

# VICTORIA UNIVERSITY BANGLADESH



## Assignment On

Course Name : Computer Architecture

Course code : CSE-313

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Ans to the Q.No - 2 (a)

a Cache memory:

- \* Cache memory is a special very high-speed memory.
- \* it is used to speed up and synchronizing with high-speed cpu.
- \* Cache memory is costlier than main memory or Disk memory but economical than CPU Registers.
- \* Cache memory is an extremely fast memory type that acts as a buffer between RAM and the CPU.
- \* it holds frequently requested data and instructions so that they are immediately available to the CPU when needed.

main memory: primary memory is the main memory of computer. it is a chip mounted on the motherboard of computer. primary memory (main memory) is categorized into two main types: Random Access memory (RAM). and Read only memory (ROM) RAM is used for the temporary storage of into input data, output data and intermediate result. Therefore, ROM is used to store the data that does not required a change.

Logical cache:

- \* it is also known as a virtual cache.
- \* it ~~store~~ stores data using virtual addresses.
- \* The processor accesses cache directly, without going through mmu.
- \* Advantage: it is faster than physical cache, because the cache can respond before the mmu performs an address translation.
- \* Logical cache (virtual cache) stores data using virtual addresses.

Physical caches:

- \* A physical cache stores data using main memory physical addresses.
- \* Cache access speed of the logical cache is faster than for a physical cache, because the cache can respond before the mmu performs an address translation.

Ans. to the Q. No. 3(b)

b Indirect addressing in x86 family:

- \* The address of the memory location is in a register (SI, DI, or BX only).
- \* The physical address is calculated using the content of DS.
- \* In an 8086 one of these registers is called BP or base pointer.
- \* If we load BP with a number, then that number can then be used as the address of a variable.
- \* e.g. `MOV BP, #344`; Loaded the base pointer with the number 344.
- `MOV AX, [BP]`; Load the AX register with the contents of the memory location pointed to by BP
- \* E.g. 2.
- \* `MOV CL, [SI]`; move the contents of DS:SI into CL.
- \* `MOV [DI], AH`; move the content of AH into DS:SI.
- \* `MOV [SI], AX`; move the content of AX into memory.  
    ; Location DS:SI and DS:SI + 1
- \* As with the x86 [bx] addressing mode, these four addressing modes reference the byte at the offset found in the bx, bp, si, or di register, respectively.

Q CPU main component and with the main memory and I/O:

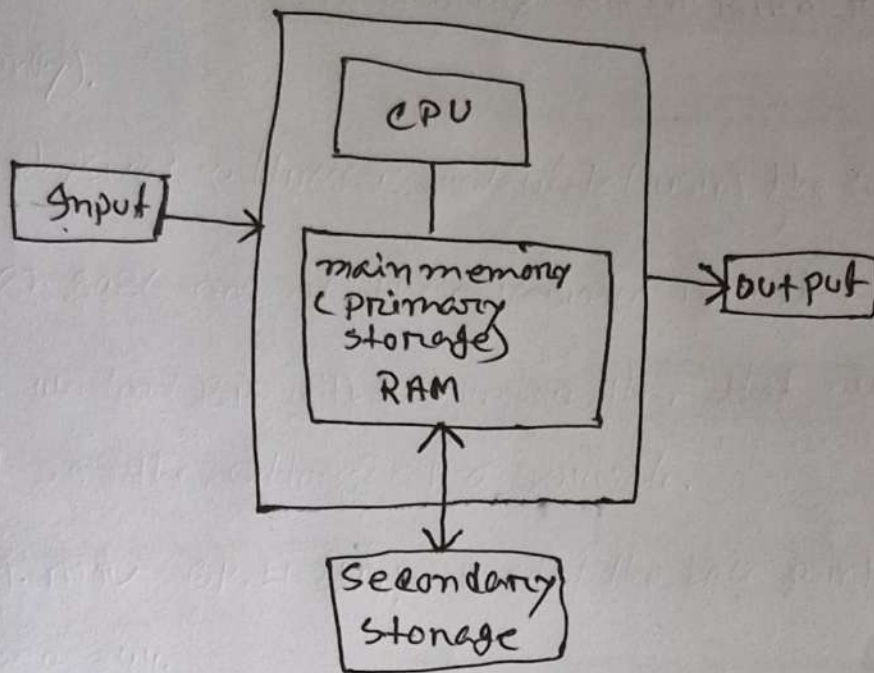


Fig: Block diagram of computer.

A standard fully featured desktop configuration has basically four types of featured device (I/O unit, memory).

①. Input Device, ②. output Device, ③ memory, ④ storage Device

- ①. Introduction to CPU
- ② CPU.
- ③ The Arithmetic/Logic unit (ALU)
- ④ The control unit.
- ⑤ main memory.
- ⑥ External memory.
- ⑦ Input/output Device
- ⑧ the system bus