PABLO

Computer Literacy lecture 1

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What is computer literacy?

- is defined as the knowledge and ability to use computers and related technology efficiently, with a range of skills covering levels from elementary use to programming and advanced problem solving.

What Is a Computer?

- Electronic device operating under the control of instructions stored in its own memory.
- The computer

first, Accepts data such as raw facts, figures, and symbol

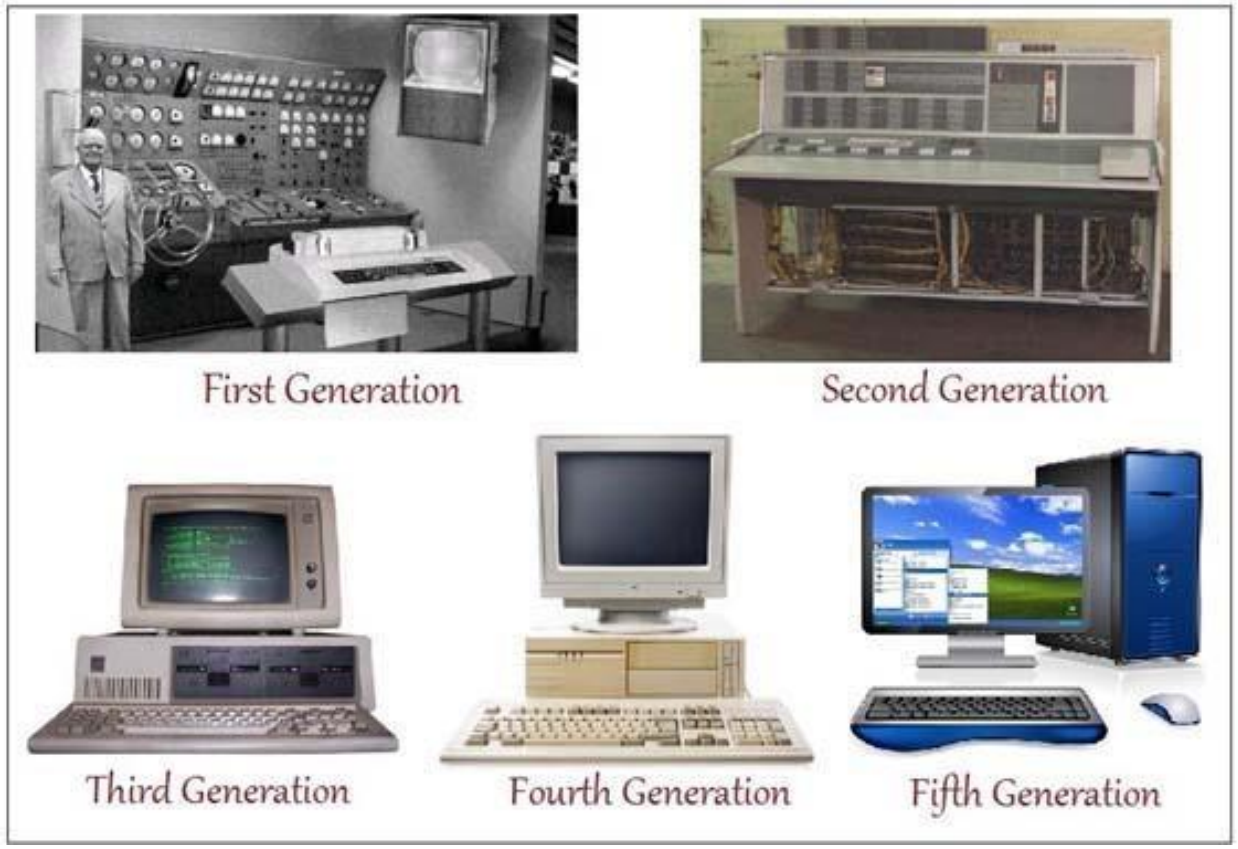
then, Processes data into information (Data that is organized, meaningful, and useful)

