Lecture 6: Key Questions June 1, 2016

1. Describe the operation of the compare instruction.

2. Complete the following table that describes the different x86 condition codes.

Mnemonic (cc)	Condition tested	Status flag setting for true condition
0		
NO		
B, NAE, C		
NB, AE, NC		
S		
NS		
P, PE		
NP, PO		
E, Z		
NE, NZ		
BE, NA		
NBE, A		
L, NGE		
NL, GE		
LE, NG		
NLE, G		

3. Describe the operation of the conditional move instruction.

4. Describe the operation of the SETcc instruction. How can this instruction be used?

5. <u>Example:</u> Show the results of the following instructions, assuming that (100H) = 0001H, (102H) = 0003H, (104H) = 1011H, (106H) = 1011H, (108H) = ABCDH, (10AH) = DCBAH

What complex condition does this sequence test?

MOV AX, [100H] AX, [102H] CMP SETLE BL MOV AX, [104H] AX, [106H] CMP SETE BH AND BL, BH AX, [108H] MOV AX, [10AH] CMP SETNE BH BL, BH OR

6. Describe the two general classes of jump instruction.

- 7. Given the instructions below, what are the resulting register values if:
  - AX = 0010H, BX = 0010H
  - AX = 1234H, BX = 4321H

What type of high-level program structure does this sequence demonstrate?

- CMPAX, BXJEL1ADDAX, 1JMPL2SUBAX, 1
- L2: MOV [100H], AX

L1:

8. **Example:** Given the instructions below, what are the resulting register values if, initially, AX = 0001H?

What type of high-level program structure does this sequence demonstrate?

MOV CX, 5 L: SHL AX, 1 DEC CX JNZ L

9. <u>Example:</u> Given the instructions below, what are the resulting register values if, initially, AX = 0001H?

What type of high-level program structure does this sequence demonstrate?

MOV CX, 5 L: JCXZ END ADD AX, AX DEC CX JMP L END: MOV [10H], AX

10. Describe the x86 loop instructions, as well as how these instructions can be used in a typical program.

- 11. Rewrite the post-tested loop example from earlier to use a loop instruction.
- MOV CX, 5 L: SHL AX, 1 DEC CX JNZ L

12. Describe the operation of the following program.

What is the final value of SI if the 15 bytes between 0A001 and 0A00F have the following values?

00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E

MOV DL, 05 MOV EAX, 000A000h MOV ESI, 0000000h MOV CX, 000Fh INC ESI CMP [EAX+ESI], DL

AGAIN:

LOOPNE AGAIN