Title case** - using capital letters for only the first word
- **Toggle** - to begin each word in lower case and the rest in upper case

##### (f) Script

(i) **Superscript** - Text appears just above the rest of the characters.

(ii) **Subscript** - Text appears just below the rest of the characters.

###### To make text superscript or subscript

- i. Highlight character
- ii. On the Format menu click Font
- iii. On the Font dialog box check superscript or subscript

## **2. PARAGRAPH FORMATTING**

You can improve the visual appearance and readability of your document

### **1. Alignment**

Text is lined up on the page relative to the left, right, centre or the page. . There are four types of justification

#### **i. Left Justification**

Lines of text are lined up evenly along the left margin but unevenly at the right margin. Commonly used for **business document**.

#### **ii. Right Justification**

Lines of text are lined up evenly along the right margin but unevenly at the left margin. Often used with **illustrations in advertising**.

#### **iii. Fully justified**

Lines of text are arranged evenly along both the left and right margins. Extra spaces are automatically inserted between word and characters to stretch a line of text so that it touches both margins. Commonly used in **business document** and gives a neat appearance.

#### **iv. Center Justification**

Lines of text are centre unevenly between the left and the right margins. This is usually used to improve the appearance of short line of text e.g. in **menus** or **agendas**

### **2. Indentation**

Moving text away from the margins.

#### **i. First line Indent**

The first line of a paragraph is moved away from the left margin while the body of the paragraph remains intact.

Hanging indents are frequently used for bibliographic entries, glossary terms, resumes, and bulleted and numbered lists.

#### **ii. Hanging line**

The first line of a paragraph is left intact while the body of the paragraph is moved away from the left margin (indented).

#### **iii. Full indent – Indent line of text from both the right and the left margin**

#### **To set indents**

1. Select the paragraph to be indented
2. From format menu click paragraph. Paragraph dialog box appears
3. Click the down arrow in the list box under special and select First line or Hanging line
4. Specify by how far the paragraph is to be indented from the margin in the by text box
5. Click ok to apply the indent and close the dialog box

### **3. Line Spacing**

The vertical distance between lines of text. The default line spacing is single spacing.

1. Highlight the text
2. From Home tab, select paragraph ribbon, click paragraph to display the paragraph dialog box
3. Click the down arrow from the line spacing list box and select the type of spacing required. (single , 1.5, double , multiple etc )
4. Click ok to effect the changes

#### **4. Bullets and Numbering**

A **bullet** point is an asterisk, black dot, circle, or another mark found before the text.

Bullets are used to identify key items or denote significance. Bullets and numbering allow you to organize text in lists

**Numbers** - Used to create a numbered list.

##### **To add bullets or numbers**

1. Select the list
2. From the Home tab, click paragraph ribbon, click on tab and select bullets and numbering from the A dialog box that appears
3. i. To apply bullet click the bullet tab  
ii. To apply independent numbers click the number tab  
iii. To apply outlined numbered list click outlined numbered tab
4. Click ok to effect the changes and close the dialog box

#### **5. Drop Cap**

Creates a large letter at the beginning of a paragraph drop it a number of lines to emphasize first letter of a paragraph. .

1. Select the first character of a paragraph.
2. Go to INSERT > Drop Cap.
3. Select the drop cap option you want.
  - To create a drop cap that fits within your paragraph, select **Dropped**.
  - To create a drop cap that is in the **margin**, outside of your paragraph, select In margin

### **3. PAGE FORMATTING**

#### **1. PAGE SETUP - PAGE LAYOUT**

Page setup lets you specify the size of the **margins**, **paper size**, **paper source** and **layout**.

##### **a. Page Margins**

The area between the main content of a page and the page edges. Define where a line of text begins and ends.

##### **Setting Margins -**

1. Select Page Layout > Margins > Custom Margins.
2. Enter the values for the left, right, top and bottom margin in the respective boxes
3. Confirm your selection- OK

##### **b. Specify Page Orientation –**

Positioning of the page in relation to the text

##### **i. Portrait**

Text and graphics are printed with the longest side vertically upright

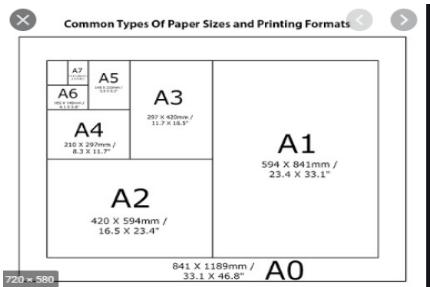
##### **ii. Landscape**

Text and graphics are placed with the longest side of the page placed horizontally and the lines of text printed parallel.

##### **c. Setting the paper size**

By default the paper size is either **letter** or **A4** paper and has dimensions of 210 x297 mm

1. Select the Page Layout tab.
2. Click the Size command, and a drop-down menu will appear. The current page size is highlighted. Changing the page size.
3. Click the size option you want. The page size of the document changes.



## 2. HEADERS AND FOOTERS

- A **header** is text that is added to the top margin of every page such as a document title or page number.
  - A **Footer** is a text that is added at the bottom margin of every page
- Follow these steps to add or edit headers and footers in the document.
1. Select **Insert > Header and Footer** subtask menu on the main tab bar. Click on the Header or Footer option as per the requirement
  2. On selecting **Header** option, header toolbar will appear and the top of the page will be highlighted.
  3. Type the heading in the **Header** box. You may use many of the standard text formatting options such as font face, size, bold, italics, etc.

## 3. PAGE NUMBERS

The number of the specific page in a document.

Use these steps to add page numbers to a document as shown in figure.

1. Select Insert > Page Number, and then choose the location and style you want.
2. If you don't want a page number to appear on the first page, select Different First Page.
3. If you want numbering to start with 1 on the second page, go to Page Number > Format Page Numbers, and set Start at to 0.

## 4. SECTION AND PAGE BREAK

### (a) Section Break

**Used to identify where a section, a column or a page ends and the beginning of the next.**

This allows the user to apply more than one paragraph or page format in the same document especially when it comes to page layout, size, etc

1. Position the text cursor in the document where the break is to be inserted
2. Click insert then break
3. From the break dialog box select the type of section break to insert
4. Click ok

### (b) Page Break

**Used to identify the end of one page and the beginning of the next.**

Normally word automatically inserts a new page after the current one is full. However if there is need to start a new one use page break.

1. Position the pointer where the break is to be inserted
2. Click insert then break
3. From the break dialog box
4. Click page break then ok.

## 5. TABS AND LEADERS

Tab stops (A location on the horizontal ruler that indicates how far to indent text or where to begin a column of text.) enable you to line up text to the left, right, center, or to a decimal character or bar character. You can also automatically insert specific characters

before the tabs known as Leader (A solid, dotted, or dashed line that is used in a table of contents and that fills the space used by a tab character). A leader is a repeated pattern such as a series of dots or dashes between the tab and the preceding text

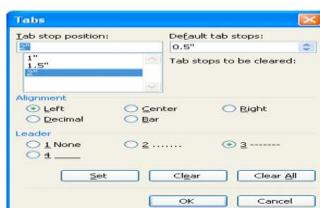
#### To set a tab stop with leader characters:

1. Summon the Paragraph dialog box.
2. In the Paragraph dialog box, click the Tabs button.
3. Type the tab stop position in the Tab Stop position box.
4. Choose the type of tab stop from the Alignment area
5. Click the Set button.

The Set button — not the OK button — is what creates the tab stop. After you click Set, your tab stop is placed on the list below the Tab Stop Position dialog box.

6. Continue setting tabs. Repeat Steps 3 through 5 for as many tabs as you need to set.

7. Click OK.  
The tabs you selected you can see mouse.



set affect the current paragraph or a group of paragraphs. If the Ruler is visible, the tabs and adjust them by using the

## 6. COLUMNS

- **Columns control the flow of text.** Text columns enable the creation of news letters glossary, scripts and inventory list.
- Word provides three types of text columns.

### i. Newspaper columns

Useful for a document such as newsletter or magazine where the text flows automatically up and down to the next column on a page. Text flow within the column can be terminated by turning off the column.

### ii. Parallel column

Text moves across the columns for documents such as script or inventory list. One of the columns may spill over into the next page while the other do not.

### iii. Parallel with block protection

Text is protected from being split by a page break. If one column extends beyond the page the full block will be moved to the next page.

#### To create column

1. Position your cursor where you would like to insert the Columns
2. Open the Page Layout ribbon
3. In the Page Setup section, click Columns
4. From the dropdown menu, select the number of columns you'd like to insert
5. Word will automatically insert the columns in your document.

#### To insert a column break, follow these steps:

Position your cursor where you would like to insert the column Break

1. Open the Page Layout ribbon
2. In the Page Setup section, click Breaks
3. From the dropdown menu, select column

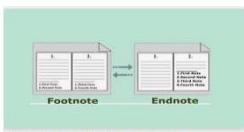
Any text typed will begin in the next column. If there is already text following the cursor, it will be moved to the next column

## 7. FOOTNOTES AND ENDNOTES

Foot notes and Endnotes are used in large documents to explain, comment on, or provide references for text in a document.

- **Footnotes** - Appear at the bottom of the a page.

- **Endnotes** - Appear at the end of a section or the document



### To insert a footnote or endnote

1. On the Insert menu, point to Reference, and then click Footnote. A dialog box is displayed
2. In the location section, click Footnotes or Endnotes and specify the location of the footnotes or end notes
3. In the Format section, specify the number type, start and continuity
4. Click Insert

## TABLES

- A table is made up of rows and columns of cells that you can fill with text and graphics.
- Tables are often used to organize and present information in a more analytical way
- You can use tables to align numbers in columns, and then sort and perform calculations on them.

### Creating a new table

You can create a table by either using the Insert table command for the Draw table tool which resembles a pencil.

- Place the cursor on the page where you want the new table
- Click the **Insert** Tab of the Ribbon
- Click the **Tables** Button on the Tables Group. You can create a table one of four ways:
- Highlight the number of row and columns
- Click **Insert Table** and enter the number of rows and columns
- Click the **Draw Table**, create your table by clicking and entering the rows and columns
- Click **Quick Tables** and choose a table

### Using Table drawing tool

1. Click table menu, then draw table or simply click Draw table button from standard toolbar. The mouse pointer changes to a pencil symbol
2. Drag the pointer to draw the outline of the table
3. Fill in the table with rows and columns by dragging the pointer, as you would draw using an ordinary pencil.

### Formatting and Editing Tables

#### a. Inserting rows and columns

1. Place the cursor where you want to insert a row or row
2. Click table, point insert then click Row above or Row below or Column to left or Column to right

#### b. Deleting rows and columns

1. Selecting the rows or columns to be deleted
2. From table menu , point Delete , then Columns, Rows or Cells

#### c. Merging Rows and Columns

Combining more than one cell in a table.

1. Select cells to be merged
2. From table click merge cells

#### d. Splitting Cells in a Table

Subdividing a cell or cells into more cells.

1. Select cells to be split
2. From table, click split cells. A dialog box appears that lets you specify the number of rows and columns that the selected cells will be split.

#### e. **Formatting Table Borders and Shading cells**

Word provides features that let you choose border style and shading.

1. From table menu, click table auto-Format.
2. In the format list box, select the format you want. **NB** the format you choose applies to borders, shading, font and color.
3. Click ok to apply the effect.

#### f. **Performing Arithmetic Calculations in a Table**

It's possible to perform arithmetic calculation in a table.

1. Click the cell in which you want the result to be placed
2. From the table menu, click Formula. A formula dialog box is displayed
3. Type the formula you want or select from the pasts function box.  
Eg =sum (Above)
4. Click Ok

### **INSERTING GRAPHICS**

There are two basic types of graphics that you can use to enhance your Microsoft Word documents: Drawing Objects and Pictures.

#### **Drawing objects include:-**

- Auto shapes,
- Curves,
- Lines,
- WordArt

These objects are part of your Word document. Use the Drawing toolbar to change and enhance these objects with colors, patterns, borders, and other effects.

#### **Drawing an object using Ms. Word drawing tools**

Ms Word provides the user with basic drawing tools such as polygons, lines, a circle, stars and banner, callouts and many others.

1. Click on the appropriate shape button.
2. Place the pointer where you want to draw that shape and drag to the required size

**Pictures** - Graphics that were created from another file.

They include:-

- Bitmaps,
- Scanned pictures
- Photographs,
- Clip art.

You can change and enhance pictures by using the options on the

#### **Inserting Graphical Objects**

You can insert a graphical object such as a picture a clip art or drawing on to your document.

### **MAIL MERGE DOCUMENT**

#### **MAIL MERGE**

A tool which allows you to create form letters, mailing labels and envelopes by linking a main document to a set of data source and send it to different people or organization.

It is the process of combining a list of data with a template.

Mail Merge requires three types of documents:

a. **Main Document:**

In a Mail merge operation, the personalized document (such as, a standard letter, or mailing label). It is the document containing the text and graphics that stay the same for each version of the merged document.

b. **Data Source:**

A file that contains the names and addresses or any other information that varies with each version of a mail-merge document

c. **Merge Document:**

When you merge the main document with data source, a third document called Merge document will be produced.

The merge document can be merged to the screen to view letters along with addresses; or directly to the printer to print the letters along with addresses.

## **MAIL MERGE PROCEDURE.**

The mail merge process involves six steps of creating a merged document

**To use Mail Merge:**

1. Click the Mailings tab.
2. Click the Start Mail Merge command.
3. Select Step by Step Mail Merge Wizard.

The **Mail Merge task pane** appears on the right of your screen. Note there are 6 steps.

**Step 1**

1. Click **Letters** for the document type
2. Click **Next: Starting document**

**Step 2**

1. Click **Use the current document** under **Select starting document**
2. Click **Next: Select recipients**

**Step 3**

The recipients can come from either an existing Excel file, or Access table or you can create a new list.

**If Using an Existing List:**

1. Click **Use an existing list** under **Select recipients**
2. Click **Browse**
3. Select the file
4. Click **Open** Mail Merge Recipients opens showing the names and addresses from your file
5. Click **OK**
6. Click **Next: Write your letter**

**To Type a New List:**

1. Click **Type a new list** under **Select recipients**
2. Click **Create**
3. Click **Customize Columns** to modify the list of fields
4. Delete any unnecessary field names and/or add new ones
5. Click **OK**
6. Type records here hitting **TAB** to advance to the next field and to continue adding new records
7. Click **OK**
8. Click **Save**  
The recipients list will be saved as a separate file as a Microsoft Access file type. It is saved in the **My Data Sources** folder. It is recommended to save the file in this folder.
9. Click **Next: Write your letter**

#### **Step 4**

1. Click the location in your document where the data from the mail merge fields need to be inserted
2. Click **Address block...**
3. Select the address elements you want included
4. Click **OK**  
The field name will look like this: <<**Address Block**>>  
The Address block will insert the following fields including any necessary punctuation: First Name, Last Name, Company, Address 1, Address 2, City, State, Postal Code. If your fields do not match the ones listed above or you have additional fields, click **More items...**
5. Click on the field from the list
6. Click **Insert**
7. Click **Close**  
The field name will look like this - «**First Name**»
8. Repeat this step until all fields have been inserted.  
Remember to put spaces and punctuation where needed.
9. Click **Next: Preview your letters**

#### **Step 5**

Here is where you can preview the first page with the fields filled in.

Click **Next: Complete the merge**

#### **Step 6**

##### **To Complete the Merge:**

1. Click **Print** to send directly to the printer
2. Click **Edit individual letters** to create a new file  
Remember to save your document as you go. The next time you open your document and click on **Step by Step Mail Merge**, the data file will be attached.

### **USING STYLE**

A predefined set of formats that can be applied to a block of text together at once.

##### **To apply a style set**

1. Click Change Styles command on the Ribbon. A drop-down menu will appear.
2. From the drop-down menu, select Style Set. Selecting a Style Set.
3. Select the Style Set you want and the change will be reflected in the entire document.  
Elegant Style Set. Formal Style Set.

### **PROTECTING A DOCUMENT WITH PASSWORD**

A password is a combination of characters that prevents other users from opening and changing a document without permission. The only person who knows the password can open the document or edit it. Since a password is case sensitive avoid mixed case, preferably use lower case

##### **Password protecting a Word document**

1. Click the File tab.
2. Click Info.
3. Click Protect Document, and then click Encrypt with Password.
4. In the Encrypt Document box, type a password, and then click OK.
5. In the Confirm Password box, type the password again, and then click OK.

### **PRINTING**

To produce hardcopies of your document. This cannot be accomplished without a printer. The choice of a printer depends on the quality of hardcopy desired.

##### **Print Preview**

Before you print, it is very important that you preview your document to confirm that no details are outside the printable area and that the document layout is ok.

### **Using Print Preview**

To view your documents before printing proceed:-

1. From file menu, select print preview.
2. Click the close button or Esc key to return to your document

### **To Print**

1. Click File > Print.
2. Choose the number of copies, and any other options you want, and click the Print button.



## Lesson 4. INTRODUCTION TO SPREADSHEET

### SPREADSHEET

Computer application software used to calculate, organize and analyze numeric data.

- It arranges data and formulas in a matrix of cells.
- It has a whole range of business uses including **what if functions** (consideration).
- It helps to substitute the paper worksheets in the offices.

#### Primary benefits

1. Ease of use
2. Reusable
3. Accurate
4. Legibility - the quality of being clear enough to be read

#### Advantages of spreadsheet

1. Utilizes the powerful aspects of a computer like **speed, accuracy** and **efficiency** to enable the user quickly accomplish task.
2. Offers a **large virtual sheet** for data entry and manipulation
3. Utilizes the **large storage space** on computer storage devices to save and retrieve documents
4. Produce **neat work** than on traditional paper
5. Better document **formatting capabilities**
6. Have **inbuilt formulae** called function that enable the user to quickly manipulate mathematical data
7. Automatically adjust the result of a formula ie **automatic recalculations**

#### Uses

1. Compute a budget.
2. Develop an amortization schedule.
3. Calculate the return on an investment.
4. Work out payroll processing.
5. Research data analysis.
6. Expenses report.
7. Profit /Loss statement calculations
8. Loan and mortgage payment calculation.
9. Income tax preparation.
10. Project cost estimation.
11. Sales trend analysis.
12. Marginal costing and break-even analysis.
13. Determination of the appropriate unit price for a new product

#### Example of Spreadsheet

1. Ms Excel
2. Lotus 123
3. Quattro Pro
4. Systematics
5. Multiplan
6. VP Planner
7. Vis Calc

## Ms Excel

- A software program created by Microsoft that uses spreadsheets to organize numbers and data with formulas and functions.
- It presents tables of values arranged in rows and columns that can be manipulated mathematically using both basic and complex arithmetic operations and functions.

It enables user to create an electronic worksheet that performs complex calculations on a computer.

