**Memory Organization In Computer Architecture**

A memory unit is the collection of storage unit or devices together. The memory unit stores the binary information in the form of bits. Generally, memory storage is classified into two categories:

1. Volatile memory: This loses its data when power is switched off.
2. Non volatile memory: This is permanent storage and doesn’t lose any data when power is switched off.

**Memory Hierarchy**

REGISTER MEMORY

CACHE MEMORY

MAIN MEMORY

MAGNETIC DISKS

MAGNETIC TAPES

**Basic Organization Of Computer System**

* **Input unit:** Data and instructions must enter a computer system before the computer can perform any computation on supplied data. The input unit that links a computer with its external environment perform this task.
* It accepts instruction and data from outside world.
* It converts these instructions and data in computer acceptable form.
* Units called Input interfaces accomplish this task.
* It supplies the converted instructions and data to storage unit for storage and further processing.
* **Output unit:**
* It accepts the produced results, which are encoded form. We can’t understand the code from easily.
* It converts these coded results into human acceptable form. Units called output interfaces accomplish this task.
* It supplies the converted results to outside world.
* **Storage unit:** 
  + - The data and instructions required for processing (received from input units).
    - Intermediates results of processing.
    - Final result of processing before the system release then, to and output unit.

1. Primary storage.
2. Secondary storage.

**CONTROL PROCESSING UNIT (CPU)**

1. Control Unit and Arithmetic Logic Unit of a computer system are together known as Central Processing Unit. It is the brain of computer system.
2. In a human body, the brain takes all major decisions and other body part of the body functions as directed by the brain. Similarly, in a computer system, the CPU performance all major calculations and comparisons and also activates and control the operations of other units of a computer system.
3. ALU is designed to perform the four basic arithmetic operations, that is, add, subtract, multiply, and divide. It also performs logical operations and comparisons such as less than, greater than, and equal to.
4. Control unit:
   * + It manages and coordinates the operation of all other components.
     + It obtain instruction from a program stored in main memory, interprets the instructions and issues signals causing other units of the system to execute them.

**Differences between RAM and ROM**

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| --- | --- | --- | --- |
| **RAM** | | **ROM** | |
| * Temporary storage. | | * Permanent storage. | |
| * Stores data in MBs | | * Stores data in jobs. | |
| * Volatile. | | * Non volatile. | |
| * Used in normal operations. | | * Used for startup process of computer. | |
| * Writing data is faster. | | * Writing data is slower. | |
| * Costlier than ROM | | * Cheaper than RAM | |
| * Full form is Random Access Memory. | * Full form is Read Only Memory. | |

***Abbreviations:***

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| **BIOS** | BASIC INPUT OUTPUT SYSTEM. |
| **HTTP** | HYPERTEXT TRANSFER PROTOCOL. |
| **BASIC** | BEGINNERS ALL PURPOSE SYMBOLIC INSTRUCTION CODE. |
| **MODEM** | MODULATOR DEMODULATOR. |
| **URL** | UNIFORM RESOURCE LOCATOR. |
| **EPROM** | ERASABLE PROGRAMMABLE READ ONLY MEMORY. |
| **FORTRAN** | FORMULA TRANSLATION. |