Overview of Computers Workshop

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Outline

- Basic Computer Organization
- Processors and its organization
- CPU
- Memory
- Storage Devices
- Interfaces
- Number System (Binary)
- Types of Memories
- Channel and Bus Architectures
- Standard buses
- Devices and Controllers
- Ports and Connectors
- Bootstrap Loaders
- Inside of a typical desktop/laptop
- Motherboard and Switch settings and Jumpers
- Servers

Generation of Computer

First Generation (1946-1959)

Vacuum Tube

Second Generation (1959-1965)

Transistors

Third Generation (1965-1971)

Integrated Circuit

Fourth Generation (1971-1980)

Very Large Scale Integration

Fifth Generation (1980-Present)

Ultra Large Scale Integration



Generations and Future Computers




Generation of Computer

SN	Generation	Period	Main Component used	Merits/Demerits
1	**First Generation**	1942-1955	 **Vacuum tubes**	• Big in size • Consumed more power • Malfunction due to overheat • Machine Language was used
First Generation Computers - ENIAC , EDVAC , UNIVAC 1 ENIAC weighed about 27 tons, size 8 feet × 100 feet × 3 feet and consumed around 150 watts of power				
2	**Second Generation**	1955-1964	 **Transistors**	• Smaller compared to First Generation • Generated Less Heat • Consumed less power compared to first generation • Punched cards were used • First operating system was developed - Batch Processing and Multiprogramming Operating System • Machine language as well as Assembly language was used.
Second Generation Computers **IBM 1401, IBM 1620, UNIVAC 1108**				
3	**Third Generation**	1964 -1975	 **Integrated Circuits (IC)**	• Computers were smaller, faster and more reliable • Consumed less power • High Level Languages were used
Third Generation Computers **IBM 360 series, Honeywell 6000 series**				
4	**Fourth Generation**	1975-1980	 **Microprocessor** Very Large Scale Integrated Circuits (VLSI)	• Smaller and Faster • Microcomputer series such as IBM and APPLE were developed • Portable Computers were introduced.

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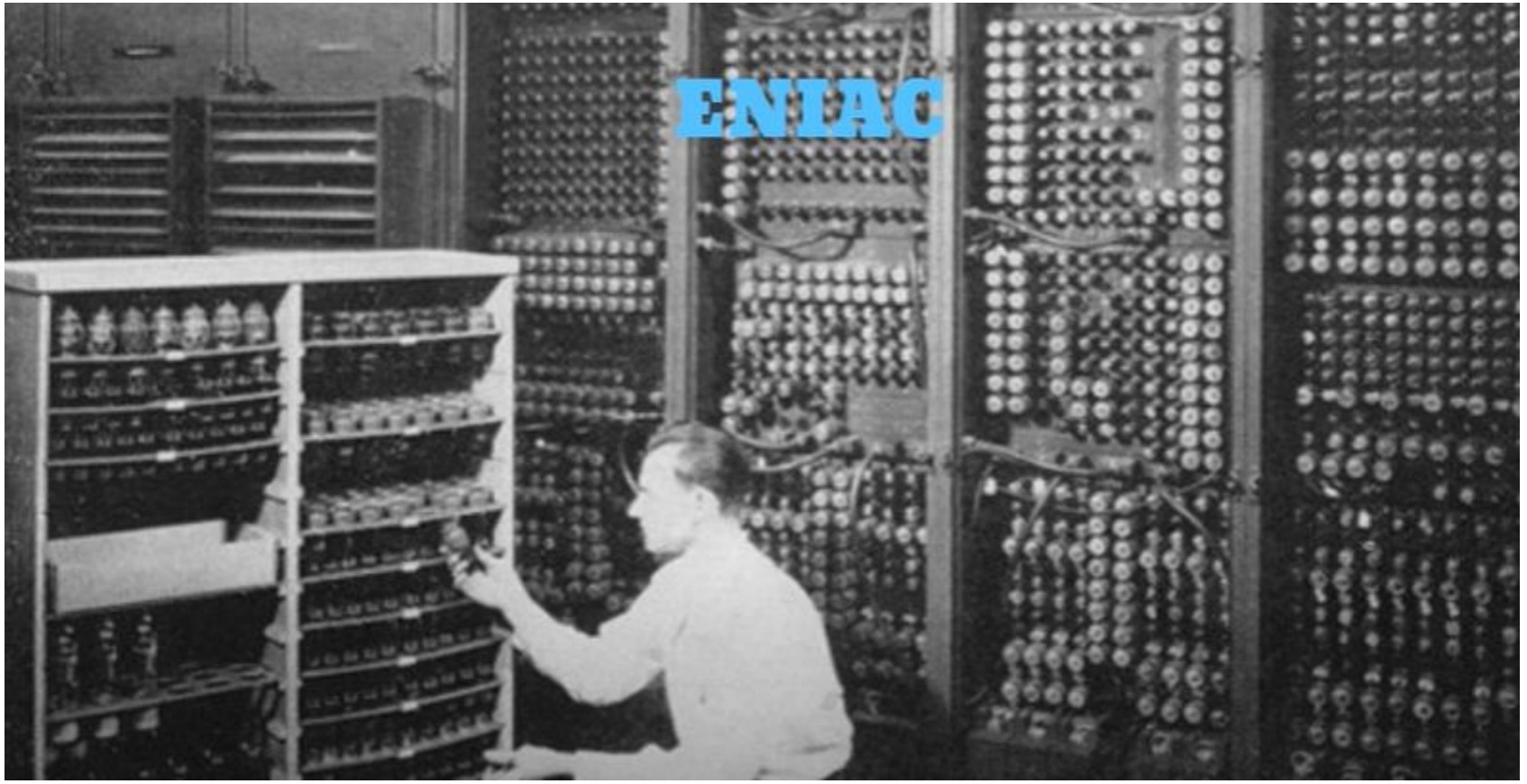
Vacuum Tubes

