

## Evolution of Computers

- Computers were first made in an attempt to make an adding machine.
- In 1642, Blaise Pascal(1623 - 1662) invented a machine called the Adding Machine, which was the world's first mathematical machine.
- In 1674 Gottfried Wilhelm Von Leibnitz improved the adding machine invented by Pascal. The improvement needed to be able to perform multiplication and division too.
- Then, a French scientist named Joseph Jacquard invented a mechanical loom using punch card system.
- Using the punch card system concept, Charles Babbage, who is the father of computing, made the analytical engine. It was built on the concepts, input, process, store and output.
- Madam Ada Augusta Lovelace tried to write programs for the analytical engine invented by Babbage. Therefore, she is considered as the first programmer of the computing history.
- In 1944, Howard Aiken invented the machine called automated sequence control Calculator at the Harvard University with assistance of his companions in IBM company it was named as 'MARK 1'
- Later on these computers were categorized into various generations and became automated

## Generations of computers

- First generation (1940 - 1956)
  - Major hardware technology
    - Vacuum tubes
    - Punch cards are used for input, process, output and storage data
  - Software used
    - Machine language
    - Assembly language
    - Stored program concept
  - Characteristics
    - High heat generation
    - Slow in processing
    - Large in size
    - Not portable
    - Consumes a lot of electricity
    - expensive
  - Systems invented
    - ENIAC
    - EDVAC
    - EDSAC
    - UNIVAC
    - IBM 701
- Second generation (1956 - 1963)
  - Major hardware technology
    - Transistors
    - Tape

- o Floppy disk, Tape for secondary storage
- Software used
  - o High – Level programming language
  - o Assembly language
- Characteristics
  - o Less heat generation
  - o Comparatively speed in processing than 1<sup>st</sup> generation
  - o Smaller in size
  - o Low power consumption
  - o Expensive
- Systems invented
  - o Honey well 400
  - o IBM 7030
  - o CDC 1604
  - o UNIVAC LARC
- Third generation (1964 - 1975)
  - Major hardware technology
    - o Integrated Circuits (IC)
    - o High capacity disks for secondary storage
    - o Keyboard and mouse for data input
  - Software used
    - o Birth of Operating Systems (OS)
    - o Well-developed Programming Languages
    - o High – level computer languages for coding
  - Characteristics
    - o Less heat generation
    - o Comparatively faster in processing than 2<sup>nd</sup> generation
    - o Smaller in size
    - o Low power consumption
    - o Expensive
  - Systems invented
    - o IBM 360/370
    - o PDP – 8
    - o PDP – 11
    - o CDC 6600
- Fourth generation (1975 - 1989)
  - Major hardware technology
    - o Large Scale Integrated Circuits (LSIC) and very large-scale integrated circuits (VLSIC)
    - o Microprocessor

- o Palm tops
  - o high capacity hard disk
  - o Floppy disk
  - o optical disk
  - o personal computers (PC)
  - o faster computer networks
- Software used
  - o OS with graphical user interface (GUI)
  - o UNIX OS
- Characteristics
  - o Very less heat generation
  - o Very smaller in size
  - o Very low power consumption
  - o Portable
  - o Upgradable
- Systems invented
  - o Apple 2
  - o IBM PC
  - o CDC 1604
  - o UNIVAC LARC
- Fifth generation (1989 - present)
  - Major hardware technology
    - o Ultra Large-scale Integration (ULSI)
    - o Very high capacity hard disks and optical disks
    - o Internet
  - Software used
    - o OS with GUI
    - o Internet and multimedia applications
    - o voice recognition based on artificial intelligence
    - o character recognition
    - o Handwriting recognition system
  - Characteristics
    - o Smaller in size
    - o Less Expensive
    - o Portable
    - o easy operation
    - o High reliability
    - o high efficiency
  - Systems invented

- o IBM Notebooks
- o Pentium PCs
- o SUN workstations

#### Evolution of laptops (1975 - 2020)

- IBM 5100
- Xerox note taker
- Osborne 1
- Epson HX-20
- Grid Compass 1101
- TRS-80 Model 100
- Commodore SX-64
- IBM PC Convertible
- Compaq SLT/286
- NEC UltraLite
- Apple PowerBook
- Olivetti D33
- Olivetti Quaderno
- Compaq Concerto
- Toshiba Portege 2000
- Compaq TC1100
- Eee PC 701
- Lenovo yoga 13
- Razor blade pro
- Yoga book
- Yoga book C930
- Asus project Precog