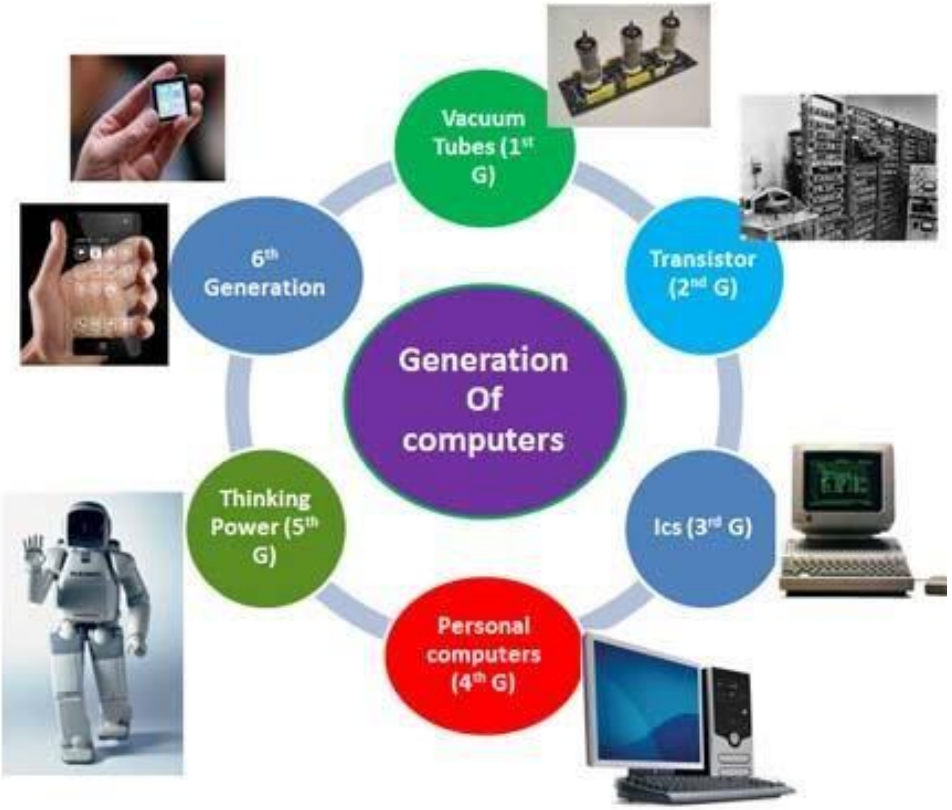
finally, Produces and stores results.

Define; - computer

- Input processing output
-
-
- store

Computer History…





First Generation of Computer(1946-1959)

- Used vacuum tubes as the CPU and magnetic drum for storing the data.
- The size of the *computer in this generation* is larger like room size and limited to basic operation.
- Used punch cards, magnetic tape, paper tape for entering the input, and storing output and data
- Examples include ENIAC, UNIVAC, EDSAC, and EDVAC

Second Generation of Computer(1959-

1965)

- *Used* the transistor in the place of vacuum tubes.
- it is more reliable, faster, cheaper and smaller in size than the *first generation of computers.*
- Used magnetic tape and magnetic core as the primary storage, and magnetic disks as secondary storage.
- Example include IBM 1620, IBM 7094, CDC 1604, CDC 3600, UNIVAC 1108

Third Generation of Computer(1965-1972)

- *Used* IC (Integrated Circut) in place of transistors.
- it is more reliable, faster, cheaper and smaller in size than the Second *generation of computers.*
- Example include the IBM-360 series, PDP (Personal Data Processor), Honeywell-6000 series, and IBM-370/168.

Fourth Generation of Computer(1972-1980)

- Used VLSI Technology.
- *These generation computers* require the limited power to run.
- This generation of computers made it possible for users to use computer for word processing, spreadsheets, file managing and graphics.
- *Examples of this generation computer* are STAR 1000, CRAY-X-MP (Super Computer), PDP 11, DEC 10, and CRAY-1.

Fifth Generation of Computer(1982present)

- Used the Ultra Large Scale Integration technology .
- This generation introduces laptops, notebooks, PC’s, desktops.
- *These computers perform* parallel processing with fast results.

Future Generation of Computers

Characteristics of Computer

- **Speed:** The speed f a computer in processing information is increasing from time to time and computers can calculate at very high speed.
- **Accuracy:** The accuracy of a computer system Is very high provided that the data and the program given to it are accurate.

Characteristics of Computer

- **Storage:** Computers can store large amount of data using their memory unit.
- **Versatility**: Computers can be programmed and applied for different purposes. People can use computers for different applications.
- **Diligence:** The computer does the same thing repeatedly without saying “I am tired or I am bored”.

Limitations of Computer

- **No I.Q:**
  - A computer is a machine that has no intelligence to perform any task.
  - Each instruction has to be given to computer.
  - A computer cannot take any decision on its own.
- **Dependency**
  - It functions as per a user's instruction, so it is fully dependent on human being
- **Environment**
  - The operating environment of computer should be dust free and suitable.

- **No Feeling**
  - Computers have no feelings or emotions.
  - It cannot make judgment based on feeling, taste, experience, and knowledge unlike a human being.

Types of Computers

Criteria's:

- Based on the operational principle(hardware structure and the way physical quantities are represented in a computer)

- Based on their processing power, cost and size

Types of Computers…

- Based on the operational principle, computers can be classified into three categories:

1. Analog computer

2. Digital computer
3. Hybrid computer

Analog Computers

- Analog computers are used to process analog data.
- Analog data is of continuous nature and which is not discrete or separate such as temperature, pressure, speed weight, voltage, depth etc.
- Utilize mechanical or electrical energy to operate.