## COMPONENTS

A spreadsheet has three components:-

a. **Worksheet** - Workspace

A rectangular grid made up of rows and columns.

b. **Database**

A feature incorporated in Ms Excel but belongs to database management software.

It enables the user to perform functions such as sort, filter, subtotaling and consolidation on worksheet data.

c. **Graphs** -

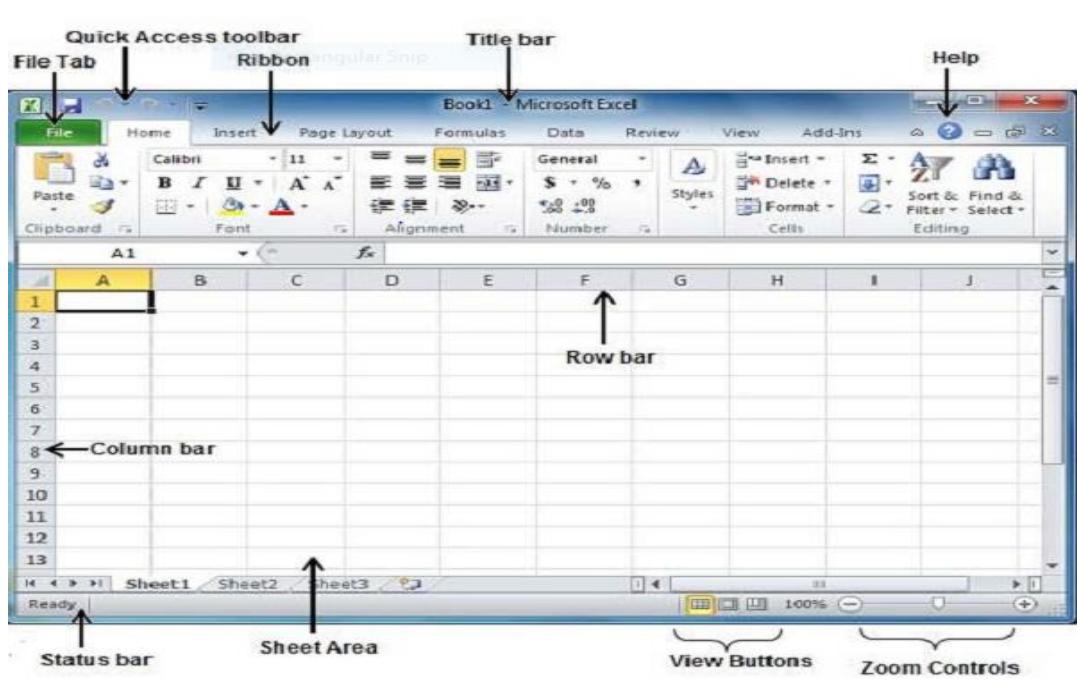
Visual representation of a worksheet data on a chart.

## MS EXCEL APPLICATION WINDOW

### LAUNCH MS EXCEL:

We can start excel in many ways:

Starts Button → All Programs → Microsoft office → Microsoft Excel



- **Title bar:**  
Contains the name of the current running program and the default name of the **workbook Book1**
- **Window Control Buttons**
  - a. **Minimize Button** - Reduces a window to a button on the taskbar.
  - b. **Maximize button** stretches the window to cover the entire desktop
  - c. **Restore button** restores a window back to its original size.
  - d. **Close button** – Closes the running application window
- **The Ribbon tabs**  
A command bar that organizes a program's features into a series of tabs at the top of a window. Eg Home tab
- **Name box:**  
Displays the **cell address** of the active cell. Column letter followed by the row number. Ex: B6
- **Formula bar** - Displays the contents of the active cell. You can also edit your formula
- **Worksheet area:** A work space made up of rows and columns. Columns are labelled with the alphabets **A-Z** from left to right while row are **numbered** from top to bottom. It contains **65,536 rows and 256 columns**.
- **A cell** - Cell: is an interconnection between a row and a column eg B2
- **A range** - A group of cells.
- **Sheet tabs:** - Appear above the status bar displaying the names of the worksheets.
- **Status bar:**  
Displays brief information about features within the worksheet area.

#### **Workbook** – an Ms Excel file

A files in which worksheets related to a project are held. By default, Excel workbook contains 3 worksheets designated as **sheet 1, sheet 2, and sheet 3**.

The extension name of excel workbook is **.xls**.

#### **CREATING A NEW WORKBOOK:**

When you first start Ms Excel you already have a new empty workbook with three worksheets, you can start entering data into the cell.

#### **Categories of data input in Ms Excel**

A spreadsheet recognizes the following categories of input:-

- a. **Numeric** - Numeric content or values that can be manipulated.
- b. **Labels/Narrative description.**- Alphanumeric characters or text that describes the content of rows or columns
- c. **Formulas** Mathematical expression.,
- d. **Functions** - Predefined or in built formula.

## Data Entry Technique

There are two methods which can be used to enter data into cells :-

### Procedure to enter Data into Cell

1. Select the cell
2. Type in data
3. Press enter key or Esc to cancel

#### (a) Entering the Same Values into Several Cells At Once

1. Select the cells into which you want to enter data. The selected cells can be adjacent or non-adjacent
2. Type the data
3. Press CTRL + ENTER

The data will be entered into all of the selected cells

- Numbers are automatically right aligned
- Text is automatically left aligned

#### (b) Enter text

Text is any set of characters entered in a cell that Ms Excel does not interpret as a number, formula, date, time, logical value or error value .

To enter text selects a cell and type the text. A cell can hold up to 255 characters. You can format the characters within a cell individually

#### N/B

- You can **wrap** the text inside of cells by choosing the cells command from the format menu, selecting the alignment tab, and then selecting the wrap text check box.
- To enter a number or formula as text, first format the cell as text or type an **Apostrophe** before the entry

#### (c ) Entering numeric values in cells

1. Select the cell or cell range you want to enter a number
2. Type the number
3. Press enter

#### (d) Entering numeric values with fixed decimal places

1. Open Excel to your current worksheet.
2. Select the cells you want to format.
3. On the Home tab, select Increase Decimal or Decrease Decimal to show more or fewer digits after the decimal point. ...
4. Your new decimal places setting are now in effect.

#### Tip:

If you are entering **currencies** you can use the **currency style** button to form the cells either before or after typing the entries.

#### (e) Entering date and time

1. Select the cell into which you want to enter a date or time
2. Type the date or time. You can use either a slash or hyphen when you enter dates. Capitalization is ignored
3. Press enter

**Shortcut** CTRL + (Enter today's date) Or CTRL + SHIFT + (Enter the current time)

**N/B :** Ms Excel automatically assigns date and time formats. You can change the format or a custom date or time of your own

1. Select any empty cell and type today's date  
**Syntax** [Day/Month/Year] e.g. 1/4/95
2. Selected the adjacent cell and enter the current time  
**Syntax** [Hours: Minutes] e.g. 1:22 pm

## SAVING A WORKSHEET

Once you have created a worksheet you need to keep saving your workbook such that it's permanently stored.

The process of saving and opening files in all Microsoft Office packages is similar.

- Click File –
- Save As from the menu . The Save As dialog box pops up
- Select the drive and the directory (folder) in which to save your work
- Enter the filename in the filename textbox
- Click Save

## Opening an Existing Worksheet

- Start Microsoft workbook
- From the menu, select File – Open or
- Select the file from the open dialog box and
- click open button

## EDITING /FORMATTING a WORKSHEET

Editing a worksheet involves deleting, copying, moving, finding and replacing as well as checking spelling.

### 1. Navigation and Worksheet Manipulation

Moving around the cells and worksheet.

To move cursor on worksheet

- **Cursor movement keys.** - You can move from one cell to another
- **GOTO (F5 key)** - To move quickly to a cell
- **Enter** - To move through a range from top to bottom
- **Shift + Enter**- To move from bottom to top
- **Tab** - To move from left to right
- **Shift + Tab** - To move from right to left

You can active a worksheet by clicking on its tab at the bottom of the worksheet.

### 2. Selecting Cell Content

- The easiest way to edit the contents of a cell is to select the cell and then retype the entry. The new entry replaces the old contents.
- Alternatively, to edit the data in a cell, press F2.

**Ex:** Suppose you find that in the cell A6, you have entered the marks as 78 instead of 87, then click on A6 and type 87 then press enter

**You can also edit part of the data in a cell:**

1. Double click the cell you want to edit. The insertion point appears within the cell.
2. Delete the part of the data that you do not wish to keep.
3. Retype the data & press enter.

#### (b) Using the formula bar

You can edit the content of a cell by using the formula bar. Click on the ell to display its content and edit from formula bar and then press enter.

### 3. Copying and Moving Text

#### (a) Copy/Cut and Paste Methods

To copy or move text from one location to another within the worksheet. Copying and moving data saves you from retyping the same data into other cells

- Select the cell you wish to copy or move.
- Select Cut or copy command
- Click on a cell to paste or move data to
- Click on paste command or Press CTRL+V
- Press enter

#### (b) Drag and Drop Method

- Select the cells you wish copy or move.
- Position the pointer on the edge of the selected cells.
- To **copy** drags the cells, while holding CTRL key down to the location and release the mouse.  
Or
- To **move** drag the cells to the new location and release the mouse,

### 4. Inserting Cells Rows & Columns:

In Excel, rows & columns can be inserted or deleted without affecting the surrounding rows, columns & cells.

#### To insert a row,

1. Right click on the row above which you want to insert the new row.
2. On the Insert menu, click rows.
3. Ok

A row is inserted and the existing row moves down after the new row.

#### To insert a column,

1. Rest the mouse pointer over the column before which you want to insert the new Column.
2. On the Insert menu, click columns.
3. Ok

### 5. Deleting Cells Rows & Columns

- Select the cell or range of cells to delete
- Right click the selection and choose delete
- If you are deleting cells choose either **shift cells left** or **shift cells up** to move existing cells in the direction that you wish. If you want to delete rows or columns choose **entire row or column**
- Click Ok to finish.

If you mind when you have already pressed ENTER you can use the **UNDO** command to undo the most recent edit.

#### N/B

If your worksheet had formulas that rely on the cell locations and you move those cells then you will create errors and your formulas may not work properly.

### 6. Cancelling Or Undoing An Entry

There are two methods of canceling an entry

#### 1. Using the ESC key

Press or cancel.

**N/B** Use this method to cancel an entry before you press Enter

#### 2. Using the Undoing

Shortcut - Undo button – CTRL + Z

## 7. Worksheet

### i. To delete worksheet

Right click on the sheet tab. A pop up menu appears then select delete  
Or

To delete an existing worksheet click on delete option. A message appears warning you that you will lose all data contained in the worksheet. Click Ok to finish

### ii. To insert a new worksheet

Click on the insert menu. Select worksheet in the insert dialog box that appears. Click Ok to finish.

### iii. To rename a worksheet

Click on rename option. Type the new name over the old. Press enter key to finish.

### iv. To Copy or move a worksheet (reordering)

Click on the sheet tab and drag to the new location.

a. **To copy** - To copy hold CTRL key as you drag

b. **To move** - To move hold the SHIFT key as you drag

## USING FILL AND AUTOFILL FEATURES

AutoFill is a feature used to create a series of incremental /detrimental values of fixed values on a worksheet by dragging the fill handle with the mouse. There are many different types of series but the most common is the Time series

### a. Time series

A Time series can include increment of **days**, **weeks** or **months** that you specify or it can include repeating sequences such as **weekdays**, **month names** or **quarters**

#### Initial Selection

9:00  
Mon  
Monday  
Jan  
Jan, Apr  
Jan-96, Apr-96  
1994, 1995

#### Extended Growth Series

10:00,11:00, 12:00  
Tue, Wed, Thu  
Tuesday, Wednesday  
Feb, Mar  
Jul, Oct, Jan  
Jan-96,Oct-96  
1996,1997,1998

### b. Linear /Growth Series

Ms Excel increases/ decreases values by a constant value that is based on the selected starting value.

#### Initial Selection Extended Growth Series

1,2  
1,3  
100,95

3,4,5  
5,7,9  
90,85

### c. Growth Series

In a growth series, the starting value is multiplied by the step value to get the next value in the series. The resulting product and each subsequent product are then multiplied by the step value.

## FORMATTING WORKSHEET

Changing the style or appearance of data in a worksheet. Formatting makes a worksheet more visually appealing.

In most cases we apply formatting features to numbers, **alignment**, **font**, **borders**, and **patterns** or **shading**

### Formatting a worksheet and Cells

You format a worksheet to improve the readability of a worksheet by applying different types of formatting.

#### a. Fill Color /Shading and patterns

To add or change the background color or pattern of cells.

#### b. Border - A line around a cell or a block of cells in Excel.

#### c. Merge cells - Combines two or more cells to create a new, larger cell

#### d. Freeze pane - Stop some rows or columns from scrolling

##### To freeze pane

1. For the top horizontal pane, select the row below where you want the split to appear
2. Press CTRL key to select a column to the right of the pane
3. From Windows menu, click Freeze Pane.

##### To unfreeze

- Windows
- unfreeze

#### e. Split panes

Split worksheet in to two or more panes, different areas of the worksheet can be viewed simultaneously

#### f. Cell content direction - To rotate text in a variety of ways.

#### g. Hide and unhide cells

If your worksheet is too large to fit In the screen, you may decide to hide some part and leave only what you want to see at that particular moment

##### To hide rows or column

1. Highlight the rows or columns to hide
2. On Format menu, point to Row or Column, then click Hide

##### To unhide rows or Columns

1. Highlight a row or column on each side of the hidden rows or columns while pressing the Shift key
2. ON Format menu, point to Row or Column, then click Unhide

#### j. Adjusting Row height & Column width:

By default, every row is 12.75 points high and every column is 8.43 characters wide. As you fill it with data, however you have to change the size of rows & columns so that it is fitted to the length of the data.

##### To Resize a column or Row:

1. Rest the mouse pointer on the column boundary on the right side.
2. The shape of the mouse pointer changes to
3. Drag the boundary until the required width is obtained.

## 2. Formatting Data in worksheet

### a. Alignment

Text flows in relation to the cells. There are four main alignments: left, right, center, and justified. Left-aligned text is text that is aligned with a left edge. Right-aligned text is text that is aligned with a right edge.

### b. Font

Most typefaces can be classified into one of four basic groups: those with **Serifs**, those without **Serifs**, **Scripts** and **Decorative styles**.

### c. Font style .

#### i. Bold

To emphasizing text by **making** it darker than the other text.

#### ii. Underline -

Placing a line at the base or bottom of a word.

#### iv. Italic

To make character to slant forward.

### d. Font size – Size of characters

### e. Wrap text

Data in the cell wraps to fit the column width, so if you change the column width, data wrapping adjusts automatically.

### Formatting Numbers:

Formatting data in a worksheet includes

- Changing the number of decimal places,
- Displaying fractions
- Adding currency symbols
- Format number as text

### Format Date/Time

### f. Inserting Page breaks:

To set the page breaks within the worksheet, select the row you want to appear just below the page break by clicking the row's label.

Then choose **Insert □□page break** from the Menu bar. When you attempt to print a worksheet Excel automatically inserts page breaks view.

The page breaks are shown in dasher lines. If the automatic allocation of page breaks does not satisfy with your requirements, you can add the page breaks in the required space.

**Step 1:** select a cell above which the page break is needed. After that, select the full row until the data in the sheet exists.

**Step 2:** select **insert □□page break**

## FORMULAS:

A formula is a sequence of values, cell references, name function or operators that is contained in a cell and produces a new value from existing values.

Formulas are used to perform Mathematical, Statistical & date/time operations on a single value or a set of values by using operators.

Formula is placed in a cell in the same way as text or number. In Ms Excel, a formula starts with an equal (**=**) sign and should be followed by the operation to be performed. We can use any number of operators in a single formula. MS- Excel evaluates the formula according to the order of precedence of the operators.

The cells in which formulas are stored, display the result of the calculation and not the formula.

### **Entering Formulas**

A formula can have any or all of the following elements

- Must begin with the 'equal to' = sign.
- Mathematical operators, such as + (for addition), – (for subtraction), \* (for multiplication) and / (for division) and logical operators such as < (less than) or > (greater than) etc.
- References of cell (including named ranges and cells)
- Text or Values
- Functions related to the worksheets, for example SUM or AVERAGE

The current cell in which you have entered a formula will display the result after the formula is completely entered. Also, when you select or click on a cell which is having some formula, the formula will appear in the formula bar.

In Excel, the formulas are available in the Formulas Tab. If you click on the Formulas tab, you can see the corresponding ribbon display with available formulas, as shown in Figure 4.20

### **Using operators in Formulas**

Various types of operators can be included in Ms Excel formulas.

The following table shows the name and description of these operators

#### **(a) Mathematical Operators**

<b>Symbol</b>	<b>Description</b>
( )	Bracket
^	Exponentiation
*	Multiplication,
/	Division
+	Addition,
-	Subtraction
&	Concatenation

#### **Order of Operations**

The operators used in your formula determines the order in which arithmetic operation are performed.

The order of precedence is as follows ^,\*,/,+,-. Parenthesis can be used to override the order of precedence e.g. in the expression **(B1+B2)\*B3**.

The contents of the bracket will be evaluated first before the multiplication takes place

#### **(b) Comparison Operators**

Compare two values and produces the logical value True or False

<b>Symbol</b>	<b>Description</b>
=	Equal
>	Greater than
<	Less than
>=	Greater than or Equal to
<=	Less than or Equal to

&lt; &gt;

Not equal to

### Text Operator

Join two or more text value into a single combined text value & connects or concatenates two text values to produce one continuous text value. If one of the value is a cell reference and the referenced cell containing a formula this operator joins the value produced by the formula in the referenced cell as a text value.

### Formulae That Produces Error Values

Ms excel displays an error value in a cell when it can't calculate the formula for that cell properly. Values always begin with a number sign #

Error	Description	Solution
#DIV/0!	Division by zero or using a blank cell	Change the cell reference one that contains a value or enter a value non zero in the cell used as a divisor
#N/A	Reference to a value that is not available to a function or formula	Make use of a valid argument or the correct type of value
#NAME?	The formula or function uses a name that Excel does not recognize	Correct the spelling of the name
#NUL!	The formula referenced an invalid intersection of cells	To refer to two areas that don't intersect, use a colon
#NUM!	Due to use of invalid numeric values	Use numeric arguments in a formula or function.
#VALUE!	The formula or function uses incorrect argument or operator	Make sure that the cell that is referenced by the formula contain values
#REF!	Due to invalid cell referencing as a result of deleting cells that are referenced.	Change the reference in the formulae or restore the deleted cells

### #####

Produces a result that is too long to fit in the cell. Increase the cell width

### Underlying values Vs Displayed Values

Ms Excel stores data as you enter it but displays it according to formatting rules applied on the cell. As an example type in the following

In Cell	Type	Displayed Value
B1	123456789.3201	123456789
B2	\$4500.232	\$4500.232
B3	2.14554E10	2.15E+10

**N/B** The displayed values sometimes may differ from the underlying values .

Ms excel always uses the underlying values when calculating your formulas unless you tell it otherwise

### Naming ranges

You can name a cell or a range of cells to give intelligent names

	A	B	C	D
1	<b>Year</b>	<b>Income</b>	<b>Expenses</b>	<b>Profit</b>
2				

The whole of **B** is named income while the whole of column **C** is named expenses.

