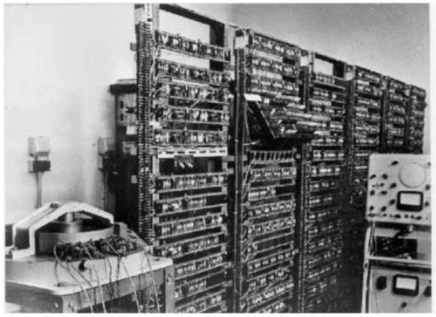
GENERATIONS OF COMPUTER

Generation Of Computers 1st To 5th



First Generation 1946-1959

Second Generation
1959-1965

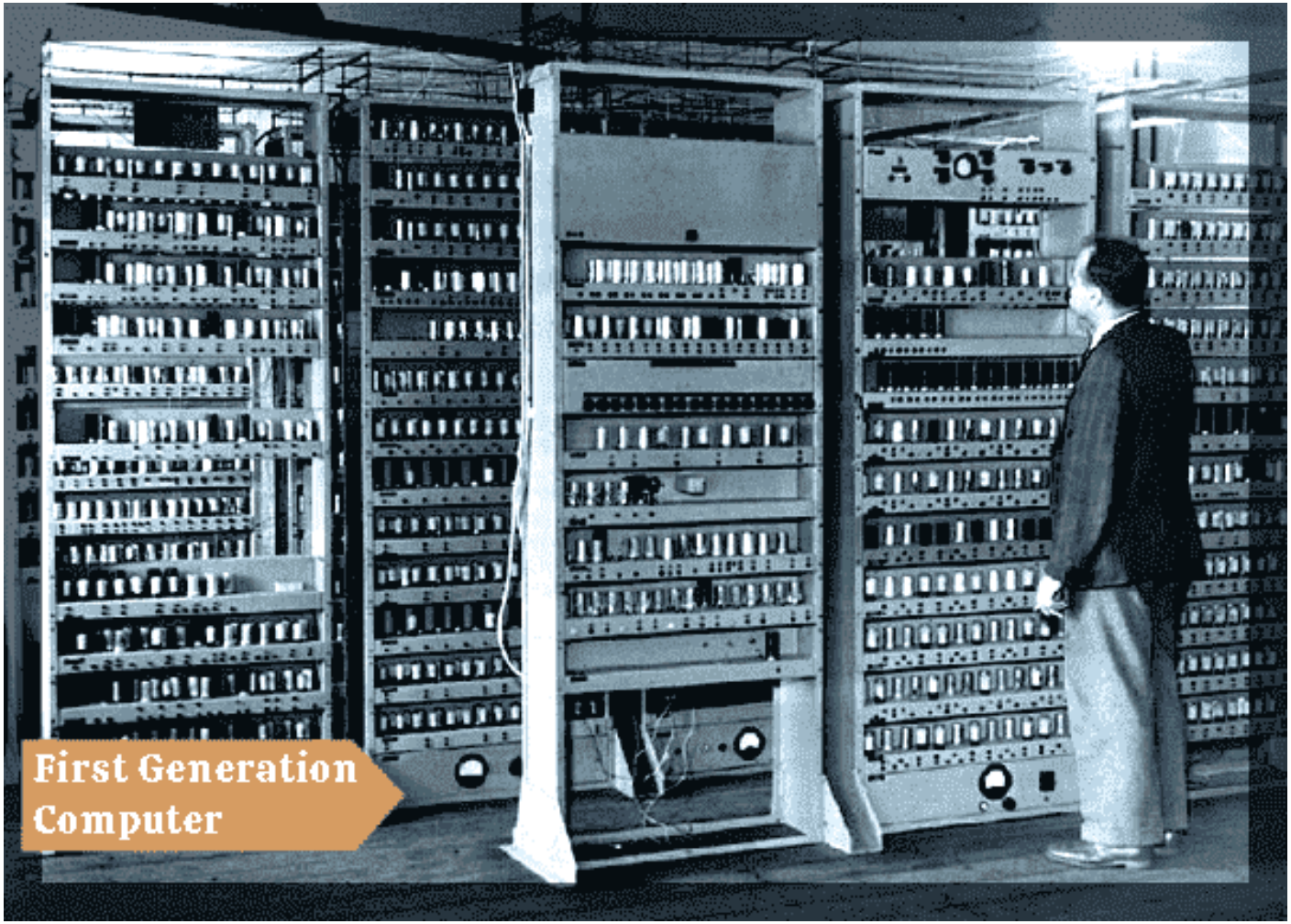
Third Generation
1965-1971

Fourth Generation
1971-1980

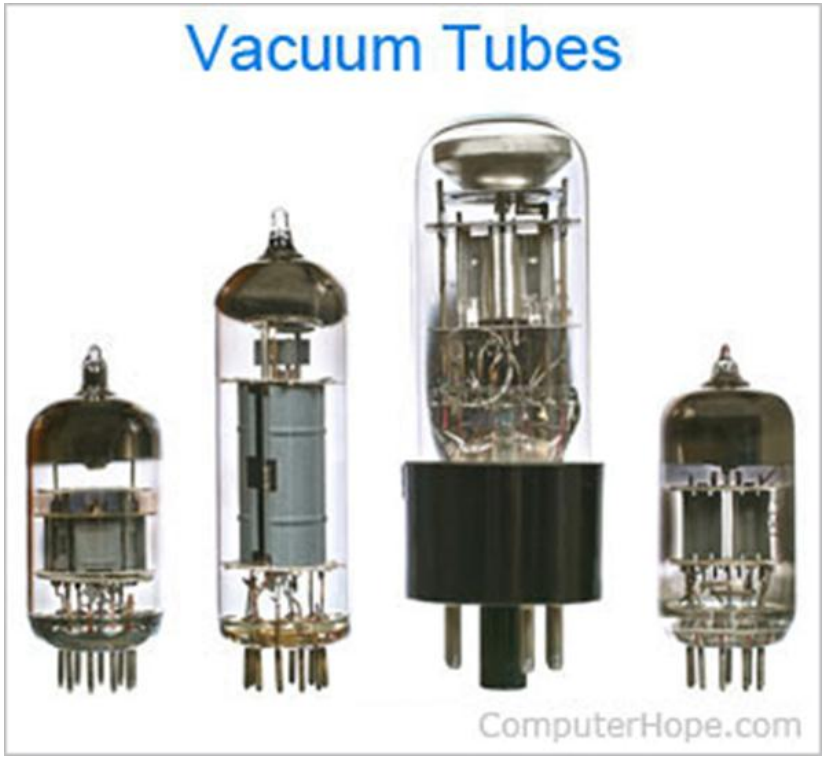
Fifth Generation 1980- Present

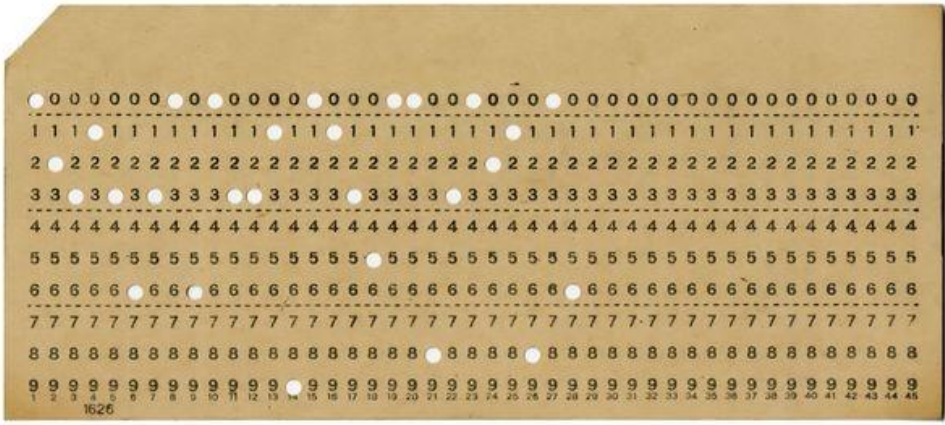
- A phase of computer development in which a particular technology is used to make computers – **computer generation**
- Generation – **technological development** or innovation – **growth of computer industry**.
- Each generation
  - **Operation of the computer**
  - **Size**
  - **Cost**
  - **Increase in the power**
  - **Increase in the efficiency**
  - **reliability**

First Generation Computers (1940- 1956)



- **Vacuum tube technology**
- Storage – vacuum tubes and magnetic drums
- **Machine language**
- Input – punched cards, paper tapes
- Output – printouts
- Computation – **10^{-3} sec**
- Eg. ENIAC, EDSAC, UNIVAC
- Size – 30.5 meters (100 feet) long



