Subject: Computer Studies

Class: JSS1

Term: First Term

Week 3

Topic: Generations of Computers

✅ Lesson Objectives

By the end of this lesson, students should be able to:

1. Define what a computer generation is.
2. Identify the five generations of computers.
3. Describe each generation based on the year of development, technology used, speed, and storage capacity.
4. Mention examples of computers from each generation.

📘 What is a Generation of Computers?

A **computer generation** refers to the evolution of computer technology over different time periods. Each generation is marked by major technological advancements in hardware and software.

🧠 I. First Generation Computers (1940 – 1956)

- **Technology:** Used **vacuum tubes** for circuitry and magnetic drums for memory
- **Speed:** Very slow (milliseconds); processed data in **thousand instructions per second (KIPS)**
- **Storage:** Very limited memory; huge in size
- **Examples:** ENIAC, UNIVAC
- **Problems:** Produced a lot of heat, consumed a lot of power, easily damaged

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⚙️ II. Second Generation Computers (1956 – 1963)

- **Technology:** Used **transistors** instead of vacuum tubes
- **Speed:** Faster (microseconds); processed **hundreds of thousands of instructions per second**
- **Storage:** Improved RAM and magnetic storage
- **Examples:** IBM 1401, IBM 7090
- **Advantages:** Smaller, faster, more reliable, and used less electricity

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💿 III. Third Generation Computers (1964 – 1971)

- **Technology:** Used **Integrated Circuits (ICs)** — a set of transistors on a single chip
- **Speed:** Even faster (nanoseconds); could process **millions of instructions per second (MIPS)**
- **Storage:** More compact memory units, magnetic disk storage
- **Examples:** IBM 360 series, PDP-8
- **Advantages:** Smaller, cheaper, better performance

💻 IV. Fourth Generation Computers (1971 – 2010)

- **Technology:** Used **Microprocessors** – a chip that contains all CPU components
- **Speed:** Very fast; can process **billions of instructions per second (GIPS)**
- **Storage:** Use of **hard disks, flash memory, SSDs**, high-capacity RAM
- **Examples:** Personal Computers (PCs), laptops
- **Advancements:** Introduction of GUI (graphical interface), networking, and internet

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🤖 V. Fifth Generation Computers (2010 – Present)

- **Technology:** Based on **Artificial Intelligence (AI)**, **quantum computing**, **nanotechnology**
- **Speed:** Extremely fast; operate in **real-time with massive data processing**

- **Storage:** Cloud storage, massive SSDs, and advanced data centers
- **Examples:** AI-based systems like Siri, self-driving cars, supercomputers
- **Features:** Smart learning, robotics, language processing

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📊 Comparison Table of Computer Generations

Generation	Year	Technology Used	Speed	Storage Capacity	Example
1st	1940–1956	Vacuum Tubes	Slow (KIPS)	Very Low	ENIAC, UNIVAC
2nd	1956–1963	Transistors	Faster (Microseconds)	Low	IBM 1401
3rd	1964–1971	Integrated Circuits (ICs)	Faster (MIPS)	Medium	IBM 360, PDP-8
4th	1971–2010	Microprocessors	Very Fast (GIPS)	High	PCs, Laptops
5th	2010–Now	AI, Quantum Chips	Real-time AI Processing	Very High (Cloud/SSD)	Siri, Self-driving Cars