(10 pts) CS 3843 Computer Organization Recitation #02 Name/abc123: _____
Due Fri Feb 22 , 2019 11:59pm

1. For a 11-bit CPU:
   a. What is the maximum number of values (express in decimal)
   b. What is the highest positive number when unsigned (express in decimal)
   c. What is the range of values for two's complement signed values (express in decimal)
   d. Show the hex and binary equivalent of -1.
2. For 8-bit 2's complement math, express each number as hexadecimal. Add them together in hexadecimal and show the result. Convert that result to decimal and compare answers. Finally, show the values of each of the four flags after doing the math.

   CF: carry flag OF: overflow flag ZF: zero flag SF: sign flag

   a. -5 + -38
   b. 120 + 53

3. For 8-bit 2's complement math, express each number as hexadecimal. For each set of numbers below, perform the logical operations:
   a. -5 AND -38
   b. -45 AND -90
   c. Use AND to clear bits 2, 3, 4 from the right of 01010110, leaving other bits untouched. Show the result in hex.
   d. -5 OR -38
   e. -45 OR -90
   f. Use OR to set bits 1, 3, 6, 7 of 01010110, leaving other bits untouched. Show the result in hex.
   g. -5 XOR -38
   h. 120 XOR -53
   i. Use XOR to flip bits 2, 4, 6 of 01010110, leaving others untouched. Show the result in hex.

4. Perform an arithmetic shift left, arithmetic shift right, logical shift left, and logical shift right for the following 8-bit numbers. Show the result in binary.

   a. 0x73

   b. 0x85