You can calculate profit (which is column **B** – column **C**) by typing **Income – Expenses** at cell **D2** and coping the formula downwards.

The easiest way to name a range is make the selection and type over (replace the old name) the new name on the name list box .

You can also use the :-Insert -> Name -> Define to display the names dialog box where you can then select the range and add a name for it.

## CELL REFERENCE

A reference identifies a cell or group of cells on a worksheet. References tell Ms Excel which cells to look into to find values in a formula.

### 1. Relative Cell Reference

Cell co-ordinates adjust automatically when a formula is copied from one place to another

### 2. Absolute Cells References

The cells reference is made to a specific address and does not change even if the formula is copied to another cell.

### 3. Mixed Reference

When a formula containing the reference **A\$1** is copied to another location could as well change to become **B** or **C** . However the row co-ordinate do not adjust. The reverse is true for the mixed address **\$A1**

## FUNCTIONS:

Functions are the inbuilt formulas used to perform calculations in Excel on specific values called the arguments.

Structure of a formula utilizing a function begins with the equal to sign = followed by the name of the function, and then the arguments.

Functions which are used frequently such as SUM function are made available in the form of buttons in the Home tab.

## Entering Functions in a Worksheet

There are two ways by which you can enter functions in a worksheet:

### 1. Direct method:

In this method, function name and required arguments are entered directly in the formula bar.

### 2. By inserting a function:

Insert function button (**fx**) is available under the Formulas tab

### Auto Sum Function

The sum of cell values can also be done with the help of AutoSum function.

Following steps explains how to do that.

- Click on the cell F3
- Select the Formulas tab
- Click AutoSum from the function library group.
- Select Sum
- Press Enter

Alternatively, you can write = **SUM(B3:E3)** in the Cell F3 to get the sum of the Physics, Chemistry, Maths and English marks.

### Note :

To specify a range of cells, a colon (:) is used between the first & last cell addresses.

### Example

: =Average(B1: B10) - Calculates the average of the values in the cells B1 to B10

### Mathematical functions with syntax and purpose:

- i) **Sum (range of cells)** – gives the sum of the values in a specified range
- ii) **Abs (number)** - gives the absolute value of a number =ABS(A10:B10)
- iii) **Fact( number)** - gives the factorial of a number
- iv) **Sqrt(number)** - gives the square root of a number
- v) **Log(number)** - gives the logarithm of a number

### Statistical functions with syntax and purpose:

- i) **Average ( range of cells)** - calculates the average values in a specified range
- ii) **Stdev(range of cells)** - calculates the standard deviation of the given data
- iii) **Mean( range of cells)** - calculates the mean of the given data
- iv) **Max( range of cells)** - gives the maximum value within the range specified
- v) **Count( )** - counts how many numbers are there in the list of arguments

### 5. CountIF - Count cells in a range that meet a single condition.

#### SUMIF function

Name	State	Sales	Criteria	Result
Jim	MN	\$100	Name = Jim	\$200
Sarah	CA	\$125	State = CA	\$375
Jane	GA	\$200	Sales > \$100	\$1,050
Steve	CA	\$50		
Kelly	WA	\$125		
Walter	OR	\$75		
Brian	OR	\$100		
Jamie	CA	\$200		
Ayako	NV	\$250		
Jim	IA	\$100		
Joan	WA	\$150		



## DATA ANALYSIS IN MS EXCEL

### WORKSHEET DATABASE MANAGEMENT

In spread sheets, you can use a worksheet list as a database. A list is a series of rows that contains related data

#### 1. Sorting

Arrange data in ascending descending order

1. Select the range or click a cell in the list you want to sort
2. On the Data menu, click Sort . Sort dialog box is displayed
3. In the sort by and then by boxes, select the columns you want to use as the sort fields
4. Select sort order either ascending or descending then click Ok.

## **2. Filtering**

### **i. Auto- Filter**

Filter is to display records that meet certain criteria.

1. Select a cell in the list to be filtered
2. On the Data menu point to filter then choose Auto Filter
3. Click the arrow displayed in the column header Select filter criteria

### **i. Advanced Filter**

To filter a list using more complex criteria. You type a criteria range on your worksheet. Select your data. Choose the filter command from the data menu and choose Advanced Filter command. Advanced filter dialog box appears.

#### **Specify**

- The range that contains the list you want filtered. Ms Excel enters the reference to the whole list for you
- Specify the range that contains your criteria. Make sure you include the criteria labels
- The cell where the filtered data will be copied

When you choose the OK button Ms Excel temporary hides all rows that do not meet the specified criteria

## **3. Subtotaling**

Subtotaling is used to summaries a worksheet list to display grouped subtotal and a grand total. The list is grouped using a preferred filed

#### **To create subtotal**

1. Sort the data in ascending or descending order
3. In At each change in box, select the field to use for grouping
4. In the Use Function box select a function you want to use
5. In the Add subtotal to box , check the columns that contains values you want to subtotal
6. Click Ok

## **4. Pivot Table**

A pivot table is an interactive table that quickly summarizes or crosses tabulates large amount of data. Its rows and columns can be rotated so as to view different summaries of the source data, filter the data by displaying different pages or display the details for areas of interest.

The pivot table is a table that summarizes data using a summary function that is specified by the user such as sum, count, or average

## **5. Seek**

Often you know the result you want a formula to return but you don't know the input value the formula needs to reach that result. To solve such a formula you can use goal seek. Ms Excel varies the values in a cell you specify until a formula that dependent on that cell turns the result you want. Goal seek saves you from performing time consuming trial and error analysis.

#### **Use Goal Seek to determine the interest rate**

1. On the Data tab, in the Data Tools group, click What-If Analysis, and then click Goal Seek.
2. In the Set cell box, enter the reference
3. ce for the cell that contains the formula that you want to resolve. ....
4. In the To value box, type the formula result that you want.

## **6. Auditing**

Ms Excel provides a feature that helps you track down problems on your worksheet.

### **Tracer**

Displays a graphic representation of the flow of computations on your worksheet. Tracks data flow by drawing arrows containing the active cell with related on your worksheet. Tracer arrows point in the direction of data flow ie towards the formula.

**Precedent-** Cells that are referred to by a formula in the active cell

**Dependent-** Cells containing formula that refers to other cells

## **CREATING CHART**

### **CHARTS**

A chart is a graphic representation of worksheet data. Values from worksheet cells or data point are displayed as bar, lines, columns, pie slices or other shapes in the chart. Data points (are rows and columns) are grouped into data series, which are distinguished, by different colors or patterns.

### **Advantages of Charts**

1. Show each data category in a frequency distribution.
2. Display relative numbers or proportions of multiple categories.
3. Summarize a large data set in visual form.
4. Clarify trends better than do tables.
5. Estimate key values at a glance.
6. Permit a visual check of the accuracy and reasonableness of calculation

### **Types of charts**

There are various types of charts to help you to display data in different ways as per the need of the viewers

#### **1. Column Charts**

Compare values across categories and analyze the data of the same category on a defined scale.

#### **2. Line Charts**

Used to display continuous data over time with respect to a common scale. Suitable for viewing data trends at equal intervals of time.

#### **3. Pie charts** - Show the relative proportions or contributions to a whole

#### **4. Bar Charts** - Used to show comparisons between individual items..

#### **5. XY (Scatter) charts** - Used to show the relationship among two variables.

### **Creating a Chart:**

To create a chart, first-select the cells containing the data, you want to put into chart and then choose chart type.

### **Create a chart**

1. Select the data for which you want to create a chart.
2. Click on INSERT tab from the ribbon.
3. Click on the Column chart drop down button

## **Protecting a worksheet**

- Password
- Hide cells
- Protect sheet from editing

## **PRINTING A WORKSHEET**

Printing is the act of producing a hardcopy of what is displayed on the computer screen. To print a worksheet properly you have to specify to Ms Excel what and how to print, which cells, number of copies, print orientation, the kind of printer to be used.

### **Print Preview**

A feature provided to enable you to have a good look at a worksheet or chart before it's printed. It's a good idea to use this feature regularly because it helps you reduce the amount of paper wasted in printing draft copies.

- Click the print preview button. The print preview screen appears showing how the worksheet will appear on the printed page.

### **Page setup**

Before you can print you may wish to modify the page setup by clicking on the page setup option.

- A dialog box appears. Activate the sheet option. Notice also that the cells in the print area are confirmed, ignore the \$ sign insert

Make sure those two boxes row and column headings and gridlines are both unchecked i.e. there is no X in either of them. (It's usual to print a worksheet without the row and column headings and gridlines if it's not too large or detailed.)

## **OTHER SETTINGS**

### **Orientation**

Normally worksheets are printed in portrait i.e. vertically down the page. Wide worksheet can be printed in landscape horizontally across the page.

**Paper** - The current paper size is displayed normally A4

**Scaling**- You can adjust the size of the printed area to fit the paper size

**Fit To**- Will adjust the size of the printed area to fit on one or more pages

### **Margin and Alignment**

Now click the margin tab a new set of options is displayed. Click the center horizontal and center vertical boxes. This will centre the printout on the page. Now click the OK button. You are returned to the print dialog box.

### **PRINT**

To print the worksheet, select Print from Office Button. Print dialog box appears with the following:

1. **Print Range** - Select either all pages or a range of pages to print.
2. **Print What** - Select selection of cells highlighted on the worksheet, the active worksheet, or all the worksheets in the entire workbook.
3. **Copies** - Choose the number of copies that should be printed. Check the **Collate** box if the pages should remain in order.
4. Click **OK** to print.



## Lesson 5. INTRODUCTION TO DATABASE MANAGEMENT.

### Objectives

- Definitions
- Uses of databases
- Advantages
- Types of databases
- Database creation

### DATABASE

A collection of related information e.g. customers addresses makes up a database, Information about students in a college, Tracking orders or Maintaining a music collection.

#### Database Management System (DBMS)

- Software designed to store, retrieve, define, and manage data in a database.
- Software for creating and managing databases.

It provides the user with tools to enter, manipulate and retrieve data from a database.

#### Functions of DBMS:-

- a. Adding or Delete records
- b. Update or modify existing records
- c. Organize data for easy **access, retrieval** and **manipulation** of record
- d. Ensure **security** for in the database by safeguarding it against unauthorized access and corruption
- e. **Keep statistics** of data items in a database.

### Component Of A Database

#### (a) DDL – Data Definition Language

A set of commands used to define and manage the structure of a database

#### (b) Data Manipulation Language (DML)

Commands used for adding, deleting, modifying, and retrieving data from a database

#### (c) Control Center

Menu driven user interactive system which gives easy access to the data in the database. It provides a means to work with data.

#### (d) Database Language

Perhaps world's most widely used computer language used for application development. It makes it possible for even a novice programmer to create sophisticated applications.

### Advantages of database

1. **Compactness:** - No need for volume of paper files.
2. **Speed:** - The machine can retrieve and change data much faster than human beings
3. **Less tediousness:** - The tediousness of maintaining file by hand is eliminated
4. **Currency:** - Accurate, up to date information available on demand any time
5. Allow the user to add, delete and modify records more easily
6. It is easy to search and retrieve records
7. Controls data duplication or redundancy.
8. Ensure data security by providing security features such as encryption and password protection
9. It is easy to generate reports that can be used in decision-making

## Disadvantages

### 1. Complexity

Databases can be difficult to use and manage, and may require specialized training ie **database expert to look after design and develop applications**.

### 2. Cost

Database can be expensive to create, maintain, and upgrade. This can include the cost of hardware, software, training, and upgrades.

### 3. Rigidity

Most current DBMS were designed to **manage fixed format record** and their ability to include **text** and **graphics** is limited.

### 4. Scalability

Databases may need help to handle increasing amounts of data, which can be **costly** and **time-consuming**.

### 5. Security

Databases can be vulnerable to data **security risks**, such as unauthorized access, data leaks, and cyber attacks.

### 6. Maintenance

Databases require ongoing **maintenance**, including regular updates, backups, and troubleshooting.

### 7. Operational risks

If a database doesn't meet a business's needs, it can **disrupt daily operations**.

### 8. Performance

Some applications may not run as fast as they would in a file-based system.

### 9. Not beneficial for small businesses

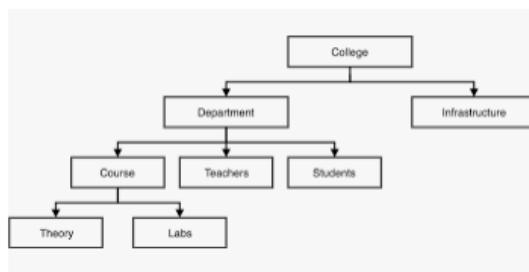
Databases are often designed for large organizations, and may not be the best option for small businesses.

## DATA MODELS

Databases are classified according to the **methodology** used to organize data.

### 1. Hierarchical Database model

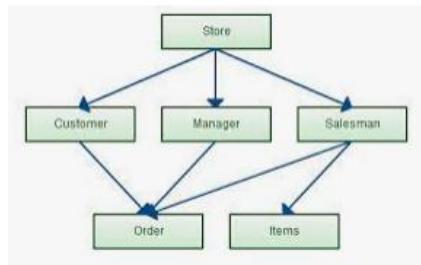
Data items are organized in **a tree like structure**. Data is represented using a parent-child relationship. In Hierarchical DBMS parent may have many children, but children have only one parent.



Database Models in DBMS | Studytonight

### 1. Network Database Model –

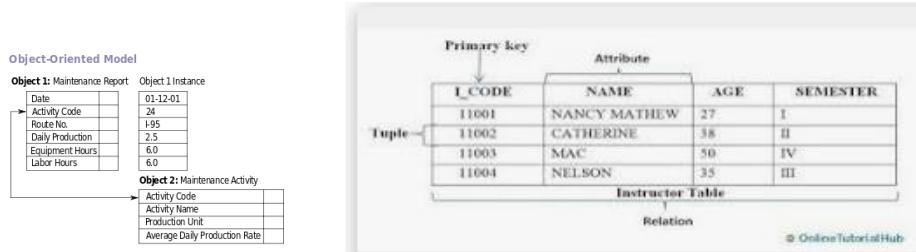
A data model that represent data connections and interactions among different entities, providing a framework for web relationships within a system



Network Model in DBMS | What is Dbms

### 3. Relational database model-

Data items are stored and organized into **table like structure called relations**. Relationships can be created between



4. **Flat Files** - A flat file holds only one set of data and is not any different from the manual files.

### 5. Object-Oriented Model

Both the data and the relationship are contained in a single structure

## Examples of Database Management System Software

- a. FoxPro
- b. FoxBASE
- c. Ms Access
- d. Paradox
- e. Oracle
- f. Dbase IV
- g. Lotus Approach

## MS ACCESS

Ms Access is **relational database software**. Besides being a database manager (a program that can manage your data in a form or table) Ms Access also is a relational (simultaneously can deal with multiple tables and can draw **relationship between those tables**).

Ms Access is not a **command oriented** like Dbase or Paradox rather its **object oriented**.

## CREATING A DATABASE USING MS ACCESS

1. Click Start, point to All Programs, Microsoft Office then Ms Access
2. On getting started pane, create a new file
3. Click Blank database
4. Select the location where the database will be created, type the database name and then click Create.

## **Ms Access Database objects**

A Microsoft Access Database objects are used to create and manipulate a database.

### **1. Tables:**

A database objects that contain all the data in a database. Table is where the actual data is defined and entered. Tables consist of **records (rows)** and **fields (columns)**.

### **2. Queries:**

A query is a **statement used to extract**, change, analyze or request **for specific data from one or more tables** based on the criteria you define. .

### **3. Forms:**

A form is a database object that you can use to **enter, edit, or display** data from a table or a query .Forms are designed to ease the data entry process

### **4. Reports:**

A database object that offer a way to view, format, and **summarize the information in your Ms Access database**

### **5. Macros:**

A tool that allows you to **automate tasks** and add functionality to your forms, reports, and controls. Macros can help you automate common tasks.

### **6. Modules:**

A collection of **Visual Basic for Applications declarations and procedures** that are stored together as a unit.

## **TABLE**

### **Objectives**

- Table creation
- Entering data
- Editing tables
- Types of relations
- Linking tables
- Sorting and filtering

### **CREATE A TABLE**

A table is a collection of data about a specific topic. Table organizes data into columns called field and rows called record.

- Each **field** contains a piece of information about e.g. a customer ID .
- Each **record** contains all the information about a customer including e.g. the customer ID, company name contact name and so on.

### **Methods Of Creating A Table**

**(a) Datasheet** - Ms Access opens the table in datasheet view

**(b) Using Table Wizard and Templates**

- Table templates are empty tables that can be used or customized as necessary
- In MS **Access 2003** and earlier, wizards are a feature that guides the user from start to finish in creating the desired object

**(c) Importing or Linking Create table**

You can create a table by importing or linking to data that is stored elsewhere.

### (e) Designing a Table

To create a table from scratch in design view

#### To design a table

1. Open an existing database
2. Click the Tables buttons, New and then Design view
3. Enter fields
4. Determine the data type of each field
5. Set the properties of each field such as size, format, validation and caption.
6. Set the Primary key then save the table

### Field Properties

#### Field size

Sets the maximum size of data that can be stored in a field. The maximum size is 255 characters, default is 50

#### Format

Specify the format for displaying and printing numbers, dates, times and text. The format property has different setting for different date types.

**Input mask** - Specifies an input mask for a field. Ie how data is entered and displayed in the text box..

#### Caption

The label on a field when used on a form. If you don't enter a caption the field name is used as a label

**Default value**- A value automatically entered in a field or control when a new record is entered.

**Validation rule** - An expression that limits the value that can be entered into a field.

**Validation text** - An error message that appears when you enter a value prohibited by the validation rule.

#### Required

Specifies whether or not a value is required in a filed. If this field is set to yes when you enter data in a record you must enter a value in the field.

**Indexes** - An index key(s) is used to speed up searching and sorting records in a table.

### Data Types.

Setting	Description
<b>Text</b>	Text up to 255 characters or the length set by filed size property, whichever is less
<b>Memo</b>	Text with a maximum length of 64000 bytes. Memo field cant be indexed
<b>Number</b>	Any numeric type.
<b>Date/time</b>	Date and time values from 100 2999
<b>Currency</b>	Accurate to 15 digits on the left of decimal point and 4 digits on the right
<b>Counter</b>	A number automatically incremented by Ms Access whenever a record Is added

<b>Yes/No</b>	Contains only two values Yes/No field and can't be indexed.
<b>Ole Object</b>	An object such as Ms Excel or Ms Draw graphics that is created by an application.

