

**VICTORIA UNIVERSITY BANGLADESH**



## Assignment On

Course Name : Computer Architecture

Course code : CSE-313

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Answer to the question No. 2(a)

Cache Memory:

- \* Cache memory is a special 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 input data, output data and intermediate result. Therefore, ROM is used to store the data that does not require a change.

Answer to the question No 02-(b)

Logical cache:

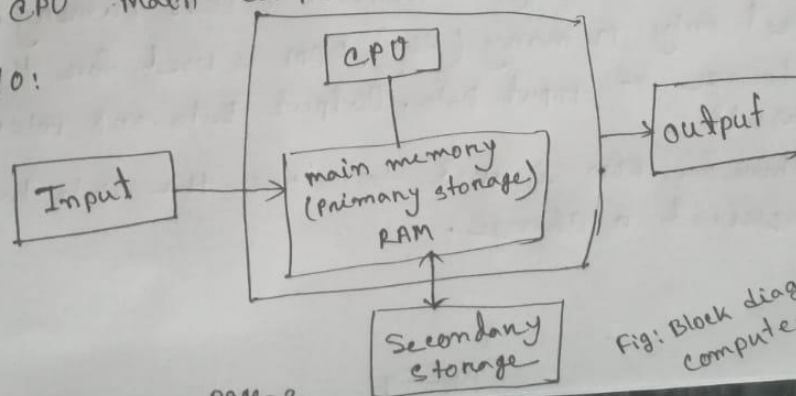
- \* It is also known as a virtual cache
- \* It stores data using virtual addresses.
- \* The processor accesses cache directly, without going through MMU.
- \* Advantage: It is faster than physical cache, because the cache can respond before the MMU performs an address translation
- \* Logical cache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

Physical caches:

- \* A physical cache stores data using main memory physical address. So cache address.
- \* 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

Answer to the question No: 3(a)

CPU Main component and with main memory and I/O:



A standard fully featured desktop configuration has basically four type 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.

Answer to the question 3(b)

Indirect addressing in 8086 family!

- \* The address of the memory location in a register (SI, DI, or BX only)
- \* The physical address is calculated using the content of DS.
- \* In 8086 one of these register 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.92

\* `MOV CL [SI]`; move the content 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 mode reference the byte at the address found in the `bx`, `bp`, `si`, or `di` register, respectively.