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COMPUTER FUNDAMENTALS AND ORGANIZATIONS –
GENERATIONS OF A COMPUTER

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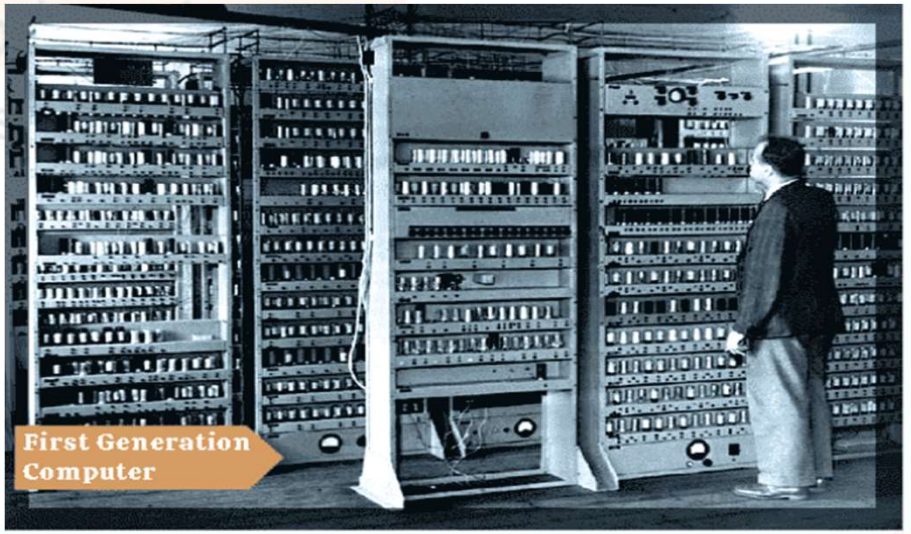
GENERATION OF COMPUTERS

FIRST GENERATION

Vacuum Tube

- Time Period : **1942-1956**
- Main Electronic Component :**Vaccum Tube**.
- Data Storage: **Magnetic Drum**
- Basic Components of Memory and CPU: **Vaccum Tube**
- Heating Feature: **High**
- Weight of Computer : **30 Ton**
- Size of Computer : **A room of 50x30**



GENERATION OF COMPUTERS

FIRST GENERATION FEATURES

- Vaccum tubes were used.
- More space was required.
- Heat was produced in large number.
- Alternating Current (AC) was used.
- OS was not present.
- To operate it programmes were stored in the punch card.
- Slow operation.
- Only understood Machine Languages.
- It took 200 Micro Seconds to Add and 2000 Micro seconds to Multiply.
- Punch Card, Paper Tape or Magnetic Tape was used as Input and Output devices.
- Supported single task single user.

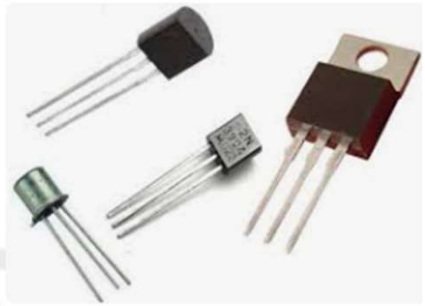
GENERATION OF COMPUTERS

TYPES OF FIRST GENERATION

- ENIAC:Electronic Numerical Integrator and Computer, built by J. Presper Eckert and John V. Mauchly was a general-purpose computer. It had been cumbersome, and large, and contained 18,000 vacuum tubes.
- EDVAC:Electronic Discrete Variable Automatic Computer was designed by von Neumann. It could store data also as instruction and thus the speed was enhanced.
- EDSAC : The Electronic Delay Storage Automatic Calculator (EDSAC) was an early British computer. Inspired by John von Neumann's seminal First Draft of a Report on the EDVAC, the machine was constructed by Maurice Wilkes and his team at the University of Cambridge Mathematical Laboratory in England.
- UNIVAC-I : Universal Automatic Computer was developed in 1952 by Eckert and Mauchly.
- IBM-701:IBM'S first large scale commercially available electronic computer.