## VIEWS OF A TABLE

You can work with a table in two views.

### (a) Design View

To build or modify the structure of a table. You can specify what kind of data the table will hold.

### (b) Datasheet view

To add, edit or analyze the data itself..

## CREATING QUERIES

### Objective

- Importance
- Creating queries
- Listing and formatting queries
- Calculated field

A query is a statement used to extract, change, analyze or request for specific data from one or more tables based on the criteria you define.

In databases, you can either use a **query object** or write **SQL statements**.

## Types of Queries

In Access, you can create two types of queries namely.

### 1. Select Query

Let user specify the **search criteria** and the records that meet those criteria are displayed in a dynaset

### 2. Action query. - Used for modifying data in one or more tables.

#### a. Make table query

You can use a make-table query to create a new table from data that is stored in other tables.

#### b. Append query

You can use an append query to retrieve data from one or more tables and add that data to another table.

#### c. Update query

You can use an update query to change the data in your tables, ie enter criteria to specify which rows should be updated.

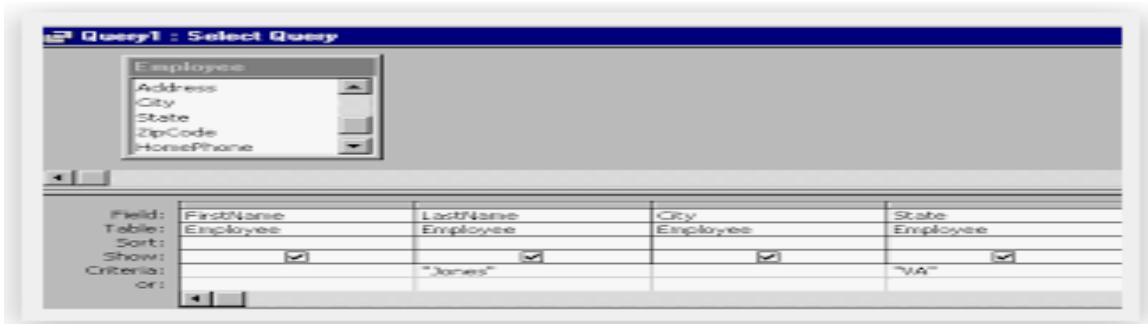
#### d. Delete query

You can use a delete query to delete data from your tables, by specify criteria of which rows should be deleted.

## To create a Query

- Create query design – Show table
- Select table or query name
- Add

- Close
- Query Grid**



Access Queries  
lib.colostate.edu

- Drag field list from field list window and drop them in the query grid field cells
- Add criteria
- Run query

## SPECIFYING QUERY CRITERIA

To display specific records using a query, **include criteria in the criteria row**.

A criteria is a condition that is constructed using.

A statement which determines whether a field contains the specified value or condition

### Types of criteria

- Relational Operators** - Relational operators include <,>, <=,>=, <>, =
- Wild cards** - Special symbols such as \* and # used instead of the actual characters
- Logical operators** - Used to establish compound criteria and include AND, OR and NOT.
- Like Between** - Like and between are used to relate or display values within a range  
E.g.

Like “A###”, and **Between #01/01/2007# AND #01/02/2007#**

### Examples of expressions that use text values as criteria

Field	Expression	Description
Ship city	“London”	Display orders shipped to London.
Ship city	“ London ” or “Hedge End”	Uses the OR operator to display orders shipped to London or Hedgend
Shipped Date	Between #1/5/95# AND #1/10/95#	Uses the BETWEEN ...AND operators to display orders shipped no earlier than 5 January 95 and later than 10 January 95
Ship country	IN (“Canada”, “ UK”)	Uses the IN operator to display orders shipped to Canada or the UK
Ship name	Like “S*”	Orders shipped to customers whose name starts with letter S
Company name	> = “N”	Displays orders shipped to companies whose name starts with the letter N through Z
orderId	Right([OrderId],2)”99”	Using the right function to display orders with ordered values ending in 99
Company name	Len([Companynam]) > val(30)	Uses the Len and Val function to display orders for company whose name is more than 30 characters long.

You can use a query to view a subset of your data or to answer questions about your data.

### **Sort a Table**

By sorting, you can put a column of information in alphabetical, numerical, or date order either in ascending or descending order.

### **Filter a Table**

To display specific records from the table or query. You can apply a filter to see only the records you want to see..

#### **To apply a filter:**

1. Click the column label for the column you want to filter.
2. Activate the Home tab.
3. Click the Filter button. A menu appears.
4. Uncheck the items you do not want to appear, making sure only the items you want are checked.
5. Click OK. Access filters your data and displays the word Filtered at the bottom of the window.

### **Compute Totals**

On the Home tab, you can use the Total button in the Records group to compute the sum, average, count, minimum, maximum, standard deviation, or variance of a number field; the count, average, maximum, or minimum of a date field; or the count of a text field.

### **Find and Replace**

If you need to find a sequence of characters, a word, or a phrase in a table or field, you can use the Find command. In Access, the Find command has three options: You can find all instances in a table or field that match a sequence of characters, all instances that begin with a sequence of characters, or all instances that contain a sequence of characters.

## **CREATING RELATIONSHIPS**

### **Relationship**

Natural Associations between different tables in a relational database

In Access, you store data in multiple tables and then use **relationships to join the tables**. After you have created relationships, you can use data from all of the related tables in a query, form, or report.

### **A primary key**

A field in a database table that uniquely identifies each record stored in the table. A primary key prevents the user from making null or double entries into a table,

### **A foreign key**

A field in a database table that references the primary key of another table

**You can use the primary keys and the foreign keys to join tables together to create relationships.**

## **Types of Relationships:**

### **1. One-to-one relationship**

A record in table A can have only one matching record in table B and each record in table B can have only one matching record in table A,

Employees	Nick	Skill Level
-----------	------	-------------

**TABLE A**

ID	Name	
01	Allan	2
02	Johnson	1
03	Wairimu	3
04	Mathew	4
Employees ID	Last Name	First Name
01	Davolio	Nancy
02	Fuller	Andrew
03	Levender	Janet
04	Peacock	Margret

**2. One-to-Many relationship,**

Record in table A can have many matching records in table B but a record in table B has only one matching record in table A.

**Supplier Table**

Supplier ID	Company Name	Contact Name
001	Exotic Liquid	Charlotte Cooper
002	Tokyo Traders	Yoshi Nagase

**Product Table**

Product ID	Product Name	Unit in Stock	Supplier ID
01	Tea	39	001
02	Omo	17	002
03	Computer	14	001

**3. Many-to-Many relationship,**

Record in table A can have many matching records in table B and a record in table C has many matching record in table B.

This type of relationship is possible by defining a third table called a junction table whose primary key consist of two foreign keys from table A and B

**Order Detail Table**

Order ID	Customer ID	Employee ID
1000	Francis	06
1001	Lucy	07
1002	Leah	08

**Product Table**

Product ID	Product Name	Unit in Stock
1000	25	14
1001	40	12
1002	59	39
1001	25	14

**Product Table**

Product ID	Product Name	Unit in Stock
40	CD Rom	500
25	Printers	600
59	Computer	570

**Enforcing Referential Integrity**

To ensures that the validity of the relationship between two tables remains intact.

- It prohibits changes to the primary table that would invalidate an entry in the related table.
- It ensure that details entered in the related table have a related record in the primary table

## DATABASE FORM

### Objectives

- Creating form
- Entering data in a form
- Editing and formatting

### A database Form

Access forms are much like paper forms: you can use them to enter, edit, or display data. They are based on tables. When using a form, you can choose the format, the arrangement, and which fields you want to display.

You use a form to view and edit information in a database record by record.

- A form displays only the information you want to see in the way you want to see it.
- A form uses familiar controls such as text boxes and check boxes that makes viewing and entering data easy.
- A form can be colorful and distinctive because you have control over the size and appearance of everything on it.

### To create a form:

#### a) To create a form using wizard

1. Open the database
2. Click the Form button then New
3. In the new form dialog box, click Form Wizard
4. Click the table or query that contains the data, and then click Ok
5. The form wizard guides you through the rest of the process.

#### b) Creating a form in design view

1. Click the Form button then New. Select Design View
2. Select a table or query in the list box at the bottom then click Ok. The form design grid is displayed.
3. If page and report headers are not displayed, on the View menu, click Page Header/Footer and Form Header/Footer
4. Drag each field arranging and resizing them on the form grid
5. Click the Form button to see the form layout
6. Save the form

### Form views

A way of looking at an Access object. Forms have three views:

#### a. Form view, - You can enter, edit, and view data in Form view

#### b. Layout view,

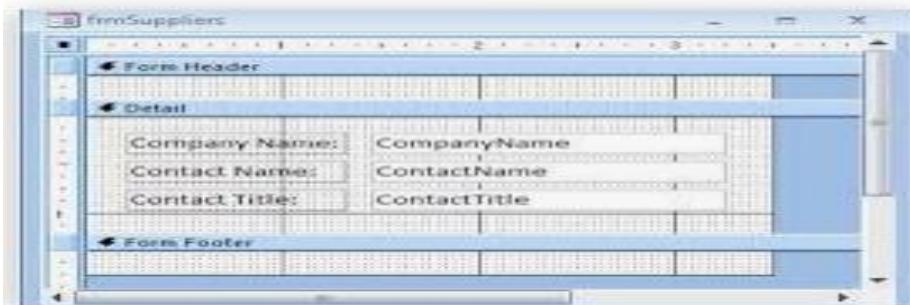
You can see your data, and the form you see closely resembles what your form will look like when you view it in Form view. You can make most, but not all, changes to your form in Layout view

#### c. Design view.

Displays the structure of your form. In this view you cannot see the underlying data, but you can perform some tasks in Design view that you cannot perform in Layout view.

### Form section in form design

You can place controls in form section.



MS Access 2007: Display the form footer ...

## 1. Detail Section

Required for displaying records. Ms Access displays a detail section for each record in the bound table or query.

## 2. Header/footer Section

**Optional.** Generally you use a header or footer for controls that display information you don't want repeated record by record such as :-

- i. The title and dates of the form
- ii. Labels for columns of values in the detail section.
- iii. Command buttons that open related forms or print the form

## Controls

There two types of controls

### 1. Bound Control -

This is a control whose **source of data is a field from an underlying table or query**

### 2. Unbound Control -

This is a control that is **not tied to any data source**.

## Examples of control

a. **Text box** - If you want a text box to display a value that isn't stored in a table.

b. **Label** - Label displays unchanging text

### c. List box

Usually you want a list box that is bound to file. When bound to a file you can use a list box to update the data

### d. Combo box

Usually you want a combo box that is bound to file you can use a combo box to update the data in your database.

### e. Picture or Graph -

contain Ole Object linking and embedding (OLE) used create to edit picture and graphs.

## CREATING REPORTS AND LABELS

### Objectives

- Importance
- Creating report
- Modifying and adding graphs
- Calculations
- Headers and footers

A report is used to organize and summarize data for viewing online or for printing. You can include summary data such as **totals**, **counts**, and **percentages** in a detail report.

### **A report**

- Display only the information you want in the way you want to see it.
- Can group records into many levels and compute totals and averages by checking values from many records at once.
- Is attractive and distinctive because you have control over the size and appearance of everything on it

### **Views of a report**

You can work with report in the following views.

#### **1. Design View**

To build or modify the structure of a report you can add controls that are bound to fields in a table or query or unbound controls that calculates totals or averages.

#### **2. Print Preview**

To print or analyse the database itself. You can also open a report in a sample preview to quickly check its layout.

#### **3. Print Preview**

To print or analyse the data itself, you can work in print preview . You can also open a report in sample preview to quickly check its layout.

### **Create A Report**

#### **To use the Report button:**

1. Open the Navigation pane.
2. Click the table or query on which you want to base your report.
3. Activate the Create tab.
4. Click the Report button in the Reports group. Access creates your report and displays your report in Layout view. You can modify the report.

### **Group**

Grouping puts all of the values in a field into a group based on the field's value.

### **DESIGN - Part of a report in design**

- 1. Report header** - Appears at the top of the first page and displays the report title.
- 2. Page header** - Appears at the top of every page and displays the headings (field labels) for each column.
- 3. Page Footer** - Appears at the bottom of every page and displays the page number and total number of pages.
- 4. Details** -  
Appears between the page header and page footer and displays the records from the table or query.
- 5. Report footer**-  
This section is optional. Appears on the last page of the report and displays summary information such as grand totals.

### **To calculating totals or averages in a report**

Ms Access reports can add, count or compare values from many records and display the results. Totals and averages are particularly effective when placed in headers or footers that group records you can show.

- a. Subtotals for a groups or records such as the totals sales to customers in Canada
- b. a running total that counts the number of employees enrolled in each company health plan.
- c. Percentages of total such as the percentage of employees in each state.

### **Calculating a group total or average**

- a. In the toolbox click the text box tool
- b. Click within the header or footer group total or average appears. Ms Access creates a text box
- c. Click within the text box. An I beam appears.

Type =**Sum ([Fieldname])**  
=Avg ([fieldname])

Where fieldname is the name of the field whose values you want to be totaled or averaged. If the field name contains spaces enclose it in square brackets = **([fieldname])**

## **Generating Mailing Label**

**Labels are special types of reports used for identification.** The easiest way to create a mailing label is to use the Label Wizard. The Label Wizard extracts name and address data from your database and formats it so you can print it on commercially available labels. Each time you view or print labels, the data are extracted from the database, so as you update your database, Access updates your labels.

### **To create labels:**

Open the Labels Wizard

1. Click the table or query you want to use to create a label.
2. Activate the Create tab.
3. Click Labels in the Reports group. The Labels Wizard appears.

### **Create a layout**

You create the layout of your labels by selecting fields and placing them in the Prototype Label box. You type any text or spaces that you want to appear on your label.

1. Click a field name and then click the right-arrow to place the field on the prototype label.
2. Press the spacebar to leave spaces.
3. Press the Enter key to move to a new line.
4. Type any text you want to appear on the label.
5. Click Next. The Label Wizard moves to the next page



## Lesson 6. INTRODUCTION TO GRAPHICS PRESENTATION

### GRAPHIC PRESENTATION

Application software that is specifically designed to allow users to create a presentation of ideas by bringing together text, images and audio/video.

The presentation tells a story or supports speech or the presentation of information  
Presentation software can be divided into business presentation software and general multimedia authoring software,

#### **Examples of presentation software**

1. Prezi.
2. Open Office Impress.
3. Windows Movie Maker
4. Google Slides. ...
5. Keynote. ...
6. Haiku Deck. ...
7. Ms Power Point ...
8. CustomShow

#### **Microsoft PowerPoint**

A graphics presentation software that present a speech using a collection of slides.

It allows a prospective presenter to organize his presentation in a proper and coordinated sequence. Power Point can therefore be used to create and make very effective presentation be it a talk or simple show

#### **What you can make with power point**

##### **1. Presentation**

A collection of slides, hand-outs, speaker's notes and outline all in one file that can be used to create oral presentation.

##### **2. Slides -** An individual pages of your presentation.

##### **3. Handouts**

Smaller printed versions of your slides two, three or six slides per page given to the audience to support your presentation

##### **4. Speaker Notes**

Short notes for the speaker to use during the presentation. An image of the slide appears on each notes page along with any notes you type on the notes page.

##### **5. Outlines**

Displays your presentation as an outline made up of the titles and main text from each slide but not your art or the text typed with the text tool.

### TO LAUNCH POWERPOINT

To open PowerPoint in Windows, click on the

- Start button -->
- ALL Programs -->
- Microsoft office-->
- Microsoft PowerPoint

## **PowerPoint Already Open**

To start a new presentation, click on the **Office button** or File menu on the top left corner of the screen and select **New**:

The **New Presentation** window will appear. Here select from a variety of themes and templates by looking under **Installed Themes** and **Installed Templates**.

## **UNDERSTANDING MS POWER POINT APPLICATION WINDOW**



1. **File or Office Button** - Contains a menu of file-related commands.
2. **The Ribbon:**  
The traditional drop-down menus and toolbars of earlier Microsoft releases have been replaced by the more intuitive and graphical Ribbon. Click on the arrow to open a dialogue box with more options.
3. **Slide & Outline Tabs:**  
The Slides tab shows thumbnail images of your slides, allowing you to rearrange and hide slides and view set transitions as you work. The Outline tab shows the content of your slides, making it easy to rearrange your text.
4. **Slide Panel:** = This panel is where you enter the content of your slides.
5. **Notes Panel:**  
This is where you can enter notes. If you wish to enter longer notes, you can go to the View tab and select Notes Page.
6. **View Buttons:**  
These three buttons include the Normal view, shown here, the Slide Sorter, which allows you to shuffle your slides, and the Slide Show, which shows the slides as if you were presenting.
7. **Zoom Slider:** = This allows you to zoom in and out on the Slide Panel

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## **CREATING A PRESENTATION**

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PowerPoint offers three ways to create a presentation: Blank presentation, Design Template and AutoContent Wizard.

- **AutoContent Wizard.**

A wizard that determines the content and organization of your presentation by using an outline.

- **Design Template.**  
A template that determines color scheme, font and other design features.
- **Blank Presentation.**  
A presentation with color scheme, font and other design features set to default value.

A blank presentation is the **recommended** starting point. PowerPoint lets you change the appearance, layout and content of your presentation at any time.

### **Inserting Slides**

There are two ways to add new slides to your presentation. New slides are automatically inserted after the currently selected slide, and by default will take on the layout and theme of the preceding slide.

#### **1. Quick Menu Options**

To insert a new slide using the Quick Menu, in the Slides panel **right click** the slide after which you want a new slide inserted and select **New Slide**.

#### **2. Ribbon Option**

From the **Home tab** in the Slides group, click on **New Slide**. A blank slide will be inserted after your active slide.

### **Slide Layout**

PowerPoint includes built-in slide layouts, and you can modify these layouts to meet your specific needs, and you can share your custom layouts with other people who create presentations in PowerPoint.

Slide layouts contain formatting, positioning, and placeholder boxes for all of the content that appears on a slide.

### **Placeholders**

You can begin adding text, graphics or other items on placeholders- specials places

### **Saving a Presentation**

You can save, close and exit presentations in PowerPoint, just as you would while using other Microsoft applications.

- Click on File Save. Or (Ctrl + S)

### **Opening a Presentation**

You can quickly open a presentation that you have previously saved by using the TaskPane.

- Select File Open.
- Navigate to the file you want to open

### **To Close a Presentation**

- Click the X in the PowerPoint presentation window (Ctrl + W).
- The PowerPoint application remains open and you can start a new presentation.

**To Exit PowerPoint** - Click the X in the far right top corner.

---

## **PUTTING TEXT ON SLIDE**

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To add text to your slide, you can either use the placeholders provided when you choose a layout or create a text box on a blank slide.

