COA

Assignment - 3

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3) **RAM chip:**

* A RAM chip is a microchip used as RAM storage for computers and other devices. This is the actual chip that is soldered onto small circuit boards in order to create RAM cards & sticks and it is rated for performance and capacity differently, depending on the model and manufacturer.

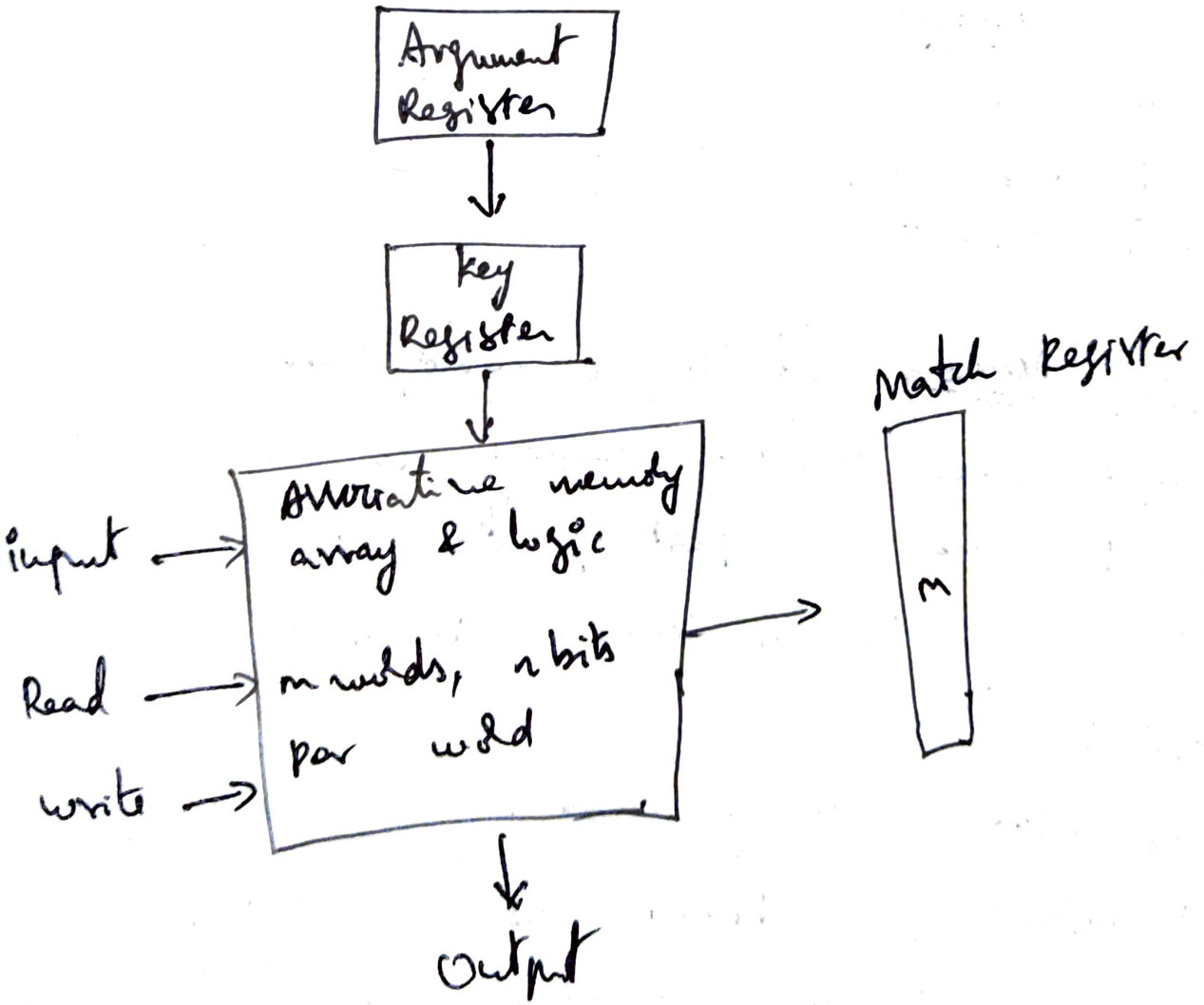
ROM chip:

* ROM is an acronym for Read-Only Memory.
* It refers to computer memory chips containing permanent or semi-permanent data. Unlike RAM, ROM is non-volatile; even after you turn off your computer, the contents of ROM will remain. Almost every computer comes with a small amount of ROM containing the boot firmware.

5) Associative Memory:

* An associative memory can be treated as a memory unit whose stored information can be recognized for approach by the content of the information itself instead of by an address of a memory location.
* Associative memory is also known as content Addressable Memory (CAM)

Block diagram:



⇒ Cache

The contents of the cache initialization file are used to populate & update a cache. This occurs when a cache server starts up. when a client application starts up when a client application explicitly creates its cache, & when a client explicitly loads a new structure into an existing code.

Cache writing techniques:

→ Write through
→ Write Back
→ Dirty Bit
→ Write Around.

3) Virtual Memory: It is a memory management technique where secondary memory can be used as if it were a part of the main memory. Virtual memory is a common technique used in a computer OS.

To map virtual memory address to physical memory address page tables are used. A page table consists of memories page table entries (PTE

The different types of mappings from main memory to cache memory :

→ Associative mapping : In this type of mapping the associative memory is used to store content & address both of the memory word.

→ Direct Mapping : In direct mapping the RAM is made use of to store data and some is stored in the cache address space is split into 2 parts : Index field & tag field.

→ Set-Associative mapping : This form of mapping is a modified form of the direct mapping where the disadvantage of direct mapping is removed.

e) Memory is the process of the devices that is used to store data of programs in a temporary & permanent basic for use In an electronic digital computer. In memory hierarchy the cost of memory capacity is inversely proportional to speed. Here the devices are arranged in a manner fast to slow, i.e; from register to memory. The registers are present inside the CPU. As they are present inside the CPU, they have the least access time.

) Performance consideration in memory system:

→ used by the CPU to reduce the memory latency.

→ A section of memory closer to the CPU

→ stores frequently used memory.

→ Design assumptions for the cache.

→ Data that is accessed once will more than likely be accessed again.

→ When memory is accessed, memory near that location will be accessed.

→ Instruction cache is used for executable instructions.

→ Data cache is used to speed up data fetch & store.