Government of Tamilnadu

Department of Employment and Training

Course :   SSC EXAM
Subject :   Computer Science
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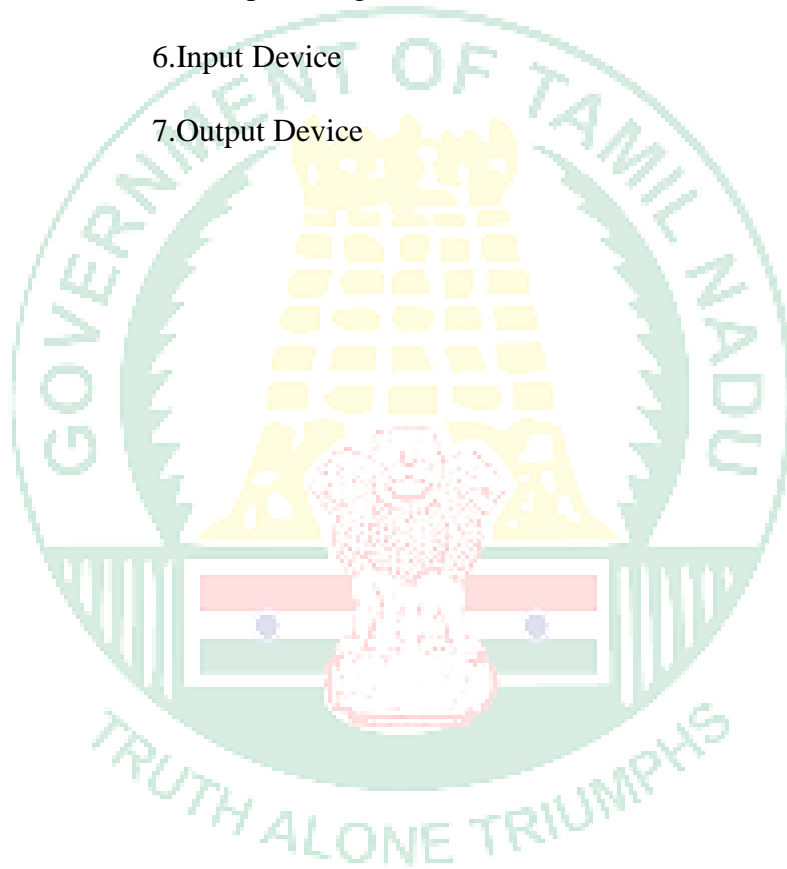
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CONTENT

I. INTRODUCTION TO COMPUTER

- A machine that stores programs and information in electronic form and can be used for a variety of processes, is known as **Computer.**
- The data that is fed into a computer processor received into the computer by a keyboard or other sources is called **Input.**
- A computer is an electronic device that accepts data from the user (input), processes the data by performing calculations and operations on it and generates the desired **Output.**
- The term 'Computer' is derived from a Latin word, which means to calculate.
- The mechanical, magnetic, electronic and electrical components that comprises a computer system such as the Central Processing Unit (CPU), monitor, keyboard, etc. is known as **Hardware.**
- A set of instructions that tells the computer about the tasks to be performed and how these tasks are to performed, is known as **Software.**
- An unprocessed collection or representation of raw facts represented in a manner suitable for communication, interpretation or processing by humans or by automatic means is known as **Data.**
- The result of processing, manipulating and organising data in a way that adds to the knowledge of the person receiving it is known as **Information.**

II. HISTORY OF COMPUTER

Professor Charles Babbage's analytical engine considered as **"Fundamental framework of computer" is** a mechanical general-purpose programmable computing engine. It was a successor to the Difference Engine. Computer that we use today is absolutely different from the first generation computer. Evolution in technology from 19th century to present day modified computer totally.

In digital world, from a small wrist watch to space satellite all are controlled by computer. A small or large machine was handled by humans in past, but in digitalized world these are handled by a programmed humans i.e.' Robots'.

III. GENERATIONS OF COMPUTER

Each generation of computer is characterized by a major technological development that fundamentally changed the way computers operate, resulting in increasingly smaller, cheaper, more powerful and more efficient and reliable devices.

First generation Computers
(1940-1956)

- The first computers used vacuum tubes for circuitry and magnetic drums for memory.
- They were often enormous and taking up entire room.
- First generation Computers relied on machine language.
- They were very expensive to operate and in addition to using a great deal of electricity, generated a lot of heat, which was often the cause of malfunction.
- The UNIVAC and ENIAC Computers are examples of first-generation computing devices.

Second generation Computers
(1956-1963)

- Transistors replaced vacuum tubes and ushered in the second generation of computers.
- Second-generation computers moved from cryptic binary machine language to symbolic.
- High-level programming languages were also being developed at this time, such as early versions of COBOL and FORTRAN.
- These were also the first computers that stored their instructions in their memory.

Third generation Computers
(1964-1971)

- The development of the integrated circuit was the hallmark of the third generation of computers.
- Transistors were miniaturized and placed on silicon chips, called semiconductors.
- Instead of punched cards and printouts, users interacted with third generation computers through keyboards and monitors and interfaced with an operating system.
- Allowed the device to run many different applications at one time.