#### **1. Placeholder**

A box with dotted outline that appears when you create a new slide.. You can type text directly into any placeholder on slide.

#### **2. Outline** - In an outline you can type slide titles and a single column of body text.

### **3. Text Tool**

To add text anywhere on the slide using the text tool. .

### **3. Auto shape**

To add text to shapes that you draw using the auto shape tools.

## **NOTES, HEADERS, AND FOOTERS**

### **1. Adding Notes**

There are two ways to insert notes in PowerPoint.

a. **To insert short notes:** In the Normal view, click on the Notes box at the bottom of your screen and type your text.

b. **To insert longer notes:**

Click on the **View** tab. Under **Presentation Views** select the **Notes Page** button. Type your notes in the space that appears below your slide.

### **2. Inserting Headers & Footers**

click on the **Insert** tab, then on the **Header & Footer** button. To add header and footer

#### **a. Fixed and Automatic Dates -**

To add either a **fixed** date and time, or **automatically updated**. If you choose to have a date and time that automatically update, the date and time will always match the date and time that you run your slide show.

#### **b. Slide Number -**

Check this box to show the slide number.

#### **c. Footer -** Check the Footer box and add text to have text appear at the bottom of the slide.

---

## **WORKING WITH SLIDE VIEWS**

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### **(a) Slide Sorter View**

To see your whole presentation so that you can easily add, delete, move, change the order of your slides, or arrange them

### **(b) Slide View**

You can add both text and graphics on a slide by slide basis.

### **(c) Outline View**

Displays your presentation as an outline made up of the titles and main text from each slide.

### **(d) Notes page**

A place to put all that extra text that you want to put onto your slides and read to your audience

(e) **Slide Show View** = An electronic presentation on your computer. Each slide fills the screen.

---

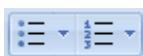
## **FORMATTING TEXT.**

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In Power Point how your text looks depends on the attributes you assign to it. Eg Font, size, color, font styles etc

### **▪ Text Shadow Text Shadow**

Adds a shadow behind the selected text to help it stand out on the slide.

- **Character Spacing**  Adjusts the spacing between characters.
- **Text Direction**  Change the orientation of text to vertical, stacked, or rotate it to the desired direction
- **Align Text**  Change how text is aligned within the text box.
- **Lists** To add a list to a text box, click on either the bulleted list or the numbered list button under the Paragraph group in the Home tab. 

## EDITING

### a. Copying

You may want to repeat a slide later in the presentation or copy a slide and make slight changes to it to make a different point.

- Click on the Copy or (Ctrl + C), then click Paste (Ctrl + V)

### b. Deleting a Slide

Sometimes you may want to take one or more slides out of your presentation.

- Press Delete on your keyboard.
- OR
- Right click the slide you want to delete in the pane to the left Delete Slide.

## WORKING WITH TEMPLATES

Power Point is designed to give your presentation a consistent appearance.

There three ways to control the look of your presentation

### a. Design Template

A template that contain color scheme , slide and title master with custom formatting and styled fonts that have been design for a particular look. .

When you apply a design template to your presentation the slide master and color scheme of the new template replaces the slide master and color scheme of the presentation. Power Point comes with a wide variety of professional design templates.

### b. Color Schemes

A set of eight balanced colors designed to be used as the main colors of a slide

- Text
- Background
- Fill
- Accent

Each color scheme is used automatically for different element on a slide

### c. Slide Masters

Stores information about the theme and slide layouts of a presentation, including the background color, fonts, effects, placeholder sizes, and positioning. Changes made to the Master Slide and the Master Layouts are applied to all slides with that layout.

## WORKING WITH POWER POINT OBJECTS

### DRAWING AND EDITING OBJECTS.

PowerPoint provides the tools to draw objects. You can create simple shapes and objects with the built in drawing tools,

### a. Drawing Preset Shapes

Draw an object from the collection of ready-made shapes, combine simple shapes to create more complex ones, and even add text to your drawings.

Including lines, basic shapes, block arrows, flowchart elements, stars and banners, and callouts.

You can also add formatting effects to your shapes, including resizing, rotating, 3D effects such as shadows and bevelling, and changing the color of all or part of the shape.

### b. Drawing Custom Shapes

To draw your own shapes you can use the freehand drawing tools,

**Curve** lets you draw shapes with curves;

**Freeform** lets you draw shapes with both curves and angles; and

**Scribble** lets you draw shapes and lines freehand. You can also combine these tools with other preset shapes

## MANIPULATING OBJECTS

### a. Aligning

To place objects to the right, left, top, bottom, and center of the slide,

### b. Rotate

To rotate a picture and object 90° right or left, or to flip the image vertically or horizontally.

### c. Grouping

To combine objects into one so that they can be moved and edited all at once.

**To select and group multiple objects:**

- Click on the first object
- Hold down the **Shift** or **Ctrl** button on your keyboard while clicking on any other items you wish to group together
- Click the **Group button**

If you wish to **ungroup** the objects, select the combined object, click on the **Group button** and choose **Ungroup**.

### d. Cropping & Resizing Images

To remove unnecessary parts of your images. Cropping resizes an image by hiding horizontal or vertical edges.

To crop an image, click the **Crop button**. Special handles will appear around your image. Click and drag the handles inward to hide that part of your image.

## ADDING VISUAL TO SLIDE and running slide

### Clip Art

1. Images user inserts in a slide
2. **Insert Picture** - to add a picture file in a slide .
3. **Word Art** - To add word art in slide to create decorative effects
4. **Graph** - To add a chart into a slide

## **5. Organizational Chart**

Add organizational chart to helps you illustrate how your company is structured,

### **ANIMATING TEXT**

Creating moving letters, words or paragraphs to add some flair to your presentation.

You can use animations to make your text and images appear on the screen dramatically or to make smooth transitions between slides and topics.

**Note:** Too many animations will distract your audience. .

#### **Adding Animation to Slides**

PowerPoint provides preset animations to allow you to easily add animations to any object on your slide. This includes text, images, clipart, charts and SmartArt.

- a. Click on the object or text box you wish to animate to select it (hold down the Ctrl button while clicking to select more than one).
- b. In the **Animations tab** under the **Animations group**, select an option from the **Animate** pull-down list. As you hover your mouse over each choice PowerPoint will preview the effect on your slide.

#### **Custom Animations**

Using custom animations allows you to have more control over your animations.

- a. Click on the object or text box you wish to animate to select it (hold down the Ctrl button while clicking to select more than one).
- a. In the **Animations tab** under the **Animations group** click on the  button.
- b. The **Custom Animation pane** opens
- c. From the **Add Effect drop-down menu** choose the kind of effect you want (Entrance, Emphasis, Exit, Motion Paths) and then the animation itself. The drop-down list shows only a few possibilities, so choose More Effects... for more options.
- d. To customize the speed, properties and timing of your animation, either click on the effect you wish to modify on the Custom Animation Pane. **Note:** If you want to customize the effects on individual list items.

Once you have the animation you would like to modify selected, use the options in the **Modify: [Effect]** section of the **Custom Animation Pane**. These options will change depending on the effect selected.

#### **Reordering Animations**

On occasion you may want to change the order in which your animations appear. The Custom Animation pane lists all the animations on the slide you are currently viewing.

- a. Select the slide you wish to change.
- b. If the Custom Animations pane is not visible, click on the  button in the **Animations group** on the **Animations tab**.
- c. From the **Modify: [Effect]** list, select the effect you want to move.
- d. Click and drag the effect to the desired place in the list.
- e. Release the mouse when the effect is where you want it.

---

### **TRANSITIONS**

A motion effects in Slide Show view that add movement to your slides as you advance from one slide to another to add a little spice when changing from slide to slide.

**Tip:** Choose transitions and stick with them! A different transition for each slide is distracting and looks unprofessional.

### **Adding Slide Transitions**

Transitions are easy to add to your slide by using PowerPoint's Transitions Gallery.

- a. Select the slide you wish to add a transition to.

**Note:** Adding a transition will determine how a slide appears, not how it disappears.

- b. In the **Animations tab** under the **Transition to This Slide group** choose an effect from the **Transition gallery**. Use the arrow to scroll through the options. PowerPoint will show you a preview of the transition when you hover your mouse over a gallery item.
- c. To set the speed of a transition, select a speed from the **Transition Speed** pull-down menu.
- d. **OPTIONAL:** If you want to apply your transition settings to all of your slides, click **Apply To All**.

## **RUNNING A SLIDE SHOW**

You can run an electronic slide show manually by clicking the mouse button to advance to the next slide.

Another way to run a slide show is to set timing and choose which slides you want to see using the slide

You can even choose to run the show over and over in a continuous loop until you press **ESC**

You can also run a slide show (**F5**) from a play list. Creating a play list lets you run several presentations one after the other

### **Navigating Through Your Slides**

You can use your mouse or your keyboard to navigate through your slides.

- **Advance Slides:**

Left-click the mouse, or use the [SPACEBAR], [ENTER], [PAGE DOWN], right arrow or down arrow key.

- **Previous Slide:**

Use the [BACKSPACE], [PAGE UP], left arrow or up arrow key.

- **Exit the Slide Show:**

Right-click and use End Show (not recommended) or press the [ESC] key.

## **SLIDE TIMING**

You can set the length of time that a slide will appear on screen during a slide show.

- i. **Enter slide timing manually**

- In the slide sorter view slide
- Click slide transition command
- Click automatically after [ ] seconds and enter the number of seconds that you want the slide to be on the screen.

- ii. **Rehearsing-feature**

Let you set timing automatically

- You can set separate timing if you want for each slide in your slide show.
- You can have the title slide appear for 10 seconds, the second slide for 2 minutes, and the third for 45 seconds and so on.

## **Build slides**

A build slide is one on which each bullet in the main text appear independently of the other or graphics appear one after another. You setup the way you want each bullet point or graphic to appear eg to fly in from the left and whether you want the other points or graphics already on the slide to Dim or simmer when a new element is added. Use the animation setting command to set how you want objects and text to build on your slide.

## **Setting Up A Slide Show**

Once you have added, created a presentation and previewed it, set up a show. Take the necessary steps to make sure your slides are ready for a real audience.

- Click on Slide Show Set Up Show.
- The Set Up Show dialog box appears

## **PRINTING YOUR PRESENTATION**

Prior to printing a PowerPoint presentation, you may wish to print your slides, outlines, or lecture notes. PowerPoint offers many format options for printing.

- The simplest way to print your presentation is just print your slides on regular paper. You can also print your outline, audience hand-outs, and speaker's notes.
- However, depending on your printing and presentation needs and capabilities you may also consider printing your presentation as **transparencies** to be shown on an overhead projector. If you have a laser or inkjet printer all you would need to do is load the printer with transparencies designed for laser printers.

**Black and White** is the recommended choice when printing slides for transparencies or handouts, as color does not always translate well into Grayscale. You can select color options from the Print screen, as described below.

## **SETTING UP SLIDES TO PRINT**

Before printing your slides you need to determine what format they will be printed in (e.g. On-Screen Show, Letter (8.5" x 11"), A4 Paper, 35mm Slides, Overhead, etc) and the orientation of the paper (Portrait or Landscape).

1. From the **Design tab**, in the **Page Setup group** click **PAGE SETUP** to open the **Page Setup dialog**.
2. Select a medium from the **Slides sized for:** list (some choices include Letter Paper (8.5x11in), Overhead, 34mm Slides and others). Each format has its own preset width and height. You can adjust these settings, but it is not recommended.
3. Note that you can set separate orientations for your slides and for your notes, handouts and outline. For printing (landscape for slides, portrait for the rest). The exception is **overhead transparencies** -- for these, select **Letter** or **A4 Paper** and **Portrait orientation**.
4. To start numbering the slides with a number other than 1, adjust the figure in the **Number slides from:** box.
5. When you are done adjusting the page settings, click **OK**.

## **PRINTING SLIDES, OUTLINES, NOTES AND HANDOUTS.**

Click on the **OFFICE BUTTON** then on **PRINT** to open the Print dialog.

1. **Print Range:**  
To print only selected slide, select **Slides:** and type the slide numbers in the box beside it.
2. **Copies:**

To print more than one copy of your slides, handouts, etc, type the number you want to print in the box below **Number of copies**.

3. **Print what:**

Use the drop down menu under this section to select what you wish to print. You can print your **Slides**, **Handouts**, **Notes Pages**, or **Outline View**.

4. If Handouts is selected, the **Handouts** section of the print dialog will activate.

5.

**NOTE:**

For handouts, 3 slides per page is usually the best option. The slides will be large enough for your audience to read, and there will be extra space beside each slide for them to take notes.

6. **Color/grayscale:**

Use this drop down to choose from Color, Grayscale, or Pure Black & White. **Pure Black & White is recommended.**

7. When you are finished, click OK. The desired information will print.



## Lesson 1. INTRODUCTION TO DESKTOP PUBLISHING

### DESKTOP PUBLISHING -DTP

#### PUBLISHING

A process of producing publications such as newspapers, cards , pamphlets , pictures , calendars, books etc. that has special text and graphical layouts and design.

#### DTP

**Desktop Publishing** creation of documents using page layout software on a personal computer.

The process of producing publications by designing their text and graphics layout using special desktop publishing software and then print on a high resolution printer or typesetter to produce publications.

#### Advantages of DTP over a Word Processor

1. Every item on a page is contained in a frame and can be edited and formatted independently.
2. Stories can be contained in a single frame or threaded between several frames and frames need not flow in logical sequences
3. Master pages are used to set a common layout which may be repeated on several pages e.g. logo, page numbers
4. Publications can be printed in a form suitable for commercial printing. E.g. using color separation
5. A wide range of templates are available e.g. brochures, booklets, posters, business card
7. Multiple stories from different authors can be handled with ease.

#### Types /Purpose of Desktop Publishing Software

##### a. Graphic Design Software

Have superior image handling capabilities like setting resolution, brightness, and contrast, cropping and filling images of all types with color. Eg

- Adobe Photoshop,
- Corel Draw,
- Harvard graphics
- Illustrator

##### b. Page Layout Design Software

Create different page layout design for text and graphics. E.g.

- Adobe Page Maker,
- Ms Publisher
- Ventura

#### Type of Publications

There are several types of publications that can be produced using DTP software. They include

- a. **Cards** - For special occasions like weddings, graduations, harambee and for congratulation.
- b. **Certificates**  
Types of publications used to show completion of courses and special events.
- c. **Newspapers , magazines , pamphlets and newsletter**  
They contain news targeting a group of people.

- d. **Books** - Bulky publications with many pages that are bound together
- e. **Calendar**  
They are used to show dates. They are also used by companies to advertise their products
- f. **Notices** - Brochures, posters, detriments and categories.

## Terminologies.

- 1. **Banner** - The main headline across the top of the page.
- 2. **Cross head** - A Small heading used to break up text into easily readable sections.
- 3. **Cast off** - A calculation as to how much space the text will use on a page
- 4. **WYSIWYG (What you see is what you get)**  
Present on the screen exactly what you will get from the printer.
- 5. **Jigging** - Moving text around by means of DTP software

## Templates:

A pre-created document that already has some

## Designing a Publication

Different publications have different design layouts and formatting

### Steps used in a DTP System

1. Prepare your **text** and **illustrations** with a word processor or a graphics package program.
2. Using DTP program to develop the format of each page on your desktop screen.
3. Copy the text and illustrations into the page format you have designed in the DTP program.
4. Format the pages on the screen to look the way you want them, then store them electronically on your hard disk or print them.

## Adobe Page Maker

A sophisticated page layout easy to use DTP program.

All production tasks are performed on a screen, which displays an exact image of the page as it would appear when printed. This program is mainly used by typesetters, publishers and production designers.

### Basic Features

1. Viewing full pages or page spreads on the screen
2. Type text or import text from other programs
3. Draw or import graphics
4. Layer text and graphics on top of each other
5. Create master page
6. Format text using style sheets
7. Access to wide range of fonts
8. Print positive or negative page images , including color separations
9. Offers a variety of tools for designing, manipulating and editing publication

## Starting Page Maker

### Launch Adobe Page Maker

- Start button
- All Programs
- Adobe
- Page Maker 7.0
- Adobe Page maker 7.0

### **Creating a New Document**

1. **File menu**, select **New...**
2. Document Setup dialog box
3. click **OK**

PageMaker will open a new document according to your Document Setup specifications.

---

### **Document Setup**

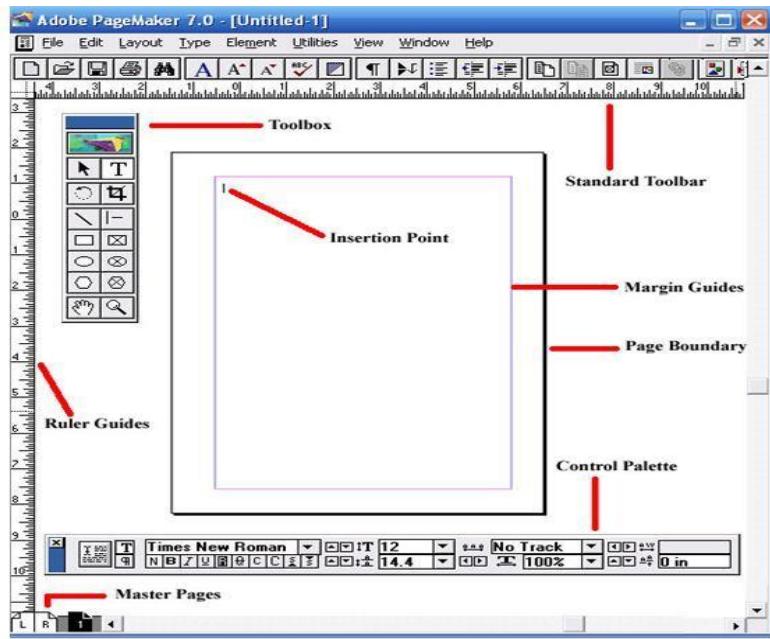
Allows you to determine how your document will look like.

- a. **Page Size** - Setting page Dimensions. Standard page dimensions are **8.5" x "11"** for **letter** size paper or **A4**.
- b. **Orientation** - The page may be Tall or Wide in orientation.
- c. **Options-**
  - i. **Single-sided**  
Pages show only one page at a time on the screen and one master page is created.
  - ii. **Double-sided**  
Pages show only one page at a time on the screen and two two master pages are created.
  - iii. **Facing**  
Display facing two pages at a time on the screen (except page one, which is displayed alone). This selection is appropriate if you are setting up a magazine or booklet, because the pages are set up to face each other, just as they would in a book.
- d. **Pages Numbers**  
Change the number of pages by typing the appropriate number in the Number of pages text box.
- e. **Setting Margins**  
In PageMaker, the standard margin settings are (in inches): inside (left): 1.0, outside (right): 0.75, top: 0.75, bottom: 0.75. You can adjust them to fit your needs.

