16.317: Microprocessor Systems Design I

Spring 2015

Lecture 5: Key Questions
February 4, 2015

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

2. 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]

3. Explain the operation of the XCHG instruction. What restrictions are placed on this instruction?

4. Explain the operation of the LEA instruction.

5. **Example:** Given the initial memory state below:

	Lo			Hi
0x528000	50	88	31	A3
0x528004	B2	FF	0F	7D
0x528008	07	D0	BE	22
0x52800C	11	96	00	14

Show the results of the following short instruction sequence.

```
MOV     EAX, 528000h
MOV     EBX, [EAX+2]
XCHG    BL, BH
LEA     EDX, [EAX+8]
MOV     ECX, [EDX-3]
```

6. Describe the x86 flags.