- Analog computers are the first computers being developed and provided the basis for the development of the modern digital computers.

Analog Computers…

- Analog computers are widely used for certain specialized engineering and scientific applications, for calculation and measurement of analog quantities.
- These computers are ideal in situations where data can be accepted directly from measuring

instrument without having to convert it into numbers or codes.

Examples: The Speedometer of a car measures speed, the change of temperature is measured by a Thermometer, etc.

Digital Computers

- They use digital circuits and are designed to operate on two states, namely bits 0 and 1. They are analogous to states ON and OFF.

- Data on these computers is represented as a series of 0s and 1s.
- Digital computers are suitable for complex computation and have higher processing speeds.
- They are programmable.

Digital Computers…

- Digital computers are either special purpose computers or general purpose ones.
- Special purpose computers, as their name suggests, are designed for specific types of data processing

while general purpose computers are meant for general use.

- Most of the computers available today are digital computers.
- The most common examples of digital computers are accounting machines and calculators.
- Analog computers lack digital memory where as digital computers store information.

Digital Computers…

Examples:

- IBM PC • Apple Macintosh

- Digital calculators
- Digital watches etc

Hybrid Computers

- These computers are a combination of both digital and analog computers.
- In this type of computers, the digital segments perform process control by conversion of analog signals to digital ones.

- Hybrid computers for example are used for scientific calculations, in defense and radar systems.

Hybrid Computers…

- For example a petrol pump contains a processor that converts fuel flow measurements into quantity and price values.
- In hospital Intensive Care Unit (ICU), an analog device is used which measures patient's blood

pressure and temperature etc, which are then converted and displayed in the form of digits.

- Radar systems are another example.

Cont'd…

- Based on their processing power (speed), cost and size computers can be classified into 4 types:

a) Micro computers

b) Minicomputers

c) Mainframe computers

d) Super computers

1. Micro/Personal computers

Desktop

PALMTOP

PDA (PERSONAL DIGITAL ASSISTANT)

Laptop/notebook

(The smallest classification of computers)

Are IPads computers? How about IPods? Phone?

2. Minicomputer

- Minicomputers are also called mid-range systems or workstations.
- They contain one or more microprocessors.
- Mini computers can be used to handle the processing for many users simultaneously who are connected via terminals.
- Used in different software application development.
- **Examples:**
  IBM AS/400
  IBM SYSTEM 360
  HP 3000
  PRIME 9755

3. Mainframe computers

- Mainframes are data processing system employed mainly in large organizations for various applications, including bulk data processing, process control, industry and consumer statistics, and financial transaction processing.

  - Mainframes typically cost several hundred thousand dollars.
  - They are used in situations where a company wants the processing power and information storage in a centralized location.

Mainframe computers…

- A mainframe computer may contain several microprocessors.
- A single mainframe computer can be used by hundreds of people at once.
- A mainframe computer system is usually composed of several computers in addition to the mainframe, or host processor. Examples:
- IBM S/390
- Amdahl 580
- Control Data Cyber 176

4. Super computers

- are the largest, fastest, most powerful, and most expensive computers made.
- are used for extremely calculationintensive tasks such simulating nuclear bomb detonations, aerodynamic flows, and global weather patterns.
- Use multiple processors
- cost several million dollars

Super computers…

Features:

- The aerospace, automotive, chemical, electronics and petroleum industries use supercomputers extensively.
- Supercomputers are used in weather forecasting.
- The ultra supercomputer will simulate nuclear explosions (eliminating the need to explode any bombs).
- Supercomputers can perform at up to 128 gigaflops, and use bus widths of 32 or 64 bits. This capability makes supercomputers suitable for processorintensive applications, such as graphics.

Super computers…

EXAMPLE:

Cray-1 Cray-2

Control Data Cyber 205

ETA

Applications of Computer

- The various applications of computers in today's arena include:
  - Home
  - Health Care
  - Business

Banking
Insurance
Education
Marketing
Engineering Design
Military
Communication
Government

In HealthCare

- To keep the record of patients and medicines.

- Used in scanning and diagnosing different diseases.
- ECG, Ultrasounds and CT Scans etc., are also done by computerized machines.

In HealthCare…

- Some major fields of health care in which computers are used are:

- **Diagnostic System -** Computers are used to collect data and identify cause of illness.
- **Lab-diagnostic System -** All tests can be done and reports are prepared by computer.

- **Patient Monitoring System -** These are used to check patient's signs for abnormality such as in Cardiac Arrest, ECG etc.
- **Pharmacy Information System -** Computer checks DrugLabels, Expiry dates, harmful drug’s side effects etc.
- **Surgery :** Nowadays, computers are also used in performing surgery.