---

### **Page Maker Application Window**

The Page maker application window:



- Title bar** - Display name of the document and current running application.
- Menu bar** - Provide a drop down list of commands used to perform a task

**N/B** Adobe page maker does not have the status bar.

#### (iii) Paste Board

A large blank area where you layout the text and graphical objects before arranging them neatly on the printable work area enclosed with margins.

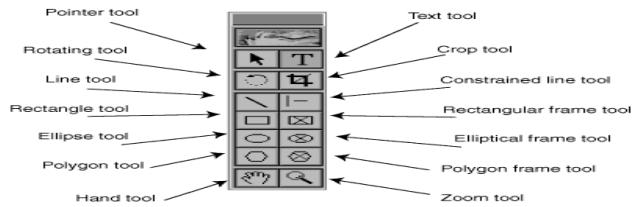
#### (iv) The printable area

An area that looks like a page surrounded by margins on the pasteboard. Any object or text that is placed on the printable area will be printed by the printer.

#### (v) Tool Box

Consist of tools and instruments used to do layout work.

To select a tool click on the respective icon on the toolbox.



#### (a) Version Window



Displays, when clicked, the version of PageMaker that is being used. To remove the Version Window, click inside this window.

#### (b) Pointer



Selects lines, shapes, graphics, and text boxes. Selected items can be moved, resized, and have their attributes changed.

#### (c) Text



Selects text or sets insertion point for adding text.

**(d) Rotate -**



Rotates text blocks and graphics to almost any angle.

**e) Crop**



Trim graphics (press and hold the [Shift] key to crop proportionally).



**(f) Line** - Creates straight lines at almost any angle.

**(g) Constrained Line**- Creates vertical, horizontal at 45-degree-angle .



**(h) Rectangle** - Creates square and rectangle shapes.



**(i) Rectangle Text Box**- Creates rectangular-shaped text boxes.



**(j) Ellipse** - Creates circular and oval shapes.



**(k) Ellipse Text Box**

Creates circular and oval-shaped text boxes.



**(l) Polygon** - Creates basic polygons.



**(m) Polygon Text Box**- Creates polygon-shaped text boxes.



**(n) Hand (Panning)** - Allows the user to drag a page for optimal view.



**(o) Zoom**

Magnifies or reduces the area of the page; useful for close placements or viewing of graphics.

**(v) Control Palette**

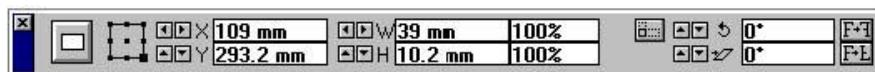
A tool used to format and manipulate text and objects in your document.

**(a) Control Palette in Character Mode**

Use this mode to change character attributes such as fonts, type size, type style, leading, Kerning, tracking and width of your text.

**(b) Control Palette In Paragraph Mode**

Use this mode to display and change the attributes of selected paragraphs, such as paragraph styles, indentation, alignment, paragraph spacing and alignment as well as grid alignment and grid spacing.



**(vi) Using Master Page**

The master page is the cornerstone of all your publication because it helps you create a consistent look for each page and save you time.

It holds the design elements that are common to most pages. Each publication you open contains a document master page which applies to all pages in the publication until you specify otherwise and cannot be renamed or removed from the publication.

### i. **Ruler guide**

A non-printing extension of the tick marks on the page. The ruler guide helps you position or place text and graphics accurately and consistently throughout the publication.

#### (a) **Snap to ruler**

When turn on the ruler exerts magnetic pull on the cursor as it comes close to the tick mark on the ruler. This ensures exact placement of the ruler guide

#### (b) **Lock ruler guide**

This option locks the ruler guide in place so you can't accidentally reposition them

### ii. **Column guide**

Control the flow of text in text blocks that you place automatically and to help position text and graphics.

Layouts ->Column guide -> specify number of columns.

You can create up to 20 columns guides on a page.

### iii. **Headers and Footers**

**Headers** - lines of text that appears at the top of every page eg , page numbers or date etc

**Footer** - line of text that appears at the bottom of every page and give each page the publications title, authors name etc

### iv. **Page number**

Add page number markers to the page you want to be numbered. Page maker automatically updated the page number when repagination occurs.

Click an insertion point with the text tool and press **CTRL + ALT + P**

### v. **Border**

Trace the border using the rectangle tool. Make sure snap to guide is checked. Align precisely with the ruler guide.

## **Viewing the Page**

As you work you can often change the display size of the page depending on what you are doing.

### i. **Actual size:** - Useful for doing detailed work.

### ii. **Fit in window:** -

To see the big picture. Check the overall composition of your page

### iii. **200% size and 400%:-** Useful when precision is imperative.

## **Saving a File Using Save As...**

To store your document as a publication.

1. From the File menu, select **Save As** The Save dialog box appears.
2. In the Save in pull-down list, navigate to the desired save location
3. In the File name text box, type the name of the file
4. When you are finished, click **SAVE**

## **Exiting PageMaker**

You can exit PageMaker completely or simply close the document you are working on while remaining in PageMaker click exit

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## **WORKING WITH TEXT**

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In DTP you can add text into a publication using the **text tool** or **text frame** tool (rectangle, ellipse or polygon tools) , import or story editor.

### **Story Views**

1. **Layout view** to see how changes affect your layout
2. **Story editor** for rapid word processing functions

## **LAYOUT**

### **To add text using text or frame tool in Page Maker**

1. Click the tool from the tool box
2. On an empty area on the pasteboard or printable area, drag to define the text block
3. Type the text. If text is in small type Page Maker displays text in small Xs called **greeking text**.

To see actual characters zoom in on a document by choosing larger view that is view ->Actual size or by clicking on the right mouse button.

## **STORY EDITOR**

A built in word processor that enables quick typing and editing of text. It offers other word processing functions such as:-

- Searching and replacing
- Spell checking
- Creating table of content
- Creating table of index and marking entries

While working with a lot of text, it is easier to use the story editor than the normal Layout View.

### **To open the story editor do any of the following**

- Select text/pointer arrows tool, click inside the story you want to edit, choose **Edit** , **Edit story** or
- Press **CTRL + E** or
- Triple click on the text block with the arrow tool

### **Parts of the Story Editor**

- You can enter into the story editor and start typing a story right away.
- You can also import a story from word processor packages.
- The story editor displays all text in a selected story. To move a certain part of the story, scroll through the story.
- When story editor is opened, the menu bar also changes. **Layout** command is replaced by the story editor command. **Element** command disappears and dimmed subcommands in the **Utilities menu** become available.
- Formatting command can be applied, however all formatting can't be seen. All text is shown in a single typeface, type size regardless of its real formatting.
- You cannot see formats in the story editor. One font and one type size helps the editor run faster.
- The left column of the story editor shows the style applied to each paragraph or headings in a story. Invisible characters can be viewed e.g. tabs, line breaks, carriage return, spaces etc by unchecking display item in the story menu. Changes in the story editor appear in the layout.

### **Closing Story editor**

To close a story editor,

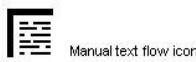
- Press **CTRL + W** or click on the close box or alternatively use the story Close menu command.
- You can also move to the layout view without closing story editor by pressing **CTRL + E** or using the menu command Edit, Layout or just clicking layout view at the background.

## **Importing Text Files**

Using the Page Maker “**Place ...**” command you can import or place, a text file in layout view or in story editor.

When you place a text file by choosing “**Place ...**” from the File menu, and then double click the file you want to work with, the pointer turns into a loaded text icon. The shape of the icon depends upon whether or not the “Auto flow” command on the Layout menu is checked.

### **Text placement Icons**



Manual text flow icon



Automatic text flow icon

To place text position, the loaded text icon where you want the upper left corner of the text block to begin and then click. The text flows down to fill the column or page.

With long text files, you can choose “**Auto flow**” from the Layout menu before you place the file. Page Maker then flows the entire text file, creating new pages if necessary.

To control the dimensions of a text block, drag the loaded text icon diagonal

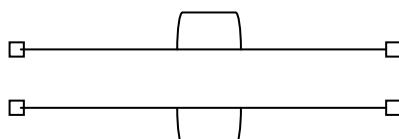
## **WINDOW SHADE**

### **WORKING WITH TEXT BLOCK**

When you select a text block by clicking on it with the pointer tool, two types of handles appears:

#### **a. Text block handle**

- Four small solid squares at the corner of the text block.
- Horizontal lines define the upper and lower boundaries of the text block.



#### **b. Window shade**

The text box will have half circle handles on the top and bottom lines. These handles are called ‘window shades’.

### **Text Placement Handles**

Text placement handles give information about text in a text block.

#### **(i) A red arrow pointing downwards**

Means there is not enough room to fit the text in the text block to accommodate all text. To make the text fit, either increase the text block or click on the red arrow and place the text elsewhere.

#### **(ii) A plus sign**

Means text is linked to another text block. An empty symbol means that the end of the text block.

#### **(iii) An empty window shade**

Shows that text has been placed on a page and there is no more text to place.

After creating a text block, you can move it around, change the shaping by using the arrow/pointer tool. But first the block must be selected (by using the arrow tool).

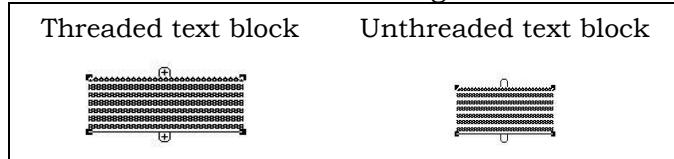
## Threading and Unthreading Text

### Threading Text

Text that is connected within a publication although it may reside in more than one text block. Text that is connected in separate block form a story you can see the entire story at once in story editor. Because threaded text is connected changing the size of one text block causes text to move in (or flow through) all connected text blocks that follows.

### Unthread Text

Breaking the link between two texts frames or rearranges the frames used to thread text.



#### To thread text

1. With the pointer tool, select a text frame, or an empty frame
2. Click the bottom window shade handle
3. Click the text frame you want to thread to. The frames are threaded together. Plus sign appears in the text frame handles to indicate that the frame is threaded.

## EDITING TEXT IN PUBLICATION

Editing text means making changes to already typed text. The changes can be inserted, deleting, copying or moving text.

#### (a) To insert text,

Click on the position you want to insert text, start typing. All other text moves to the right.

#### (b) To delete text,

Select characters to be deleted and the press **Del** key on the keyboard.

##### (i) To delete all text,

Click text tool at the beginning of the word to be deleted. Keep pressing Del key till all characters are wiped out.

##### (ii) Delete a Text Block

Select the text or you want to delete using the arrow tool, then press delete. Both text and block are erased (electronic oblivion).

#### (c ) To move text from one place to another,

##### (i) To move a text block

place arrow tool within the block, press and hold down the mouse button then move to new position and release the button.

##### (ii) Move the block in short distances

By pressing arrow keys on the keyboard. To resize the block drag the window shade handles. You can drag horizontally, vertically or diagonally

#### (d) Copying and moving a block of text

1. Select the block of text
2. On the Edit menu click Copy or cut or press **CTRL + C or CTRL + X**
3. Click where you want to paste the text
4. On the Edit menu click Paste or or **CTRL + V**.

#### (e) Spell Checking a Publication

1. On Edit menu, click Edit story
2. Click Utilities menu, then Spelling

3. In the dialog box specify the spelling check options then click Start
4. Click Start to spell check
5. Click the Close button once spelling check is complete

#### **(f) Find and Replace**

- To search for a word or phrase in page Maker
1. Click Edit then Edit Story
  2. On the Utilities menu, click Change to display dialog box
  3. In the Find What box type the word(s) to be searched
  4. In the Change to type the word(s) to replace the found word(s)
  5. Click Find or Change/Change All button

### **FORMATTING A PUBLICATION**

Formatting refers to applying special effects or attributes to the layout, text and graphical objects

#### **Text Formatting**

1. Highlight the text to format
2. On the Control Palette, select the **Font, font style, size** and **other attributes**
3. Click the Apply

#### **Change Case**

1. Highlight the text
2. On the Utilities menu point to plug ins then click Change case
3. Select case type, and then click Ok

#### **Superscript and Subscript**

Superscript Character appears slightly above the other characters and Subscript appears slightly below the other characters.

To format text to superscript or subscript in Page Maker

1. Highlight the character
2. On the Type menu, click Character to display dialog box of
3. Under Position box, select Superscript or Subscript.

#### **Drop Capitals**

To create a large capital at the beginning of a paragraph which drops a number of lines.

To add a drop capital to a paragraph, click with the text tool anywhere in the required paragraph, then select 'Utilities', 'Plug-ins', 'Drop cap'. Choose how many lines the drop capital is to take up, and click 'Apply'.

### **PARAGRAPH AND PAGE FORMATTING**

Paragraph formatting involves alignment text, indenting, adding column guides, inserting header and footer.

#### **(i) Text Alignment**

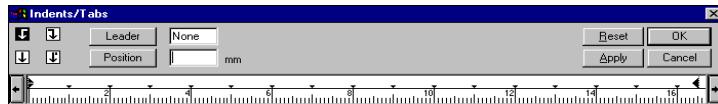
- Text can b aligned to the **left, right, center, or justified** along the left and right margins
1. Highlight the text
  2. Click the Control Palette, click the Paragraph view button
  3. Click left, center, right, justify or force justify
  4. Click the Apply button.

#### **(ii) Setting Tabs and Leaders**

You use tabs to position text at specify location relative to the left edge of a text block. After you set tabs, it is easy to add leaders (a row of dots or dashes placed between items, usually in a list or table.)

In Page Maker, you can set **left**, **centre**, and **right-aligned** tabs as well as that align a column of numbers at the decimal point.

Leaders make information in a table of contents or list easy to read.



- To enter a new tab stop, select the type of tab you require from the options on the left:  
**left tab** , **right tab** , **centre tab** or **decimal tab** .

Then click the position on the scale where you want the tab to appear. .

- The '**Leader**' button allows you to add a series of specified characters (normally dots or dashes) between the selected tab stop and the previous one.
- Then press the '**Apply**' button to add tab stops

### (iii) Creating Indents.

Indents move text inward from the left or right margin. After you set indents it is easy to add bullets.

You can set indents by typing indent values on the control palette (in paragraph view) or in the "**Paragraph specification**" dialog box. The most widely used indents are First line indent and hanging indents.

#### (a) First line indents

First line applies only to the first line of a paragraph. You specify the distance you want the first line to be indented from the left edge of the text block.

#### (b) Hanging indents

The first line extends farther to the left of the text block than the main body of the paragraph. You apply hanging indents to the body of a paragraph

- On the Type menu, click Indents/Tabs
- On the Indent/Tab ruler, set the tab stop then click Ok
- To indent, click increase or decrease indent button on the toolbar

### (iv) Bullet and Numbering

Solid dots printed before pieces of text in order to add an emphasis

This 'Plug-In' allow you to add 'bullets' or numbers to selected paragraphs in the text. Use it as follows:

- Start from 'Layout view' (i.e. not 'Story Editor').
- Using the 'Text' tool, click in the first paragraph to which you want to add the bullets/numbers.
- Select 'Utilities', 'Plug-Ins' and 'Bullets & numbering'.
- Select bullets or numbers to add to paragraph,
- Then click 'OK'

### (v) Changing Width of Character

You can change the width of individual characters in selected text (this is often called **horizontal scaling**) and also apply a character width setting as part of a paragraph style you have defined.

You change the width of a selected character (including a space) by scaling it to a specific percentage between **5%** and **250%**.

Percentages less than **100%** compress character width. Percentages greater than 100% expands character width.

#### (vii) **Spacing between Letters**

There are two ways to change the spacing between letters: Use these techniques to make text more visually pleasing or to make text fit within a given space.

##### **(a) Tracking**

Adjust letter spacing uniformly over a range of selected text.

Graphic designers often use tracking for lines of very large or very small type such as headings or captions.

You apply tracking by using **Expert Tracking** commands on the **Type menu** or by using the Control palette. To adjust inter letter spacing, select the text then from the type menu click expert tracking

##### **(b) Kerning Control** the spacing between pairs of characters.

You can apply kerning by pressing keyboard combinations to increase or decrease spacing or by entering kern value percentage (between **100% and + 100%**) in the control palette.

##### **Kerning can be adjusted by type expert Kerning menu command**

1. Highlight the pair of characters
2. On the Format menu click Character spacing
3. Under Kerning, select Expand or Condense

#### (vii) **Changing Space between Words**

Word spacing is the distance between the end of one word and the beginning of the next.

Page Maker lets you **compress or extend** this spacing. The ability to change word spacing is especially useful when you are working with **justified** text.

Page maker lets you specify tighter or looser word spacing to obtain the "look" you want. It also lets you perform copy fitting easily.

#### (viii) **Changing Spacing between Lines**

The vertical spacing between lines of text is called leading (pronounced "**ledding**"

To improve readability you can change the leading for all or part of a story. You can specify leading in **.01** increments up **to 1300 points**.

You can change leading using the control palette, the "**Type Specs...**" command or the **Leading command** . Page Maker positions each lines of text in an invisible horizontal space called a slug. You can see the slug when you select a line of text with the text tool. The height of the slug represents the amount of leading you have chosen for the text. Changing the leading of even one character on a line affects the leading for the entire line.

#### **Page Maker provides three methods:-**

##### **(a) Proportional Leading**

A baseline of a line of text is two thirds of the way down from the top of the slug

##### **(b) Top of cap leading**

Distance from the top of the slug to the baseline equals the height of the tallest character.

##### **(c) Baseline Leading**

The bottom of the slug is aligned with the baseline of text. Use the Type Leading command to specify the lead value.

#### **(viii) Changing spacing between Paragraphs**

Specify the amount of space you want before and after paragraphs. You can specify the spacing you want as a built in attribute of a paragraph or **paragraph style**.

Generally you specify consistent spacing before or after paragraphs, but not both. This is especially true when you are using paragraph styles to format your publication.

Use the Paragraph specifications dialog box to make paragraph settings such as inter-paragraph spacing, widows and orphans.

#### **Widows and orphans**

Lines of text that become separated from the other line in a paragraph, either at the top or bottom of a column or page.

Page Maker lets you specify the number of lines (up to three) that constitute widows and orphans and automatically prevent their occurrence in your publication.

In Page Maker a **widow** occurs when one, two or three beginning lines of a paragraph fall at the bottom of a column or page.

#### **Controlling Column Breaks**

Sometimes you want to control how and where columns break in a publication.

By using the “**Column break before**“ option in the “**Paragraph Specification**” dialog box, you can ensure that certain paragraph styles such as main headings, always begin a new column.

The ability to control column breaks also lets you avoid text reflow when you are working with threaded text block.

#### **Adding Rules to Paragraph**

When you want to add a rule, or line, above or below a paragraph you can apply a **paragraph rule**. Because rules are paragraph attributes and not independent graphic objects, they move with the paragraph.