GENERATION OF COMPUTERS

SECOND GENERATION



- Time Period : **1956-1965**
- Main Electronic Component :**Transistor**.
- Data Storage: **Magnetic Drum**
- Heating Feature: **Low**
- Size of Computer : **Smaller than First Generation.**

GENERATION OF COMPUTERS

SECOND GENERATION FEATURES

- Solid state device.
- Made up of semiconductor metal.
- Works same as Vaccum Tube of First generation.
- Size is reduced than First generation.
- Used less electricity.
- Reliable than first generation.
- Worked faster than first generation.
- Magnetic Cores were used as Primary Memory.
- Magnetic Tape and Magnetic Disks were used as Secondary Memory.
- Assembly and Machine Language were widely used.
- Programming Language were introduced.
- COBOL and FORTRAN were used as High Level Languages.
- Accurate than First generation.
- AC was needed.

GENERATION OF COMPUTERS

TYPES OF SECOND GENERATION

- IBM 7030
- Honeywell 400
- CDC 1604

GENERATION OF COMPUTERS

THIRD GENERATION

- Time Period : **1965-1975**
- Main Electronic Component :**Integrated Circuit**.
- Data Storage: **Magnetic Drum**
- Heating Feature: **Low**

Integrated Circuit

GENERATION OF COMPUTERS

THIRD GENERATION FEATURES

- Integrated Circuits were introduced which consisted of Transistor, Registers and Capacitors.
- Magnetic Tapes and Magnetic Disks of high storing capacity were used.
- For Input and Output Keyboard and Monitor were introduced.
- MICR, Plotters and Scanners were invented in this generation.
- Concept of Time Sharing and Multi Programming Operating System were introduced.
- High Level Programming Languages like PASCAL, BASIC, FORTRAN-II, III, IV came into existence.
- Were widely used and were accurate
- Smaller than both the generations.
- Less heat was generated.
- Faster than both the generations.
- Needed less space.
- Costlier.
- Electricity needed was less.
- AC was needed.

GENERATION OF COMPUTERS

TYPES OF THIRD GENERATION

- IBM-360
- IBM-370
- CDC 6600
- PDP-8
- PDFP-11

GENERATION OF COMPUTERS

FOURTH GENERATION

- Time Period : **1975-1989**
- Main Electronic Component : **Microprocessor**
- Heating Feature: **Low**

GENERATION OF COMPUTERS

FOURTH GENERATION FEATURES

- Starting of Microprocessor age.
- Thousands of Integrated Circuits (Ics) could be fitted in a single chip.
- Large Scale Integration (LSI) was created using 5000 Transistors.
- Further this LSI was upgraded to Very Large Scale Integration (VLSI).
- In VLSI lakhs of transistor are fitted in one fourth part with other electronic elements which also came into existence to be known as Mircrochip.
- The first Microchip was introduced in 1971 by Intel Corporation known as Intel-4004 which was also known as Microprocessor.
- The Computer that possess Microprocessor is known as Microcomputer.
- The use of Microprocessor reduced the size of the computers.
- The storage was included in the computer itself by which Personal Computers reached to every household.
- Time Sharing, Real Time Networks, Distributed Operating Systems were introduced in this generation.

GENERATION OF COMPUTERS

FOURTH GENERATION FEATURES

- New HLL were introduced in this generation known as C, C++ and DBASE.
- Super Computer like CRAY was introduced in this generation which could perform One Billion Calculation in One second.
- Cheaper than all the three generations.
- Portable and Reliable.
- Increased Memory.
- Different types of Computer Networks cam into existence.

GENERATION OF COMPUTERS

TYPES OF THIRD GENERATION

- CRAY-I
- CRAY-II
- APPLE-II
- VAX-9000

GENERATION OF COMPUTERS

FIFTH GENERATION

- Time Period : **1989-Present**
- Main Electronic Component : **Microprocessor ULSI**
- Heating Feature: **Low**

GENERATION OF COMPUTERS

FIFTH GENERATION FEATURES

- Microprocessor contains upto 10 Lakh electronic elements in it.
- The age of Artificial Intelligence begin in this generation.
- Mobile communication, Voice Recognition, Satellite Communication, Signal Data Processing came into existence.
- HLL programming languages such as JAVA, Visual Basic (VB) and .Net were introduced.
- The fifth generation are useful in various fields such as Accounting, Engineering, Space, Research, Film making, Traffic Control, Business, etc.
- Day-by-day the size of the computers are decreasing like Desktop, Laptop, Palmtop etc.
- The use of internet has gained importance.
- Use of multimedia such as audio, video, graphics, text has been increased.

