Ahsanullah University of Science & Technology

Department of Computer Science and Engineering

Course No : CSE 2214

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Submitted To : Ms.Tahsin Aziz & Md.Siam Ansary

Submitted By:

Group : A1

Name : Nusrat Jahan

Id : 18.01.04.020

Section : A

Question :01

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

Answer:

BASIS OF COMPARISON	REGISTER	MEMORY
Description	A small amount of fast storage which is a quick accessible location available to a computer's CPU	A form of computer data storage that stores data and machine code currently being used.
Location	Registers are located inside the CPU.	Memory or RAM is located external to the CPU.
Data Loading	Data has to be loaded into a CPU register from memory before the CPU can process it.	Data has to be loaded into a CPU memory after register the CPU can process it.
Data Storage Capacity	Register holds small amount of data. Data storage capacity of register ranges between 32-bits to 64-bits.	Memory stores the large amount of data than register. Data storage capacity of memory ranges between Gigabyte (GB) to Terabyte (TB).
CPU Speed	CPU can operate on the register at a very much faster rate when compared to memory.	CPU accesses memory at the slower rate than registers.
Function	Registers hold the operands or instruction that CPU is currently processing.	Memory holds the instructions and the data that the currently executing program in CPU requires.
Types	Types of registers include: Accumulator register, Program counter, Instruction Register, Address Register etc.	Random Access Memory (RAM) Read only memory (ROM)

Question :02

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

Answer :

Written in the form segment:offset , this form is also known as logical address. Here DO9Ah is the offset within the segment 0155.

Here,

Segment=0155

Offset = DO9Ah

We know,

Physical address=segment * 10h +Offset

=(01550+D09A)h

=E5EAh

SO, Physical address=E5EAh.

(ANS).

Question:03

Question: 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) Given that,

Physical address=4A37Bh

Segment=40FFh

Offset = ?

We know,

Physical address=segment * 10h +Offset

⇨Offset = physical address –segment*10h

=(4A37B-40FF0)h

=938Bh

SO, Offset = 938Bh.

(ANS).

(b)

Given that,

Physical address=4A37Bh

Offset = 123Bh

Segment=?

We know,

Physical address=segment * 10h +Offset

⇨ Segment*10h = physical address – Offset

⇨ Segment = {(physical address –offset)/10}h

= {(4A37B-123B)/10}

=(49140/10)h

=4914h

SO, Segment=4914h.

(ANS)