Fourth generation Computers

(1971 – Present)

- The microprocessor brought the fourth generation of computers, as thousands of integrated circuits were built onto a single silicon chip.
- The intel 4004 chip, developed in 1971, located all the components of the computer.
- From the central processing unit and memory to input/output controls on a single chip.
- Fourth generation computers also saw the development of GUIs, the mouse and handheld devices.

Fifth generation Computers

(Present and beyond)

- Fifth generation computing devices, based on artificial intelligence.
- Are still in development, though there are some applicants, such as voice recognition.
- The use of parallel processing and superconductors is helping to make artificial intelligence a reality.
- The goal of fifth-generation computing is to develop devices that respond to natural language input and are capable of learning and self-organization.

IV.   TYPES OF COMPUTER

- Micro Computer the small, low-cost digital computer which usually consists of a microprocessor, a storage unit, an input channel and an output channel, all of which may be on one chip inserted into one or several PC boards.
- A notebook is a small, lightweight personal computer that incorporates the screen, keyboard, storage and processing components into a single portable unit. Notebook is also referred to as Laptop.
- A mainframe computer is a large and expensive computer capable of simultaneously processing data for hundreds or thousands or users.
- A computer falls into the Super Computer category, if it is, at the time of construction one of the fastest computers in the world.
- Hybrid Computers are used to obtain a very good but relatively imprecise seed value, using an analog computer front-end, which is then fed into a digital computer iteration process to achieve the final desired level of accuracy.
- Computerized traffic control systems, automatic aircraft landing and to solve a single and dedicated type of problems. These type of computers are generally known as Special purpose computer.
- Mainframe is an ultra-high performance computer made for high volume, processor intensive computing. It is also consists of a high end computer processor for Extensive Data Storage.

V.   COMPUTER ORGANISATION

- Central Processing Unit (CPU) controls, coordinates and supervises the operations of the computer. It is responsible to process all kinds of data. Arithmetic Logic Unit (ALU) is part of CPU which is responsible for evaluating and performing arithmetic and logic operations on the input data.
- Control Unit respective part of CPU, responsible for controlling the overall operations of computer. The sequence of execution of instructions coordinates and controls the overall functioning of the computer.
- Personal computers use a number of chips mounted on a main circuit board. Motherboard is the common name for such boards.
- The CPU if fabricated as a single integrated Circuit (IC) chip. It is also known as the Microprocessor.
- A standard intended to connected relatively low speed devices such as keyboards, mic, modems and printers, is known as Access Bus.
- The components of a computer are connected by a device which is a collection of wire that carries electronic signals from one component to another. It is called Bus.
- Buffer the temporary storage between the CPU, Memory and a peripheral device.
- The part of the CPU which accesses and decodes program instructions, and coordinates the flow of data among various system components is known as Control Unit (CU).
- Hardware devices that are not part of the main computer and are often added later to the system are Peripherals.

VI.   INPUT DEVICES

The Device that can feed data into a computer is known as Input device. For example

1. **Keyboard**
   - Most common data entry device
   - Layout is categorized in five types of keys (Alphanumeric, Numeric, Function, Cursor movement, Other keys)
   - It consists of 101 keys (approx)
   - Ex: QWERTY, Dvorak and Azerty.

2. **Mouse**
   - Most common pointing device.
   - Perform Drag and Drop function on screen.
   - Also known as **Mice.**
   - It consists of three buttons with one moving rubber ball.
   - Types of mouse are: Mechanical Optical, Laser, and Wireless Mouse.

3. Joystick
- It consists of stick that pivots on a spherical ball on its base.
- Movement at 360 in all directions is possible.

4. Touch screen
- It consists of three components i.e., touch sensor, controller and a software driver.
- Pressure sensitive activation by finger or stylus.

5. Light Pen
- A light sensitive wand.
- It consists of photocell mounted at its tip.

6. Microphone
- Also called Mic.
- Converted received sound into computer's format, which is called Digitised sound or Digital Audio.

7. Digital Camera
- Stores the pictures or videos in an electronic format instead of film.

VII. OUTPUT DEVICES

- An electromechanical device, which converts machine-readable information into human-readable form, is known as Output Device
- The printed form of output is referred as Hard Copy. The form of output displayed on the screen is referred as Soft Copy.
- The device that prints information from the computer onto the paper is Printer.
- A pen based output device, attached to a computer for making vector graphics, that is, images created by a series of many straight lines is known as Plotters.
- A Monitor is a TV-like display attached to the computer on which the output can be displayed and viewed. It can either be a monochrome display or a colour display.
- Resolution refers to the number of pixels in the horizontal and vertical directions on the screen.
- An interactive presentation device that works electronically to display digital image, drawings and text in different colours is known as Electronic Whiteboard.
- Speakers, headset or headphone are used to output sound from the computer system. They are known as Audio Output Devices.
- A computer can talk to persons through a device known as Speech Synthesizer.