GENERATION OF COMPUTERS

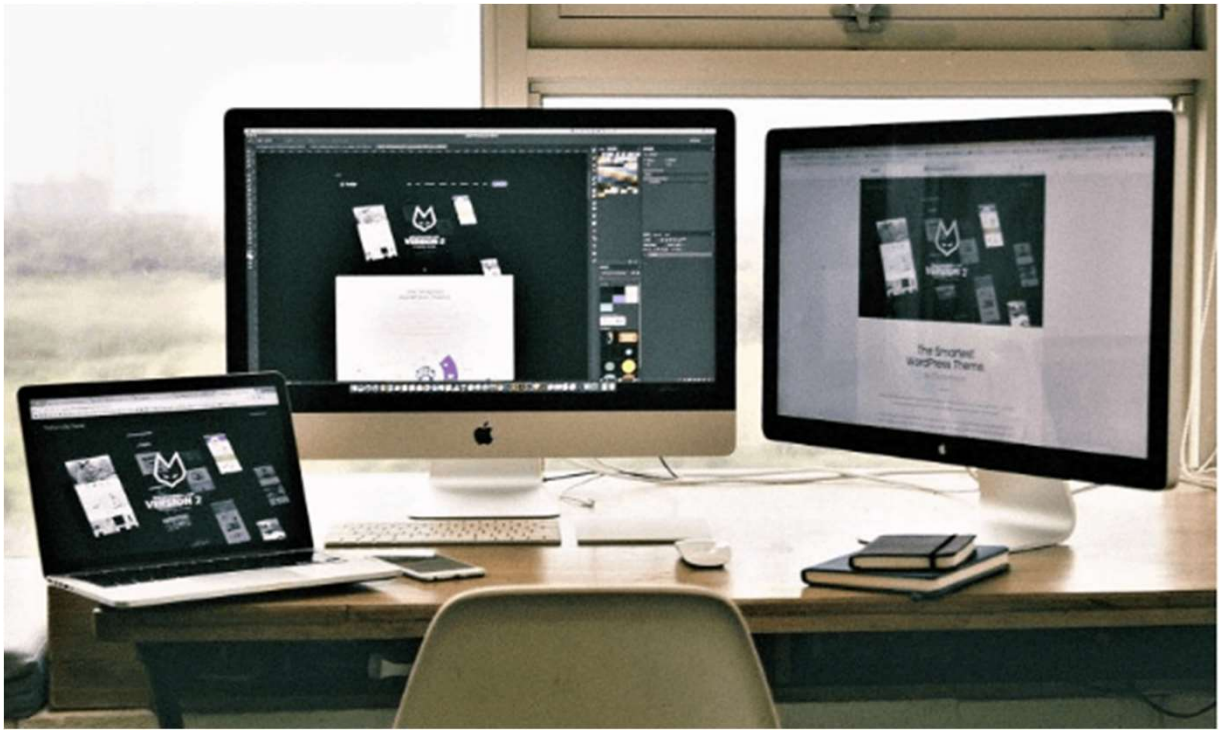
TYPES OF THIRD GENERATION

- IBM
- Note Book
- PARAM
- Pentium

GENERATION OF COMPUTERS

SIXTH GENERATION (Not described in books yet)

- Time Period : **2000-Present**



GENERATION OF COMPUTERS

SIXTH GENERATION FEATURES

- Wireless connection to connect different devices.
- Decreased sized and increased speed.
- These are intelligent computers based on Artificial Intelligence.
- As AI is developing mostly it is considered that we are in fifth generation.
- Nanotechnology is used which results in increased speed and decreased size.
- To understand human language Natural Language Processing which is a component of AI is used.
- Parallel computing is used to solve problems more quickly by using more processors.
- Distributed computing solve a problem together.

GENERATION OF COMPUTERS

RECOGNITION OF GENERATIONS

Earlier the generation of Computers were categorized by the evolution of hardware.

Today the generation of Computers are categorized by te evolution of hardware and software.

REFERENCES

1. https://www.geeksforgeeks.org/generations-of-computers-computer-fundamentals/

2. https://www.tutorialsmate.com/2021/01/first-generation-of-computer.html

THANK YOU