Ahsanullah University of Science & Technology

Department of Computer Science and Engineering

Course No : CSE 2214

Course Title : Assembly Language Programming Sessional

Assignment no : 03

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Question no 1:

What are the differences between a register and a memory location ?

Answer:

Memory and registers both increase processor's working speed. Although both memory and register are used to increase processor's speed, but both have differences in their actual working.

Register holds the instructions/program that is being executed by the processor. But Memory holds data/instructions that are required by the processor or CPU for execution of a program. Fetching of data from Register is very fast. Fetching of data from Memory takes more time as compared to Register.

Register are placed inside the processor of the computer. On the other hand, main Memory is located outside of the CPU but closer to it.

Registers are measured in bit. Memory capacity is measured in kilo-bytes(KBs) or giga-bytes(GBs). There are many kinds of Registers like Data Register(DR), Address Register(AR),Instruction Register(IR) and so on. For example of memory Main memory and RAM of the computer.

Question no 2:

Determine the physical address of a memory location given by 0155:D09Ah.

Answer: Here, 0155:DO9Ah means Offset is D09Ah within Segment 0155h.

To obtain a 20-bit physical address. The 8086 microprocessor first shifts the segment address 4 bits to the left and then adds the Offset value with it.

So, here physical address of 0155:D09Ah is

01550h

+ D09Ah

= E5EAh (Answer)

Question no 3: A memory location has physical address 4A37Bh. Compute

a. the offset address if the segment number is 40FFh.

b. the segment number if the offset address is 123Bh.

Answer: **a.** We know that, Physical address= Segment *10h + Offset

So,Offset=Physical address-Segment*10h

=4A37Bh-40FF0h

=938Bh

b. Here, Segment*10h = physical Address-Offset

= 4A37Bh-123Bh

=49140

Thus , the segment number =4914(answer)