Paragraph rules also adjust automatically when you change other paragraph attributes such as type size or leading.

You can specify attributes for paragraph rules, such as **line weight (width)**, **line pattern** and **color**.

You can also set a rule’s distance to the first or last line of the paragraph and specify that the rule either span the length of a line of text or extend the width of the column.

#### **Automatic Paragraph Styles**

A style is a collection of attributes (such as typeface, type size and style, line spacing, alignment, and indents) that you can apply to a paragraph in one step.

Using style frees you from the repetitive task of applying attributes individually to each paragraph in a publication. It takes only a second to change a style, which then automatically changes every paragraph which has that style applied in the publication.

When you create a new style (using the define styles item of the type menu command) its name appears on the “**Style**“ palette and on the control palette in paragraph view.

In story editor, Page Maker also displays each style name next to the paragraphs to which it is applied. Whenever you apply extra formatting that isn’t part of the style to a paragraph, Page Maker places a plus sign (+) next to the style name on the “**Style**“ palette.

## WORKING WITH GRAPHICS

Graphics play a vital role in conveying information. A DTP application cannot be complete unless it adequately addresses the techniques of creating, editing and formatting graphics.

### Importing Graphic

You can import graphics files using the Page Maker “**Place ...” command**. When you place a graphics file by choosing “**Place ...”** from the File menu, and then double click the graphic you want, the pointer turns into a loaded graphics icon.

To place the graphic position the loaded graphics icon where you want the upper left corner of the graphic to appear, and then click.

If you need to resize the graphic, you can retain its original proportions by holding down shift as you drag one of its handles.

In Page Maker you can work with both Independent and inline graphics.



#### (i) An independent graphic

Graphic that is not anchored to the text surrounding it. If you move the surrounding text, the graphic remains stationary until you move it manually.

#### (ii) Inline Graphic

An inline graphic is embedded in a text block and is anchored to the text. So when you recompose or move the text block, Page Maker automatically repositions the graphic.

Placing an inline graphic requires an extra step: before you choose “**Place ...”** you must first use the text tool to click an insertion point where you want the graphic to appear.

## Creating Basic Shapes

Page Maker allows the user to create basic shapes such as lines, ellipses, rectangles and other polygons using the drawing tools on the toolbox

#### (i) To draw basic shape

1. Select a shape tool
2. Position the toll where you want to draw the shape
3. Hold down the left mouse button and drag the shape to the required size
4. You can then fill the shape with any pattern and color

#### (ii) Inserting graphical objects

You can as well import pictures and other graphical objects into your publication.

Graphical objects are of different formats. Some common formats are

##### a. Post script

Vector graphics created using drawing programs, such as Adobe Illustrator, Adobe Freehand and Corel Paint

##### b. Tagged image file format (Tiff)

Screen images, scanned photos. Tiff images take up a lot of storage space

##### c. Joint picture extension graphics (jpeg) and graphical interface format (gif).

Used mainly on the internet and digital cameras because they take up small storage space

##### d. Windows metafile (wmf) and Windows Paintbrush file (PCX)

## **Placing an Object**

To import an object in page maker

1. On the File menu, click place
2. In the Place dialog box, select the drive or folder where the file is located, click open.
3. The mouse pointer changes to a loaded icon
4. Click once to paste the object.

## **Editing Graphical Objects**

Graphical objects are clip arts and pictures. You edit an object's attributes such as size, position, color and brightness.

### **(i) Moving and resizing objects**

To resize an object in Page Maker

1. Select the shape using the pointer tool
2. To resize, place the mouse pointer on the place sizing handles then drag
3. To move, place the mouse pointer on the shape then drag to the required place

### **(ii) Changing picture attributes**

A picture or clip art attributes include content, color mode and brightness

**To edit an object attributes in page maker**

1. Select the object
2. Edit the object using the toolbox, element menu and the control palette

## **Formatting Shapes and Graphical Objects**

Once you add a drawing or a picture into your publication, you may want to format it to make it more appealing .You format a graphical objects as you edit it.

### **(i) Fill and stroke**

**Filling** refers to applying a solid color or patterns to a drawing

**Stroke** refers to the outline style.

**To apply background and stroke in page maker**

1. Select the object
2. On the Element menu, click Fill and Stroke
3. In the dialog box apply the fill and stroke attributes

### **(ii) Rotating an Object**

Rotate selected text and graphics by using the rotating tool from the toolbox or by using the control palette. You can rotate text and graphics in increments as small as **1/10th** of a degree.

You can also constrain rotation to **45 degree** increments by holding down the shift key as you drag the object with the rotation tool.

1. Select the object
- 2, Click the rotate tool on the toolbox
3. Position start burst pointer at the centre of the object
4. Drag the mouse pointer away from the object
5. Rotate the handle in clockwise or anticlockwise direction.

### **(iii) Skewing Object**

To slant or stretch an object vertically, horizontally or both. You can skew any object, except a line, using the control palette by increasing or decreasing the skew value. Page Maker lets you skew an object up to a positive or negative angle of **85 degrees**.

A positive angle skews the object to the right and a negative angle skews the object to the left.

When you skew an object its original height is preserved.

#### **(iv) Arrange objects**

If an object is hidden by another, you need to rearrange them in order of visibility priority

##### **To arrange objects**

1. Select the object you wish to bring to the front or send to the back
2. On the Element menu, point to Arrange
3. Select an arrange option from the list

#### **(v) Cropping Graphical Objects**

Cutting off unwanted parts of a graphical object particularly a picture.

The control palette lets you crop the image precisely by using numerical control. After you crop a graphic you can move it within the frame to display a different part of the image by dragging the object to the position you wish to place it.

1. Select the object
2. In the toolbox, click the crop tool
3. Place the crop handle at the edge of the object and drag inward

#### **(vi) Grouping Objects**

If you have several objects in a publication, you may want to group them together

##### **To group objects in Page Maker**

1. Hold down shift key as you click each object
2. On the Element menu, select Group or simply press **CTRL+G**

#### **(vii) Wrapping Text around an Object**

You can wrap text around a graphic to visually integrate text and graphics in your publication.

The graphics boundary can take any shape: you can drag a boundary handle any place on the page, and add more handles (to create new line segment) clicking on the boundary.

##### **To wrap text in Page Maker**

1. Select the object placed on the text frame
2. On the Element menu click Text Wrap
3. Select wrap type and set the standoff measurement.

## **PRINTING A PUBLICATION**

Page maker provides tools that help you translate your design ideas into print.

1. On the File menu, click Print
2. Click Properties button to set print option
3. In the Print dialog, click the Advanced Print settings buttons
4. Click the Separations tab
5. In the output list, click Separations to process cyan, Magenta, yellow and black (CMYK) separately
6. Finally click the Print button to start printing.

## NETWORKING AND INTERNET

A network is an arrangement that enables two or more computers to communicate (talk) to each other.

### TYPES OF NETWORKS

Networks can range from a small group of computers linked together in a class room to thousands of computers linked together across the globe.

Depending on the geographical location, networks can be classified as

#### 1. LAN - Local Area Network:

If a network is confined to a single location, typically a building, it is called a LAN. Ex : Set of interconnected computers within an office.

#### 2. MAN - Metropolitan Area Network:

A metropolitan area network is a network that is larger than a LAN, it connects the computers distributed across multiple buildings. Ex: the computers in all branches of an office within a city.

#### 3. WAN - Wide Area Network:

When a network is located over wide areas such as cities, states, countries or even continents, it is called a WAN.

- i. Computers in different branches of a Globalised company.
- ii. Internet

### NETWORK TOPOLOGIES

Refers to the way in which computers and other devices have been arranged or how data is passed from one computer to another in the network

#### 1. Logical Topology

Deals with the way data passes from one device to the next on the network.

##### (a) Ethernet Topology

All computers listen to the network media and can only send data when none of the others is sending.

##### (b) Token Ring

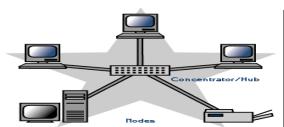
A special package for data called a token goes around the network and only the computer whose address is on the data held in the token will take up the token to read the data and then release the token. The token can then be captured by another computer, which needs to transmit data

#### 2. Physical Topology

Refers to the physical layout or arrangement of components on the network

##### (a) Star Topology

All devices are connected to a central hub. Nodes communicate across the network by passing data through the hub. When the hub receives data from a transmitting computer, it broadcasts the message to all the other nodes on the network. The star topology uses twisted pair (10BaseT or 100Base T) cabling .



### **Advantages:**

Centralized monitoring, failures do not affect others unless it is the hub, easy to modify.

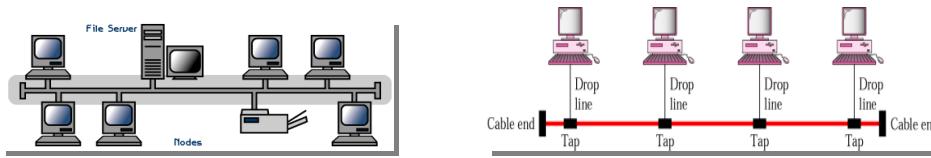
### **Disadvantages:**

if the hub fails then everything connected to it is down. this is like if you were to burn down the phone company's central office, then anyone connected to it wouldn't be able to make any phone calls.

#### **(b) Bus Topology**

All devices are connected to a central cable called backbone. A 50 OHM impedance terminator is attached to each end of the cable to avoid signals from bouncing back and forth on the cable causing signal distortion.

As data passes along the cable each station checks whether the data is addressed to it. If the address matches the machines address, it receives the data otherwise it rejects it. This type of network is usually peer to peer and uses thinnet (10Base2) cabling. It is configured by connecting a T connector to the network adapter and then connecting cables to the T connectors of the computers on the right and left.



### **Advantages:**

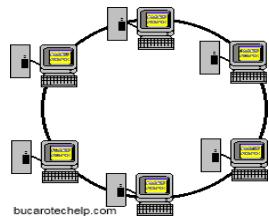
Cheap, simple to set up.

### **Disadvantages:**

Excess network traffic, a failure may affect many users, problems are difficult to troubleshoot.

#### **(c ) Ring Topology**

All devices are connected to one another in the shape of a closed loop. Each station is responsible for regenerating and retransmitting signals around the network to its neighbor. A token is used to exchange data from one station to another.



### **Advantages**

- i. Data packets can travel at great speed.
- ii. There are no collisions
- iii. Its easier to locate problems with devices and cables
- iv. No terminator are needed.

### **Disadvantages**

- i. A ring network requires more cable than a bus network
- ii. A break in the cable will bring many types of ring network down.
- iii. When you add devices to the ring all devices are suspended from using the network.
- iv. It's not as common as the bus topology so its equipment are not available...

#### **(d) Mesh Topology**

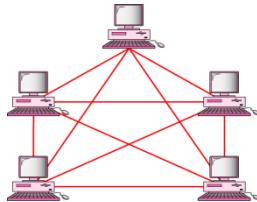
Every node has a connection to every other node in the network. A full mesh network can be expensive but provide redundancy in case of a failure between links.

## **Advantages**

A mesh network offers improved fault tolerance if part of the system goes down

## **Disadvantages**

- i. It's expensive and difficult to install
- ii It's difficult to manage
- iii. It's difficult to troubleshoot.



## **NETWORK MEDIA**

Data communication media

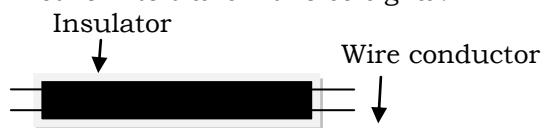
A pathway used for carrying data and information from one point to another

### **Communication using cables (bound media)**

Data signals are transmitted from the source to the destination through a restricted pathway.

#### **1. Two Wire Open Line Cable**

Two parallel copper wires separated by a plastic insulator. They are used in telecommunication network to transmit voice signal.



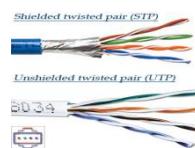
#### **2. Twisted Pair Cables**

Two solid copper wire strands wound around each other in a double helix manner to reduce the development of an electromagnetic field around the two wires.



##### **a. Unshielded Twisted Pair (UTP)**

Do not have a shield that prevent electromagnetic interference (EMI) also called “electric noise” and signal interference. Noise may come from lightening sparks, radio signal and even the radiations from spark plug in motor vehicle.



##### **b. Shielded Twisted Pair (STP)**

A braided shield is wrapped around the wire to shield or protect them from noise.

Twisted-Pair Connector Types Twisted pair cables use an RJ-45 (registered jack) connector. Most telephones connect use an RJ-11 connector.

#### **3. Coaxial Cable**

Resemble cable used to connect television antenna to a television set. It has a solid central copper core or stranded wires surrounded by a dielectric material (insulator).

The dielectric is then surrounded by a hollow mesh conductor which is covered by a shield making the cable more resistant to electromagnetic inference than the twisted pair cable.



There are two types of cable available based on the thickness of core

#### i. **Thinnet**

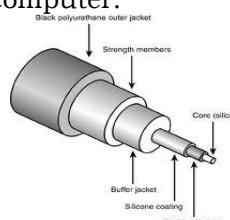
A thin and flexible coaxial cable, which has a thickness of about one-fourth of an inch. easy to work with , can be used for any kind of installation and of low cost. An earlier *10 Mbps Ethernet standard* that used a thin coaxial cable. Network nodes were attached to the cable via T-type **BNC connectors** in the adapter cards. BNC may be Bayonet Connector, Bayonet Nut Connector, and British Naval Connector.

#### ii. **Thicknet**

Thicker cable, about *half an inch* in diameter. has a thicker copper core, carry a signal for 500 meters , can be used as a backbone to connect several smaller thinnet-based networks. A station attaches to the main cable via a vampire tap, which clamps onto the cable. A vampire tap is so named because a metal tooth sinks into the cable, thus making the connection with the inner conductor. The tap is connected to an external transceiver that in turn has a **15-pin AUI connector** (also called **DIX or DB-15 connector**) to which you attach a cable that connects to the station. DIX got its name from the companies that worked on this format -- Digital, Intel, and Xerox.

### 4. Fiber Optic Cables

Utilizes light to transmit data from one point to another on the network. The electric signals from the source are converted to light signals, and then propagated along the fiber optic cable. To convert an electric signal to light, you need a Light Emitting Diode (LED) at the transmitter. At the receiving end a photosensitive device to convert light signal back to electric signal to be processed by the computer.



**Fiber optic cables are of two types**

#### (i) **Single Mode Fiber**

Has a narrow centre core and the light in the cable can only take one path through it. Low attenuation rate and preferred for long distance transmission. Has a bandwidth of 50 GBPS , very expensive and requires careful handling during installation.

#### (ii) **Multimode Fiber**

It's thicker than single mode, allows several light rays to be fed in the cable at an angle. Because of multiple light signals navigating the cable at the same time, distortion of the signal is possible. It has a high attenuation rate and are usually used for shorter distances.



### Fiber-Optic Connector Types

The subscriber connector (SC), known as a square connector, . SCs are latched connectors. This makes it impossible for you to pull out the connector without releasing the connector's latch, usually by pressing a button or release.

### **ST connectors for LAN connections.**

The straight tip (ST) fiber-optic connector, developed by AT&T, is probably the most widely used fiber-optic connector. It uses a BNC attachment mechanism, similar to the Thinnet Ethernet connection mechanism, which makes connections and disconnections fairly easy. The ease of use of the ST is one of the attributes that makes this connector so popular.

## **WIRELESS COMMUNICATION (UNBOUND MEDIA).**

Transmit data from one point to another without using physical connection. Use transmitting antenna and receiver aerial facilities for communication.

### **1. Microwave transmission**

Use very high frequency radio signals to transmit data through space. The transmitter and receiver of a microwave system should be in line-of-sight because the radio signal cannot bend. Long distance transmission is not possible. In order to overcome this repeaters are used at intervals of 25 to 30 kilometers between the transmitting and receiving end.

#### **(a) Satellite Communication**

A microwave relay station placed in outer space. Communication signal is transmitted from a transmitter on earth to the satellite at space. The satellite amplifies the weak signal and transmits it back to the receiver.

### **2. Radio communication**

Radio waves starts from a central point and spread outwards in all directions. The waves are radiated into atmosphere by a radio frequency antenna at constant velocity. Radio waves are not visible to the eye. They are used in radio and Television broadcast.

#### **(a) High Frequency (HF)**

Signal is propagated by directing it to ionosphere of the earth, which reflect it back to the earth's surface and the receiver pick the signal.

#### **(b) Very High Frequency (VHF)**

Transmitted along the earth's surface, such that repeater stations are placed strategically to maintain a line of sight in order to receive, amplify and propagate the signal from one area to another. The technology is popular for the hand held radio devices like "walkie -talkie" radios. The range of VHF is limited but is preferred to HF where major obstructions are encountered on the landscape. To overcome mountains and building obstructions repeater stations are built on raised areas.

#### **(c ) Ultra High Frequency (UHF)**

UHF radio waves require line of sight principle. There should be no barrier between the sending and receiving aerial. However they require smaller aerial.

#### **(c) Bluetooth Technology**

A short-range radio technology that enables people to use hand held communication devices such as phones and PDA to access the internet.

### **3. Infrared Transmission**

Communication is achieved by having infrared transmitters and receivers (transceivers). The computer infrared transceiver must maintain a line of sight with the one for the printer.

## **COMMUNICATION DEVICES**

Computers and transmission media require communication devices for the network to fully operational. These devices are more or less used

### **(i) Network Interface Card (NIC)**

Creates physical link between the computer and the transmission media. A network interface card is plugged into an empty expansion slot on the motherboard.



There are three types of networks cards . They are ethernet, token-ring, and ARCnet.

**(a) Ethernet:**

Connects a computer to a network. This cable structure does not need to form a structure, but must be essentially common to all cards on the network. Before a card transmits, it listens for a break in traffic. The cards have collision detection, and if the card detects a collision while trying to transmit, it will retry after some random time interval.

**(b) Token Ring:**

Connects computers in a ring networks. The cards, using their built in serial numbers, negotiate to determine what card will be the master interface card. This card will create what is called a token, that will allow other cards to send data. Essentially, when a card with data to send, receives a token, it sends its data to the next station up the ring to be relayed. The master interface will then create a new token and the process begins again.

**(c ) ARCnet:**

Designate a master card and keeps a table of active cards, polling each one sequentially with transmit permission.

**(ii) Modems and Codecs**

It converts a signal from digital to analog form for the purpose of transmission over the analog media. A modem can be external, an add-on card or built on the motherboard. Codecs converts analog signal to digital form for transmission via a digital medium.



**(iii) Hub**

Devices used to link several computers together. They repeat any signal that comes in on one port and copy it to the other ports (a process that is also called broadcasting).



