

Topic : Evolution of Computers

Subject : Computer

Class : V

Introduction

Before learning about evolution of computers, first let us know the definition of a computer. The term computer is derived from the word 'compute' which means calculate but it is not meant for calculation only. It is a versatile device which means it can handle different applications at the same time.

A computer is an electronic device used for storing and processing data and carrying out sequence of operations. In short, it is a device which is invented to simplify the complicated tasks. Initially computers were used only by scientists and engineers. But when we talk about today everyone have their own computer as it becomes a basic need. Computers are used in many areas such as schools, banks, hospitals, railways, airports etc.

History of computer

Do you know how computer came into existence? Actually the computers we used today are different from earlier devices which are used for only calculations. Let's discuss about the history of computers step by step.

CALCULATING DEVICES

1. Abacus

Many centuries ago when man started to count the numbers, he thought of a device which can trace the numbers and thus came the existence of ABACUS. It was the first counting device which was developed in China more than 3000 years ago. This device basically consists of a rectangular wooden frame and beads. The frame contains horizontal rods and the beads which have holes are passed through the rods. Counting was done by moving the beads from one end of the frame to the other. Actually the frame is divided into two parts named as Heaven and Earth. Heaven has 2 beads while Earth has 5 beads. It is used for addition, subtraction, multiplication and division.

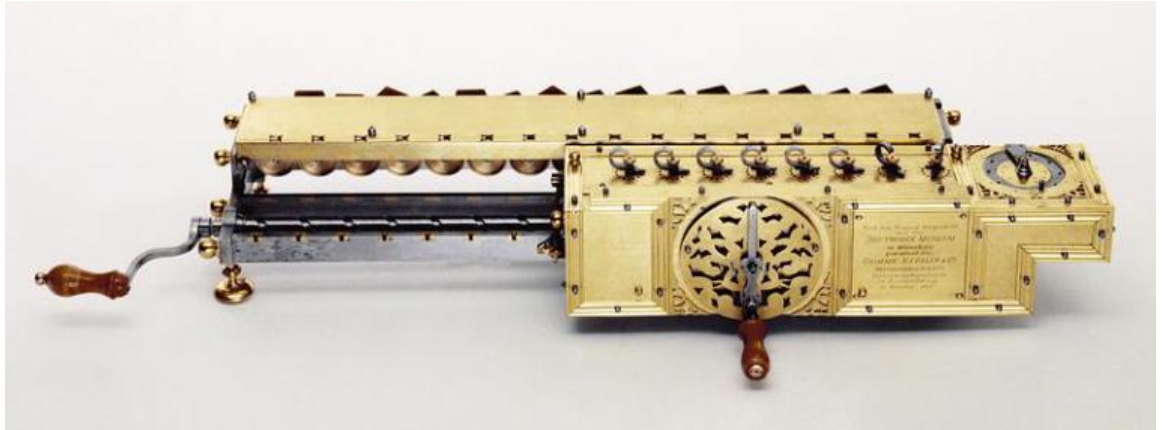
2. Pascal Adding Machine

It is the first mechanical calculator invented by famous French mathematician Blaise Pascal at the age of 19 years. It was invented in the year 1642. It used gears, wheels and dials. It was the first device with an ability to perform additions and subtractions on whole numbers. Numbers were displayed rotating the wheels.



3. Leibniz Calculator

Leibniz a German mathematician modified the Pascal calculator in 1671. He developed a machine called Leibniz Calculator which could perform various calculation based on multiplication and division as well. It is also used for finding square roots.



EARLY IT INVENTORS

1. Charles Babbage

Charles Babbage, credited deservedly as Father of the Computer, the world renowned inventor of Differential Engine and Analytical Engine. He invented Differential Engine in 1822 and Analytical Engine in 1833.

The Analytical Engine have five units – Input, Output, Store, Mill and Control. These units worked like the same as modern day computers. Today's computer are based on it. Store is used for storing the data, mill is used for calculations and control unit was used for supervising all the units.

2. Augusta Ada Lovelace

Lady Ada Lovelace was a famous English mathematician and is well known for her work on Analytical Engine. She is the first programmer who suggested Binary data instead of decimal number system.

3. George Boole

He was also the famous English mathematician. He works on the Lady Ada Lovelace concept of binary digits. He solve the mathematical problems by reducing them to a series of positive and negative answered question. He introduced '1' for positive number and '0' for negative number by linking the binary system which is also called as **Boolean Logic**.

4. Dr. Herman Hollerith

Herman Hollerith was an American statistician who developed an electromechanical tabulating machine for punched cards to assist in summarizing information and, later, in accounting. The tabulating machine was capable of reading data, processing it and giving the desired output.

5. John Von Neumann

He was the first man to bring a new change in the history of computer. The modern computers came into existence with the help of Von Neumann's development of software written in binary code. He initiated the use of memory to store data as well as program. In 1950, Von Neumann built EDVAC by joining the hands with Presper Eckert and John Mauchly.

6. Howard Aiken

He was a primary Engineer in IBM, who developed Mark-1 in 1944. Mark-1 was the first automatic sequence-controlled calculator which is used to execute long computations.

ENIAC

ENIAC stands for Electronic Integrator And Computer. It was the first general purpose electronic digital computer invented by Presper Eckert and John Mauchly in 1946. It was 1000 times faster than Mark-1. It consists of 18000 vacuum tubes which is used to add two large numbers in 200 microseconds.

UNIVAC 1

UNIVAC stands for Universal Automatic Computer I. It was also designed by Presper Eckert and John Mauchly in 1951. It was the first computer which handle both numeric and text data. It was the first computer which contains magnetic tape unit and buffer memory.