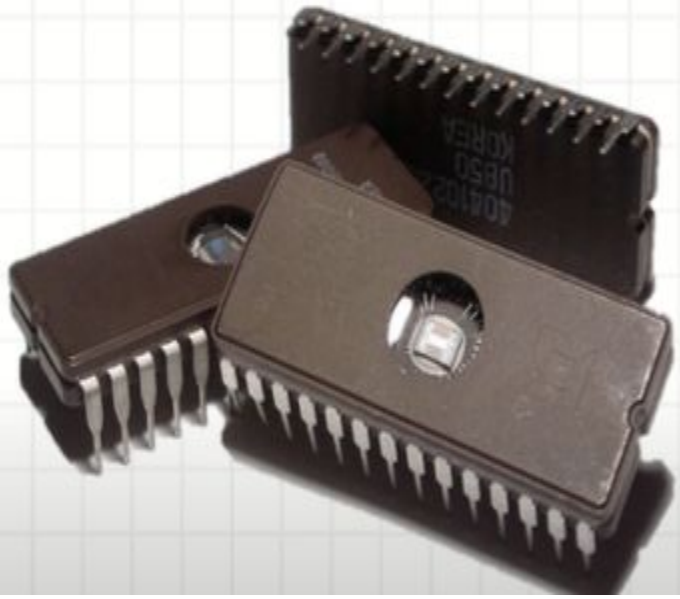
- Thousands of Vacuum tubes
- Consumed lots of Power
- Generated large amount of heat
- Large in size
- Very Expensive
- Used Machine Language
- Punched Cards & Paper Tapes
- Fastest Calculating Device
- 5000 Additions / sec
- 350 Multiplications /sec


ENIAC

SG


- Used Transitors
- Smaller and Faster than 1st Gen
- Cheaper and more reliable
- More energy efficient
- Still generated lots of heat
- Used Magnetic Core technology
- Saved instruction in memory

TG



- Used Integrated Circuits (IC)
- Smaller and Faster
- Cheaper than 2nd Generation
- Accessed using Keyboard, Monitor
- Used Operating System
- Made available to large number of people

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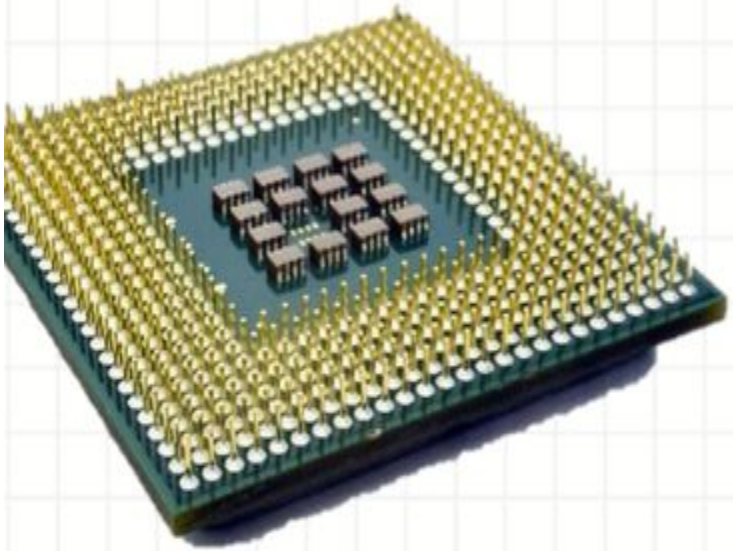

- Microprocessors with VLSI (Very Large Scale Integration)
- Thousands of IC on a single chip
- Small and portable
- Cheapest and work at high speed
- Accuracy and Reliability
- Larger Memory
- GUI and Application Software

Fifth Generation

5	**Fifth Generation**	1980 - till date	 **Ultra Large Scale Integration (ULSI)**	• Parallel Processing • Super conductors • Computers size was drastically reduced. • Can recognize Images and Graphics • Introduction of Artificial Intelligence and Expert Systems • Able to solve high complex problems including decision making and logical reasoning