**(a) Intelligent hubs**

Monitor the way computers are communicating on the network and keep the information in a small database of their own called a management information base (MIB). The network server can the use this information to fine tune the network.

**(b) Active hub**

Regenerates and retransmit signal the same way a repeater does. They require electrical power to run. They have 8 – 12 ports for network computer to connect to.

**(c ) Passive hubs**

acts as connection points and do not amplify the signal. They do not require power to run.

**(iv) Bridges**

Operate at Data Link layer of the OSI model and join similar topologies, divide network segments and keep traffic on one side from crossing to the other thus increase performance on a high-traffic segment. Unable to distinguish one protocol from another, because higher levels of the OSI model are not available to them. Aware of the destination MAC address, forward packets to all segments. Bridges are more intelligent than repeaters but are unable to move data across multiple networks simultaneously.



#### (v) **Repeaters**

Allow a cabling system to extend beyond its maximum allowed length by amplifying the network voltages so they travel farther. Repeaters operating at the Physical layer of the OSI model and used to regenerate signals between similar network segments.



#### (vi) **Routers**

Intelligent devices that connect multiple network types and determine the best path for sending data. Route packets across multiple networks and use routing tables to store network addresses to determine the best destination. Routers operate at the Network layer of the OSI model as such make their decisions on what to do with traffic based on logical addresses, such as an IP address.



#### (vii) **Gateways**

A device configured to give access to WAN or internet. A router is a device in which the gateway software is installed. A gateway may not necessarily be a router but it may be a computer configured to access the internet. Gateway converts data across different network architectures and protocols



#### (viii) **Switches**

Provide centralized connectivity just like a hubs . However, switches don't pass along everything they receive on one port to every other port as hubs do. Rather, switches examine the Layer 2 header of the incoming packet and forward it properly to the right port.



#### (ix) **Modems:**

Modems are of two types. One modem used to connect to internet using telephone line by dialing to ISP and the other one is used to connect to DSL. However both are used for modulation and demodulation, i.e. to convert analog signals into digital and vice versa to travel on telephone lines.

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## **INTERNET AND E-MAIL**

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The term internet refers to world wide network, connecting millions of computer users through ordinary telecommunication lines for the purpose of communication and resource sharing.

### **The other names**

1. The net,
2. The information superhighway,
3. Cyberspace

### **Evaluation of Internet**

Internet began as an experiment by the US Department of Defense in the 1960's to help scientist and researchers from widely dispersed areas work together by sharing scarce and expensive computers and their files. The goal requires the creation of a set of connected networks that would acts as one large network.

- In 1969 , the US Department of Defense created Advanced Research Project Agency Network (ARPAnet)
- In 1973 , ARPAnet made the first international connection.
- In 1986 , a faster backbone network was created by National Science Foundation (NSFNET)
- In 1990, ARPAnet dissolved and its sites were connected to NSFNET.
- In 1992 , World Wide Web (WWW) was introduced at the Centre for Europeans Nuclear Research (CERN) in Switzerland. This body has overseen the proliferation of internet technology across the globe.

## **FACILITIES OFFERED BY THE INTERNET**

### **1. Electronic Mail (E-mail)**

Exchanging electronic mail is the most popular feature on the internet. You can exchange electronic mail with people around the world, including friends , customers and even people you met on the internet. Electronic mail is faster than ordinary mail, easy to manage inexpensive and save paper .

### **2. Information**

The internet gives access on virtually any subject. You can review newspapers and much more. Governments, colleges , universities , company and individuals all offer free information on the internet. For example you can inquire about universities in Britain or America.

### **3. Program**

Thousands of programs are available on the internet. These programs include word processors, spreadsheets, games and much more. You can look for the latest software over the internet. For example you get the latest anti-virus software available and in addition, retrieve a free trial issue.

### **4. Entertainment**

Hundreds of simple games are available on the internet, including backgammon, chess, poker, football and much more. The internet also lets you review current movies and hear television theme songs.

### **5. Discussion group (Chat group)**

You can join discussion groups on the internet to meet people around the world with similar interests. You can ask questions, discuss problems and read interesting stories. There are many discussion groups on various topics.

### **6. Online shopping**

You can order goods and services on the internet without leaving your desk. For example you view a catalogue of a certain clothes shop over the internet and fill in an online order form.

## **THE FACILITIES CAN BE USED AS TOOLS IN VARIOUS WAYS.**

### **1. As a research tool**

To learn about new developments or products , competitors market news and customer opinion.

### **2. As an advertising /trading tool**

To aid in selling goods or delivering information through world wide web pages to customers on a global 24 hour basis

### **3. As a communication tool**

To support correspondence with customers, suppliers or staff through electronic mail.

### **4. As an entertainment channel**

Games , movies , songs and television theme songs are available for free at the internet. You can have interactive conversations with people around the world including celebrities

## **USERS OF THE INTERNET**

Considering the facilities and the various tools offered, the internet has attracted various users

- i. Researchers can get information
- ii. Individuals use it for their work or communicate
- iii. Large organizations can communicate with subsidiary companies or suppliers
- iv. Students and schoolchildren can communicate
- v. Business can advertise, communicate and sell goods
- vi. Buyers can shop online

## **FACILITIES NEED ED FOR THE INTERNET (Internet connectivity requirements)**

In order to get connected to the internet you will require the following:-

### **1. A computer**

There are several elements that are desirable in the computer.

- i. Fast processor so as to quickly access and download information and programs from the internet.
- ii. Color screen to view the various graphics and images
- iii. Free disk space on which to load the information or programs from the internet.

### **2. Software**

To access internet services, a computer must be installed with a browser and e-mail client. A browser is a program that lets the user surf or browse the internet. Eg Mozilla Fire fox, Netscape navigator, Internet explorer etc. E-mail client on the other hand is a software that enables the user to receive , compose and send e-mail. Eg Ms Outlook express, Eudora, Yahoo mail, Gmail etc

### **3. Telephone**

If you are using analog telephone lines, a device known as a modem is connected between the computer and the line. A modem converts digital signal to analog for transmission over analog telephone lines. As transmitting modem it translates computer information into a form that can transmit over telephone line (**modulates**) . As a receiving modem it translates the information in a form that your computer can understand (**Demodulates**). Modem speeds are quoted in bits per second (Bit) . Typical speeds are 9600 bps, 4.4 kbps , 28.8 kbps, 56.0 kbps etc. However modern telephone lines are digital hence a modem may not be required.

### **4. Internet Service Provider (ISP)**

This is a Licensed commercial or non commercial organizations that provides access for subscribers to the internet along with a set of support services for a fee. An ISP will usually have a number of host computers. These hosts will typically provide storage space for electronic mail messages for their users, users owe web sites and a set of related facilities such as advice, support , software and appropriate security. There are now a large number of ISP's offering a wide range of facilities over and above the most basic connectivity. Examples of local ISPs include *African online*, *Form Net*, *Net 2000*, *Access Kenya*, *Swift Kenya* , *Nairobi Net*, *Wananchi online*, *Zuku Network*, *Jambonet*, *African online*, *Kenya Data Network*. *ISP charge for the service rendered.*

## 5. **Username and Password**

Every time you get connected you require a name to identify yourself in the internet. This is done when the user registers with the ISP

### **Password**

This is needed for security purposes. You need to enter a user name and a password when you want access to the internet. This ensures that you are the only one who can access your internet account.

## 6. **Transmission Media**

These are physical or wireless pathways used for information transfer from one point to another

### **a. Microwave transmission**

A high frequency wave that fall between ultra high frequency and infrared light. Microwave dishes are used to propagate the signal from the transmitter station to the receiver station.

### **b. Broadband wireless transmission**

Broadband radio transmission use radio frequency to transmit data packets between wireless devices such as mobile phones, PDAs and notebook. This service of transmitting data via global system for mobile phone (GSM) to internet is referred to as general packet radio service (GPRS)

## **ADVANTAGES OF INTERNET**

### **1. Efficient communication**

People can exchange information with family members and friends located anywhere in the world through e-mails.

### **2. Electronic commerce**

This is the fastest growing internet use. Transactions are carried through cyber shops and cyber malls

### **3. Vast Content**

Researchers and scholars use internet to access digital libraries for the latest information and archives

### **4. Entertainment**

Multimedia sites keep the net users entertained through video, music , web tv and radio

### **5. On line teaching and learning**

On-line teaching is conducting classes electronically. E-learning on the other hands lets a student attend

On-line classes as well as sit for on line examinations.

## **TYPES OF CONNECTIONS**

- **Analog connection**  
You can connect to an ISP by dialing a telephone number over an analog telephone. This is referred to as dial up.
- **Integrated service digital network (ISDN)**  
Though a dial up, is a digital connection hence faster than analog connection
- **Broadband Connection**  
Can either be **Asymmetric digital subscriber line (ADSL)** or **Symmetric digital subscriber line (SDSL)**. This is the fastest connection because no dial up is required.

## INTERNET SERVICES .

### 1. World Wide Web

World Wide web (www) is a virtual space on the internet that contains information. This information is made available as:-

- **Website**  
A group of related web pages or other resources located on a web server. The first page on a website is called a home page
- **Web Portal**  
Offers special services such as searching , e-mail, sport updates , financial , news and links to selected websites.
- **A blog**  
Websites that contains personal information which can easily be updated. Some blogs acts resume , diary and may be used for business , advocacy and campaign purpose.
- **Multimedia**  
Sites that contain photos, movies , music , web TV and internet radio. They are meant for entertainment

### 2. Newsgroup

An organized group of internet users who wish to share ideas and interests. Once you join a newsgroup, you can participate in discussion forums, and debates

### 3. Searching engines

Specialized programs that help the user to easily search for any information on the internet.  
Eg Google, Alta Vista, Excite and Yahoo

#### Good Search strategy

- Identify a search engine
- Enter the key words in the search text box. Be as precise as possible
- Use quotation marks to identify the key words
- From the displayed search result, identify the site that contains the information you want

### 4. E- learning

Learning on the net. Courses for high school, colleges and universities are being conducted on line or accessed from selected files on the internet

### 5. Electronic Mail

Messages transmitted electronically over the internet.

### 6. Instant Message

This is a more enhanced messaging service that allows two or more people to communicate directly. To get the service you must first register with an instant messenger such as Yahoo messenger

## **7. Chatting on the net**

People can sign into a chat room and exchange ideas freely through discussion.

### **Uniform resource locator(URL)**

Simply referred to as web address, connects the user to a particular website. The URL has two basic parts

#### **a. Protocol**

Standard used to connect to the resource eg hypertext protocol (http://) and file transfer protocol (ftp://)

#### **b. Domain name**

Name of the web server where the resource is located

**http://** (HyperText Transport Protocol) moves graphical, hypertext files

**ftp://** (File Transfer Protocol) moves a file between 2 computers

**gopher://** (Gopher client) moves text-based files

**news:** (News group reader) accesses a discussion group

**telnet://** (Telnet client) allows remote login to another computer

## **ACCESSING THE INTERNET**

Before access the internet, a person must start the browser software. Generally the application windows for internet Explorer will look like this

1. The title bar
2. The toolbar with standard browser buttons
3. The address bar
4. Internet pages displayed here

### **Log in/Sign in**

To access a website , type the full address of the website in the address bar then press the Enter key on the keyboard. If the internet connection is working properly the browser will start connecting to the requested website or URL.



### **Hyperlink**

A link. Connects a person from one website to another.

### **Adding a website to favorites**

Book mark those web pages that you are likely to revisit by adding them to the favorite

### **To bookmark a site**

1. On the Favorites menu, click Add to Favorites
2. Click Ok to accept the name of the new favorite
3. To make the site available off-line, check Make available off-line

### **To view or visit your favorite later**

1. Open the Window explorer window
2. Locate the favorites folder and open it
3. Click the favorite you wish to view

### **Downloading web pages**

Using internet explorer you can save a web page or a file to a disk file. This is referred to as downloading

### **To download web content**

1. Go to the web page to be downloaded or simply click its hyperlink
2. On the File menu choose File then click Save File As
3. Select the destination folder then click Save. The download progress is displayed.

### **Printing web content**

1. Click the Print button on the navigation toolbar
2. Set the print options as you did with application packages
3. Check the "Print shortcut in a table at the end of the document" check box then click Ok.

## **USING ELECTRONIC MAIL**

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To create , receive and send electronic mail (e-mails) , a special e-mail program such as Microsoft Outlook Express. Yahoo Mail, Gmail and Eudora are required. You launch an e-mail program from Start menu or Taskbar.

### **E-mail Software**

E-mail software fall under a special group of application packages called communication software. It is specially designed and developed to help a person to read and send individual text documents on the internet as long as both the sender and receiver have an e-mail address. Like the normal postal address , an e-mail address directs the computer on the internet on where to deliver the e-mail message. A typical e-mail address would look like the **citcnbi@gmail.com**

1. **CITC** is the user name and is usually coined by the user during e-mail account registration
2. **@** is the symbol for “at” which actually separates the user name from the rest of the address
3. **Gmail.com** is the name of the host computer in the network i.e. the computer on which the e-mail account is hosted.
4. The period “.” Is used to separate different parts of the e-mail address
5. **com** identifies the type of institution offering a particular service(s) and is called the domain, meaning it is a commercial institution

### **Other common domain include**

<b>Domain</b>	<b>Type</b>
.edu	Education institution
.gov	Government institution
.org	Non profit making organization
.mil	Military
.co	Commercial institution.

Sometimes another two letter extension is added after the domain name to show the country where the site is located eg .

.ke	Kenya
.ug	Uganda
.tz	Tanzania
.jp	Japan

### **Opening an e-mail in Yahoo**

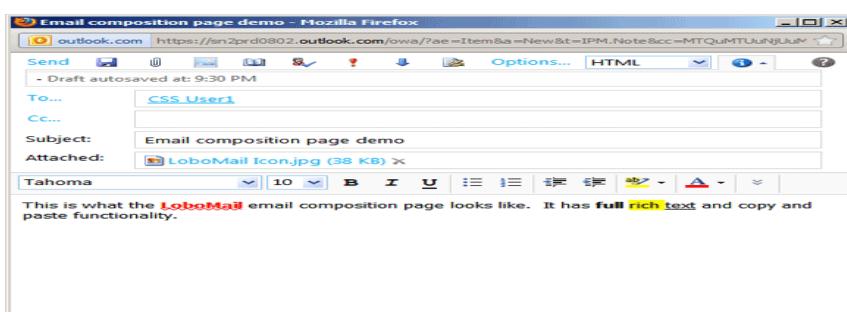
Once an e-mail message that has been sent to you arrives at your computer, it must be opened to be read. To use Yahoo mail, you first sign up for an e-mail account. Yahoo assigns you a unique user name referred to as an ID and a password.

### **To open an e-mail in Yahoo mail**

1. Sign in the username (ID) and password
2. Click Check mail button then inbox
3. In the inbox list , click the subject of the mail to read
4. Read the mail. Open an attachment if any

### **To open an e-mail on outlook Express**

1. Launch Outlook Express from the taskbar
2. In the folders list, click Inbox
4. Read the mail . Open an attachment if any



### **Composing an E-mail**

A typical e-mail compose window has three basic elements. These are

#### **1. Header**

The e-mail header is made up of the following parts

- **Address of the recipients**  
The e-mail address is made up of two basic parts, the user name and domain name
- **Subject**  
Presents the topic of the message
- **Attachment**  
Files attached from other programs such as word processor and spreadsheet

#### **2. Message**

This is the content of your e-mail. It is typically short and to the point. It may include text and graphics

#### **3. Signature**

This signature provides additional information about the sender such as full name, postal address and telephone number.

### **E-mail Etiquette**

To ensure proper behavior in electronic messages observe the following guideline.

1. Read your mails.
2. Specify the subject.
3. Clearly identify yourself.
4. Know and respect your recipient .
5. Avoid outburst.
6. Use proper English
7. Be brief.

8. Avoid copying messages to others.
9. Don't demand the replies from the recipient unless its necessary.
10. If replying to requests please identify the original question.
11. Never assume your mails are private.

#### **To compose an e-mail in either Yahoo mail or Outlook Express**

1. Click the Compose button
2. Type the recipient address or get it from the address book
3. Type in the subject of the message
4. Type in the message in the message box
5. Click the Send button.

#### **File Attachment**

Just the way you can attach a document such as a resume to an ordinary mail, you can attach a file to an e-mail, you can attach a file to an e-mail. A file may contain pictures , video or text

#### **To attach a file to an e-mail**

1. Click the Attachment button on the toolbar
2. In the dialog box that appears , select the file(s) to attach
3. Click Attach button to attach the files

#### **Contact Management**

To avoid typographical errors when entering an e-mail address, add the contact to the address book

#### **To add a contact in outlook express**

1. On Tools menu, click Address Book
2. In the Address Book window, click the New Contact button
3. Enter the contact details including the e-mail address
4. Click the Add button to add the contact into the list, then close the address book

#### **To add a contact in Yahoo mail**

1. Click the e-mail address of the sender
2. Click Add Contact button
3. Enter other contact details.

### **ABOUT SEARCH ENGINES/SEARCH TOOL.**

A search engine is software that quickly helps you to locate information in the web. There are several search engines such as *Yahoo, Infoseek, Lycos, Web Crawler and Excite*.

#### **How search tools find web pages**

Hundreds and thousands of new web pages are created each day. It is almost impossible for a search tool to catalog every new page on the web. There are two ways that search tools use to locate web pages

##### **1. Spider (Robots)**

Automated robots called spiders travel around the web looking for new pages and linking them

##### **2. Submissions**

Derived from people who have created new web pages and submitted information about pages they have created.

#### **Step by step**

1. Select a search engine , in the case of Yahoo and type in its address at the address box i.e. <http://www.yahoo.com>. Once a search engine home page appears as yahoo type the keyword in the search box ( eg Kenya ) then click search to search. The steps will vary depending on the search engine you are using.

2. As soon as the search is completed, you will be presented with a list of web sites that contain the key word you are looking for. Select a site whose description comes closest to the information you desire.
3. If there are too many sites, not all will be displayed. However there will be an option that allows you to view the next 10 or so matches. Click on this if necessary.
4. If there are too many matches you may want to use additional keyword to narrow down the search. Type the additional key word in the search box. Eg “Kenya + Economy “ to narrow down to sites that contain information about the Economy in Kenya.

## **EFFECTS OF INTERNET ON SOCIETY**

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### **Challenges brought by internet**

- **Accessibility to dirty sites**  
Pornography by the young hence affecting their morals. This has resulted in premarital sex, drug and substance abuse. The solution to this problem is to restrict the known offensive sites using filter programs such as Cyber Patrol, Cyber sitter or Net Nanny
- **Security and privacy**  
Internet has made it easy for criminals to illegally access organizations private information hence posing security concerns. To improve on security , install a firewall
- **Spread of malicious software**  
These include viruses, Trojan horse and worms. This results in frustration and loss of data. Install internet security program and update it regularly.