16.317: Microprocessor Systems Design I

Fall 2014

Lecture 7: Key Questions
September 17, 2014

1. **Example:** Given EAX = 00000005h and EBX = 0000FF02h, what are the results of the following instructions? Assume each instruction starts with the values shown above in EAX and EBX.

a. MUL BL

b. MUL BH

c. IMUL BH

d. DIV BL

e. DIV BH

f. IDIV BH

2. Explain the general operation of the AND, OR, XOR, and NOT instructions.

3. **Example:** Show the state of AL after each instruction in the following sequence:

        MOV AL, 55H
        AND AL, 1FH
        OR AL, C0H
        XOR AL, 0FH
        NOT AL

4. Explain the operation of shift instructions. What is the difference between SHR and SAR?

5. **Example:** Given AL = 15H, CL = 03H, and CF = 0, show the state of AL and CF after each instruction in the sequence below:

   SHL AL, 1
   SHR AL, CL
   SAL AL, 5
   SAR AL, 2