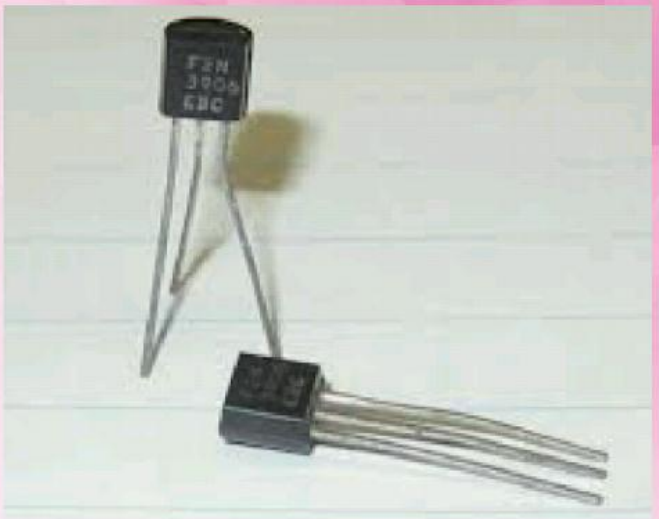


Vacuum tube

- **Electronic device** – electrons flow through vacuum.
- Lee De Forest – 1906.
- **Glass envelope**, an **anode**, a **cathode** and a **grid**.
- **Cathode** is a filament –metal electrode with **-ive charge**
- **Anode** – metal electrode with **+ive charge**
- When electric current pass – cathode emit electrons – **thermionic emission**
- e- attracted by anode – freely flow in the vacuum
- **Amplifier** and **switches** – make it store and transmit data electronically
- Thousands of vacuum tube

Second Generation Computer

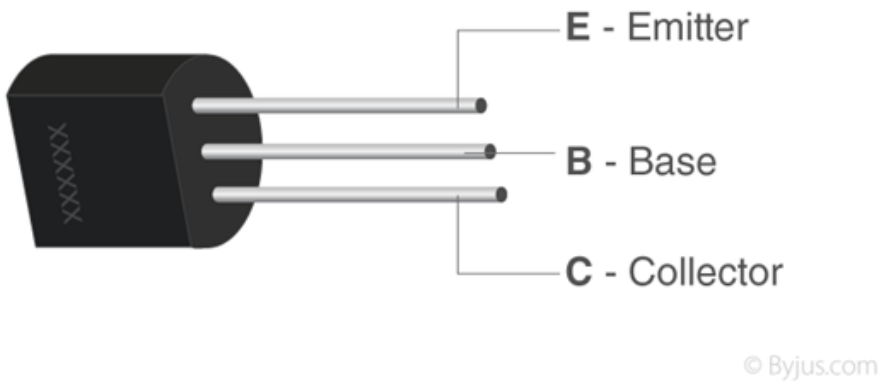
Time: 1956 - 1963



- Transistor
- Storage – magnetic tape and removable disk
- Assembly language
- Input – punched cards ad paper tapes
- Output – printout
- Calculation time – 10^{-6} sec
- Eg. IBM systems 360

Transistor

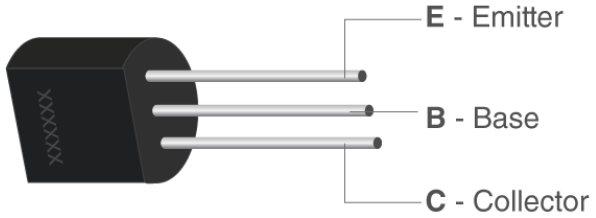
- Semiconductor device
- Amplifies weak signal and acts as a switch.
- Semiconductor material (silicon) with three connecting pins (base, emitter and collector)
- Base (input gate)
- Collector (amplifies)
- Emitter (output gate)
  - Off – no flow of current
  - On – current flows
- Simple memory device – 0 or 1




Third Generation Computer
Time: 1964 - 1971
IBM

- **Integrated circuit technology**
- Storage – **microchips**
- **High level programming language**
- Input – keyboard
- Output – monitor
- Computation time – 10^{-9} sec
- Eg- IBM 370

Integrated circuit



- Single silicon chip
  - **Many transistor**
  - **Diodes**
  - **Capacitors**
  - **Resistors**

Types

- Small scale integration - 100 elements
- Medium scale integration – 100 - 1000
- Large scale integration – 1000- 100000
- Very Large scale integration –more than 100000

1971-1980

- **Microprocessor technology**
- Main memory – RAM
- Secondary memory – hard disk
- Non- procedural language
- Advanced operating system installed
- Input – keyboard, mouse and stylus
- Output – monitor
- Computation time – 10^{-9} sec

Microprocessor

- Single silicon chip
- Brain
- Manufactured by LSI and VLSI
- 100s and 1000s of transistors assemble
- Arithmetic and logic operations

Fifth Generation computers

- 1989 to present
- ULSI
- **High level languages**
- Storage – High speed RAMs and HDDs
- Advanced operating system
- Input – keyboard, mouse, touchscreen
- Output – monitor, voice
- Eg. IBM 3000, Intel Pentium


Sixth Generation Computing