EECE.3170: Microprocessor Systems Design ISpring 2016

Lecture 5: Key Questions January 29, 2016

| 1. | Describe the basic structure of an assembly language statement. |
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| 2. | Describe how the x86 registers are accessed as 8-bit, 16-bit, and 32-bit values. Include the answer to the example provided in the slides (EAX = $1A2B3C4DH$). |
| 3. | Describe how to determine the number of bytes being accessed from memory in an x86 instruction. |

4. Describe the use of the MOV instruction.

5. The example program below shows the initialization of internal registers with immediate data and address information, using MOV instructions. Show the state of all affected registers. Also, explain why AX is used to initialize segment registers.

MOV AX,2000H

MOV DS, AX

MOV ES, AX

MOV AX,3000H

MOV SS,AX

MOV AX,0H

MOV BX,AX

MOV CX,0AH

MOV DX,100H

MOV SI,200H

MOV DI,300H

6. Describe the operation of the MOVSX/MOVZX instructions. How/when are these instructions useful?

- 7. Assume: AX = 0100H, DX = 8100H, (100H) = 00H, (101H) = FFH. What are the results of the following instructions?
- a. MOVSX EBX, AX
- b. MOVSX EBX, DX
- c. MOVZX EBX, DX
- d. MOVSX EBX, BYTE PTR [100H]
- e. MOVSX EBX, WORD PTR [100H]