Generations Of Computers



Types of Computers:

Supercomputers

It's a term used to describe computers that have the most capable processing power of its time. Today, modern supercomputers run *hundreds* of thousands of processors, capable of computing quadrillions of calculations in just a few nanoseconds. You probably won't be needing that kind of power to access Facebook. Actually, supercomputers are used to

calculate and carry out complex tasks. Modelling molecular structures, weather forecasting, satellite control and space research rely on supercomputers and their intense processing power to solve their equations. Examples : CRAY-1, CRAY-2,PARAM, ETA A-10 etc.

Mainframe Computers

Like supercomputers, mainframe computers are huge, towering machines with lots of processing power. Mainframe computers are mostly used by corporations, government agencies, and banks – organizations that need a way to store large quantities of information. They are not the same as supercomputers. Example : IBM Z series,PDP-10 and System Z 10.

Minicomputers

A minicomputer is a multiprocessing machine that can support up to about 200 users at the same time. It's like a less powerful mainframe computer, and is about the size of a refrigerator. Despite their name, a minicomputer is *not* a personal computer like the desktop machine you might have at home or work. They are much larger than that. They are used in banks, universities and in any other big organisations. Example : PDP-8.

Microcomputers

Microcomputers are the ones people are most familiar with on a daily, non-professional basis, but of course that doesn't mean they're exclusive to the home. Microcomputers are smaller computers that run on microprocessors in their central processing units. They are much, *much* cheaper than supercomputers, mainframe computers and even minicomputers, because they're meant for everyday uses that are more practical than professional. Example : Commodore 64, IBM PC.

- Desktop Computers

A desktop computer is a personal computer that fits on or under a desk. It has a monitor or another display, keyboard, mouse, and either a horizontal or vertical (tower) form factor.

- Laptop Computers

A laptop computer is a portable personal computer powered by a battery, or an AC cord plugged into an electrical outlet, which is also used to charge the battery. Laptops have an attached keyboard and a touchpad. They are battery operated and portable.

- Tablet Computers

These computers are smaller and lighter than Laptop Computers. It has 7 or 10 inch screen. We can do all the work in tablet which we do in personal computer such as we play games, watch movies, send e-mails, listen to music etc.

Test your Knowledge

Multiple Choice Questions:

1. The era of first generation computers was _____
a. 1920-1936 b. 1940-1956 c. 1950-1958 **Ans. (b)**
2. _____ is an example of super computer.
a. CRAY1 b. IBM PC c. ENIAC **Ans. (a)**
3. _____ are used in homes, schools, shops, offices, banks etc.
a. Micro-computers b. Mini- Computers c. Super- Computers **Ans. (a)**
4. _____ Technology was used in second generation of computers.
a. Vacuum tubes b. Transisters c. Integrated circuits **Ans. (b)**
5. _____ Language was used in first generation of computers.
a. Cobol b. Machine c. RDBMS **Ans. (b)**

Fill in the Blanks :

6. The first mechanical calculating device was _____
Ans. ENIAC
7. _____ invented the first mechanical calculator – Pascline.
Ans. Blaise Pascal
8. _____ is the world's fastest super computer.
Ans. Tianhe -2
9. The first general purpose electronic computer was _____
Ans. Abacus
10. Analytical engine was invented in _____
Ans. 1833

Very Short Questions:

11. Name the first mechanical computer.

Ans. Difference Engine in 1922.

12. Who is considered as father of computers?

Ans. Charles Babbage

13. Who is the first programmer?

Ans. Augusta Ada Lovelace

14. Which was the first computer to handle both numeric and text data.

Ans. UNIVAC 1

15. Which is the world's fastest supercomputer?

Ans. Tianhe – 2

16. Who is the father of personal computer?

Ans. Andre Truong Trong Thi

18. Who is the father of the disk drive?

Ans. Reynold B. Johnson

19. In which year Difference engine is invented?

Ans. 1822

20. Who invented the Mark-1?

Ans. Howard Aiken

Short Questions:

21. Which was the first electronic digital computer and who invented it?

Ans. ENIAC (Electronic Numerical Integrator And Computer) was the first electronic digital computer invented by John Mauchly and J. Presper Eckert in 1946.

22. Write any three features of fourth generation computers.

Ans. Features of Fourth generation Computers are :-

1. Increase in speed.
2. Increase in storage capacity and reliability.
3. Decrease in cost and size.

23. Write a short note on Napier Bones.

Ans. In 1617, John Napier made a calculating device- a set of rectangular rods called Napier's bones. The rods were made up of curved bones, which were used for performing addition, subtraction multiplication, division and square roots.

Long Questions:

24. Name the types of Micro computers. Explain any two.

Ans. Types of micro computers are :-

1. Desktop Computer
2. Laptop Computer
3. Tablet

Desktop Computers: These computers are designed to fit comfortably on the top of the desks. These computers typically come in several units such as monitor, CPU, Keyboard and mouse, which are connected to each other and work like a single unit.

Laptop Computers: These computers are small in size and can be placed on the lap. They are battery operated and portable.

25. Write a short note on the device- Abacus?

Ans. It was the first counting device which was developed in China more than 3000 years ago. This device basically consists of a rectangular wooden frame and beads. The frame contains horizontal rods and the beads which have holes are passed through the rods. Counting was done by moving the beads from one end of the frame to the other. Actually the frame is divided into two parts named as Heaven and Earth. Heaven has 2 beads while Earth has 5 beads. It is used for addition, subtraction, multiplication and division.