EE 471 – Computer Design and Organization  
HW #2 – Due January 28

1.) For the following 6-bit 2’s complement values, compute the result of the given calculation. If there is an overflow please state this.

A: 100101  
B: 001011  
C: 110010

i.) \( A + B \)

ii.) \( A + C \)

iii.) \( A - B \)

iv.) \( A - C \)

2.) Assuming the values given in the previous problem were unsigned 6-bit values, compute the following results. Your answers should be a 12-bit unsigned value

i.) \( A \times B \)

ii.) \( A \times C \)

3.) For each of the following values, indicate what they mean if they are treated as:

(a) 2’s complement number.

(b) Unsigned number.

(C) MIPS instruction

0x24A60004

0xAFBF0000

4.) In class we build a left shifter. Using the same logic, create a right shifter for 8-bit values. It takes in an 8-bit value \( A_7..A_0 \) to be shifted, and a 3-bit shift amount \( B_2..B_0 \). It also gets a signal “Arithmetic”, which when true performs an arithmetic right shift, while when false performs a logical shift. Your design should require only 2:1 Muxes, and should be as simple as possible.