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Day - 12

Embedded Systems Programming

HISTORY BEHIND THE INVENTION OF RAM

SEQUENTIAL ACCESS MEMORY (SAM)

Sequential Access Memory (SAM) is a type of data storage that retrieves information in a **fixed** order.

Think of it like a **magnetic tape** from old movie reels. To access specific information, you have to **roll the tape forward or backward** to the exact spot—there's no jumping directly to the data you need.

WORKING OF SAM

- Data is accessed **sequentially**, meaning the retrieval follows a strict order.
- The access time depends on the **location** of the data, so reaching some pieces of information takes longer than others.

LIMITATIONS OF SAM

- **Slow Data Access:** Since you have to go through data in sequence, reaching the required information takes time.
- **Variable Access Time:** Depending on where the data is located, it could take seconds or much longer, making SAM inefficient for real-time applications.

INVENTION OF RAM

Engineers wanted to solve this issue by ensuring all data could be accessed at the **same speed, no matter its location.**

This led to the creation of **Read Write Memory (RWM),** which they named **Random Access Memory (RAM)**.

Interestingly, **Read-Only Memory (ROM)**, developed later, is also a type of random access memory!

RAM IN A NUTSHELL

📍 Random Access Memory (RAM) is volatile memory that temporarily stores data while a computer runs.

📍 It allows fast, direct access to any location, supports both read and write operations, but loses all data when the power is off.

ROM IN A NUTSHELL

📍 Read-Only Memory (ROM) is also a type of random access memory, but as the name suggests, it can only be read from, not written to.

📍 Like RAM, ROM allows fast access to any data, but the data is permanent and cannot be altered.

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