Introduction to Computers

A Computer is an electronic device that performs calculations and operations based on instructions provided by a software or hardware program.

Characteristics of Computers

- **Speed –** A computer can process millions of calculations per second. The speed of computation is very high.
- **Accuracy -** As computers work on inbuilt software programs, there is no scope for human errors and highly accurate.
- **Diligence –** Computers are highly reliable. They can perform complex and long calculations with the same speed and accuracy.
- **Versatility -** Computers are versatile in Nature. They can perform various operations at the same time.
- **Storage -** Computers can store a large amount of data or instructions in its memory which can be retrieved at any point of time.

History of Computers

A Computer was intended for making a person capable of performing numerical calculations with the help of a mechanical computing device.

Abacus

Abacus was the first counting device which was developed in China. It consists of a rectangular wooden frame and beads. The wooden frame contains horizontal rods and the beads which are passed through the rods. The beads of counters represent digits. The device is used to perform simple addition and subtraction.

Napier's Bones

It was a device which contained a set of rods made of bones. It was developed by a Scottish Mathematician, John Napier. To perform multiplication and division, the device was developed. Napier also invented logarithms.

Pascaline

Pascaline was the first calculating device with a capability to perform additions and subtractions on whole numbers. It was developed by Blaise Pascal, a French Mathematician. The device made up of interlocked cog wheels having numbers 0 to 9 on its circumference. When one wheel completes its rotation, the other wheel moves by one segment.

Punched Card System

Punched Card System was invented by Herman Hollerith, an American Statistician. It was used for storing and retrieving data. In the form of punched holes, the system data could be stored.

Charles Babbage's Calculating Engines (1792-1871)

Babbage invented the Difference Engine to solve algebraic expressions and mathematical tasks accurately. Later, he designed some improvements to his first computer. The modified machine is called the Analytical Engine. He intended to design a machine with a collection of the four basic arithmetic functions. The design principle of the Analytical Engine can be divided into Input, Output, Memory, Central Processing Unit. The parts and working principle of an Analytical engine are the same as today's computer. Hence,

Charles Babbage is known as the Father of Computer.

Hollerith Machine

A Hollerith machine was incorporated with the tabular and punched cards. The machine could census the punched holes, recognise the number and make the required calculation and store the data of census. The machine was invented by Herman Hollerith.

Mark I Computer

The first electro-mechanical computing device was developed by Howard Hathaway Aiken. He used Hollerith's punch card and Babbage's statements to develop Mark I computer with IBM. In Mark III computer, he used some electronic components and Magnetic drum memory. In Mark IV computer, he used all electronic components and Magnetic drum memory & Magnetic core memory.

First Un-programmable Electronic Digital Computer (ABC)

The Atanasoff-Berry Computer (ABC) was the first electronic computer. It was designed by John Vincent Atanasoff and Clifford E. Berry. It was designed to solve systems of linear algebraic equations. It was also the first to use capacitors for storage.

Electronic Numerical Integrator and Calculator – ENIAC

ENIAC was the first electronic computer used for general purposes, such as solving numerical problems. It was invented by J. Presper Eckert and John Mauchly.

Electronic Discrete Variable Automatic Computer – EDVAC

EDVAC was the successor of ENIAC. In this computer, Binary numbers were used for arithmetic operations and the internal storage of instructions were also written in digital forms.

Electronic Delay Storage Automatic Calculator – EDSAC

EDSAC was the first practical general-purpose stored-program electronic computer. It was built according to the von Neumann machine principles.

Universal Automatic Computer - UNIVAC

UNIVAC was the first commercially available computer. It was made by the Eckert-Mauchly Computer Company. It represents the birth of the modern computers.

Micro Processor – INTEL 4004

In 1969, Intel Corporation designed the first general-purpose programmable processor INTEL 4004. It was a set of four chips known as the MCS-4. It included a central processing unit chip (the 4004) as well as a supporting read-only memory chip for the custom applications programs, a random-access memory (RAM) chip for processing data, and a shift-register chip for the input/output (I/O) port.

Quick Revision

Particulars	Name of Person/System
Father of Computer	Charles Babbage
Father of Modern Computer Science	Alan Tuning
First Non-programmable Electronic Digital Computer	Atanasoff Berry Computer (ABC)
First General Purpose Electronic Digital Computer	Electronic Numerical Integrator and Calculator (ENIAC)
First Micro Processor	INTEL 4004
First Commercially Available Computer	Universal Automatic Computer