Memory Hierarchy

Memory hierarchy is one of the most required things in computer memory as it helps in optimizing the memory available in the computer.

* They are multiple levels present in the memory, each one having a different size, different cost .

CPU

register

cache

memory

main memory

magnetic disk

optical disk

* Some types of memory like cache , main memory are faster as compared to other types of memory but they are having a less size are also costly .
* Some memory has a higher storage value but they are a slower.
* Accessing of data is not similar in all types of memory , some have faster access and some have slower access.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **level** | 1 | 2 | 3 | 4 |
| Name | Register | cache | Main  memory | Secondary memory |
| Size | <1KB | <16MB | <16MB | >100GB |
| Implement  ation | 0.25ms to 0.5 | 0.5 to  25 | 80 to 250ms | 50 lakh |
| Bandwidth | 20kto 1lakh MB | 5k to 1500MB | 1K TO 5K | 20 TO 150 |
| Managed by | compiler | hardware | Operating system | Operating system |
| Backing mechanism | From cache | Main memory | Secondary memory | From i.e, |