**CSCI 360-1 Assignment 2 – Binary, Hexadecimal and Absolute Addresses Spring 2019**

**60 points**

Do not use a calculator to complete this. You are required to *show your work*. It is important that you know how to do what is included in this exercise without a calculator as you will be asked to do these types of conversions and binary or hexadecimal arithmetic on quizzes and exams.

You may NOT work with someone else on this assignment! Do your own work! Please put your name, CSCI 360-1, Spring 2019, and the due date of 02/01/2019 (in that order and on four separate lines) in the top right corner of the first page of what you hand in.  Please write very clearly and be sure that we can tell which question you are answering, what is your answer and where it is on the page. If you have multiple pages, they must be *stapled* or your assignment will not be graded!

Once again, you must SHOW your work!

1. Convert the following unsigned **binary** numbers to their decimal representations: (8 points)

  a. 10

b. 1111

c. 1110011

d. 01111

1. Convert the following unsigned **hexadecimal** numbers to their decimal representations: (8 points)

a. 1A

b. F2

c. BC9

d. B29

1. Convert the following unsigned **decimal** numbers to both their hexadecimal **and** binary representations: (8 points)

a. 16

b. 356

c. 41

d. 4095 

1. Do the following unsigned **binary** arithmetic giving the answer in binary: (8 points)

a. 10110 + 11101

b. 11101 + 01101

c. 10100 - 01011

d. 11111 - 01111

1. Do the following unsigned **hexadecimal** arithmetic giving the answer in hexadecimal: (8 points)

a. 826D + 1B82

b. E2C + AC2

c. FA29 - 3259

d. E2C - DAB1

1. Do the following arithmetic as if these were **five-bit signed representations** and indicate if overflow occurs and, if so, why. Note: Remember that you want to add. So, for signed subtraction, convert the subtrahend (the number being subtracted) to its 2's complement and add it. (8 points)

a. 10110 + 01101

b. 11001 + 00101

c. 10110 - 01101

d. 11111 - 01011

1. Assume that

Register 0 contains 00000048  
Register 1 contains 00001128  
Register 7 contains EC0035C1  
Register 9 contains 00018C22

If they are valid, calculate the absolute D(X,B) addresses for the representations below. If they are not valid, explain why. (12 points)

a. 490(,1)

b. 0(0,1,7)

c. 16(7,0)

d. 12(9)

e. 231(9,1)

f. 15(1,7)