EVOLUTION OF COMPUTER SYSTEMS

IN THE EARLY YEARS, BEFORE THE COMPUTER WAS INVENTED, THERE ARE SEVERAL INVENTIONS OF COUNTING MACHINES.

CREDITS

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EVOLUTION OF COMPUTER SYSTEMS

A computer system is a basic, complete and functional computer, including all the hardware and software required to make it functional for a user.

It should have the ability to receive user input, process data, and with the processed data, create information for storage and/or output.

A computer system allows users to input, manipulate and store data. Computer systems typically include a computer, monitor, keyboard, mouse and other optional components. All of these components also can be integrated into all-in-one units, such as laptop computers.
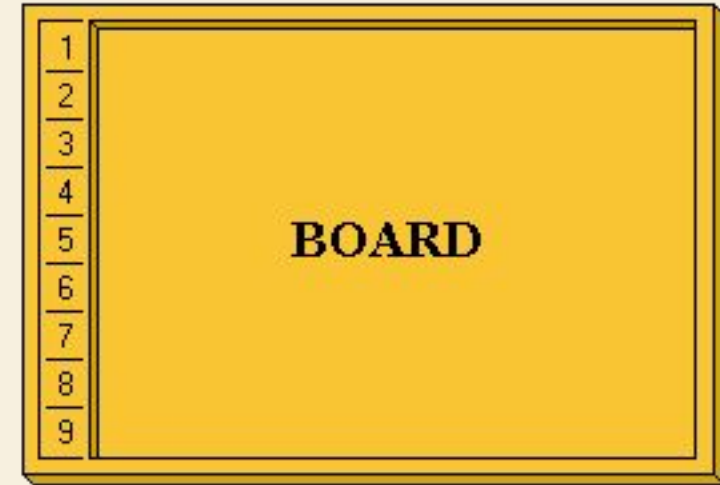
EVOLUTION OF COMPUTER SYSTEMS

❑ **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. The name Abacus was obtained from Greek word Abax which means slab. 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.
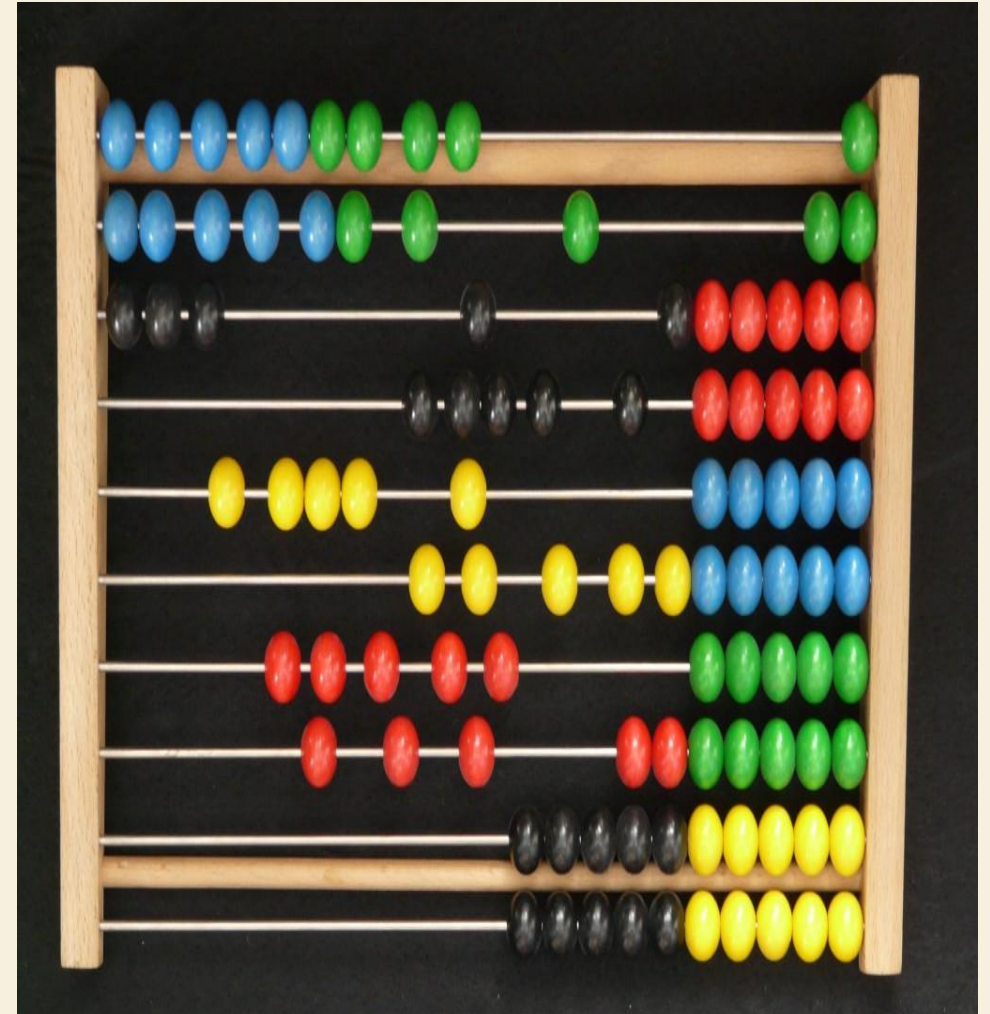
EVOLUTION OF COMPUTER SYSTEMS

❑ **Napier's Bones-** It is a device which contains a set of rods made of bones. It was developed by John Napier, a Scottish Mathematician and hence the device was named as Napier's Bones. The device was mainly developed for performing multiplication and division. Later in 1614 he also introduced logarithms.

$7 \times 1 =$

$7 \times 2 =$

$7 \times 3 =$

$7 \times 4 =$

$7 \times 5 =$

$7 \times 6 =$

$7 \times 7 =$

$7 \times 8 =$

$7 \times 9 =$

BOARD

SET OF RODS

EVOLUTION OF COMPUTER SYSTEMS

❑ **Pascaline-**Pascaline is a calculating machine developed by Blaise Pascal, a French Mathematician. It was the first device with an ability to perform additions and subtractions on whole numbers. The device is made up of interlocked cog wheels which contains numbers 0 to 9 on its circumference. When one wheel completes its rotation the other wheel moves by one segment. Pascal patented this device in 1647 and produced it on mass scale and earned a handful of money.

FIRST GENERATION (1940-1956)

The first generation of computer were huge, slow, expensive and often unreliable. In 1946, two Americans, Presper Eckert and Willian Mauchly build the ENIAC (Electronic Numerical Integrator and Computer). It use vacuum tube instead of mechanical switches of the MARK

MARK I Features:

- It could perform five basic arithmetic operations: addition, subtraction, multiplication, division and table reference

- It took approximately 0.3 seconds to add two numbers and 4.5 seconds for multiplication of two numbers

MARK I Disadvantages :

- It was huge in size

- Complex in design.

- Very slow

FIRST GENERATION (1940-1956)

- **UNIVAC-** The UNIVAC (universal automatic Computer) was the first digital computer invented by Mauchly and Ekert

In 1951, Eckert and Mauchly build the UNIVAC, which could calculate at the rate of 10,000 addition per seconds.

SECOND GENERATION (1956-1963)
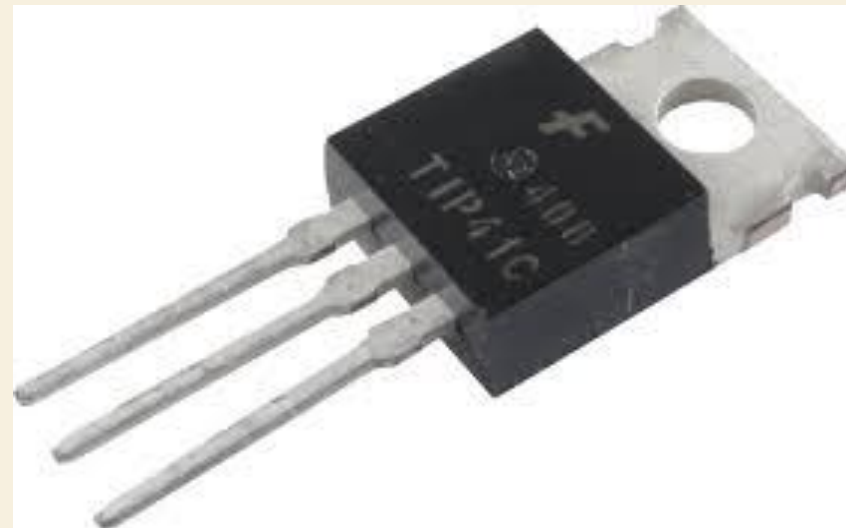
Features :

Vacuum tubes were replaced by *transistors.*

Transistor is a small device that transfers electronic signals through resistors

The creation of transistor spark the production of a wave of second generation computer. Transistor was small devices use to transfer electronic signals across a resister. Transistors had many advantages compared to other hardware technology.

transistors were smaller than vacuum tubes

- they needed no warm up time
- consumed less energy
- generated much less heat
- faster and more reliable
-

THIRD GENERATION (1964-1971)

Features :

In this generation microelectronics technology was introduced that made it possible to integrate large number of circuit elements into very small surface of silicon known as chips. This new technology was called *INTEGRATED CIRCUIT INTEGRATED CIRCUIT*

Advantages A new concept in this generation was that of a family of computer which allowed computer to be upgraded and expanded as necessary. ·

- Silicone chips were reliable, compact and cheaper.

- · Sold hardware and software separately which created the software industry.

- · customer service industry flourished (reservation and credit checks)

FOURTH GENERATION (1971-PRESENT)

It took only 55 years for the 4 generations to evolve. The growth of the computer industry developed technologies of computer inventions. There are many types of computer models such as:
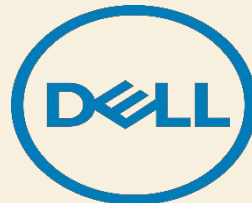
- · Apple Macintosh

- · IBM

- · DELL

- · ACER

FOURTH GENERATION (1971-PRESENT)

In 1971 Intel created the first microprocessor. In 1976, Steve Jobs built the first Apple computer. Then, in 1981, IBM introduced its first personal computer.

During the fourth generation, hardware technology such as silicone chips, microprocessor and storage devices were invented. A microprocessor is a specialized chip which is developed for computer memory and logic.

FOURTH GENERATION (1971-PRESENT)

The microprocessor is a large-scale integrated circuit which contained thousands of transistors. The transistors on this one chip are capable of performing all of the functions of a computer's central processing unit.

Advantages

- · Computers became 100 times smaller than ENIAC (Electronic Numerical Integrator and Computer) the first computer
- · Gain in speed, reliability and storage capacity
- · Personal and software industry boomed

FIFTH GENERATION (PRESENT & BEYOND)

The fifth generation computers are technologically advance and are still being development to become more efficient. The inventions of new hardware technology in the fifth generation have grown rapidly including many other modern computer devices such as :

- · silicone chips
- · processor
- · robotics
- · virtual reality
- · intelligent systems
- · programs which translate languages

NEW ERA COMPUTER

After the fifth generation computer, the technology of computer has become more advanced, modern and sophisticated. The latest invention in the era of computers are :

- **Super Computers**
- **Mainframe Computers**
- **Mini Computers**
- **Personal Computers**
- **Mobile Computers**

In the new era of computers, expert system such as teleconferencing and speech-recognition system have been invented as part of modern world communication tools.