CMSC 313 Homework 2
Spring 2017, Sects. 01, 02

For the following questions, show *all of your work*. It is not sufficient to provide the answers.

Exercise 1. Convert each of the following numbers to 8-bit signed magnitude, 8-bit one's complement and 8-bit two's complement. Report your answers in binary.

a. $(-97)_{10}$
b. $(-47)_{10}$
c. $(-127)_{10}$
d. 126_{10}

Exercise 2. Convert the following 16-bit two's complement numbers in hexadecimal representation to decimal.

a. $AC24_{16}$
b. $64A2_{16}$
c. $5D17_{16}$
d. $FFFF_{16}$

Exercise 3. Find the decimal equivalents for the following 8-bit two's complement numbers.

a. 0010 0100
b. 1010 1001
c. 1100 0011
d. 0101 0101

Exercise 4. Perform two's complement addition on the following pairs of numbers. In each case, indicate whether an overflow has occurred.

a. 1000 0010 + 1000 0010
b. 1010 1001 + 0110 1100
c. 1001 1111 + 1111 1110
d. 0111 1010 + 0110 0110

Project 0. Copy the hello.asm assembly language program to your GL account:

```
cp /afs/umbc.edu/users/p/a/park/pub/cmsc313/spring17/hw2/* .
```

Using a text editor, replace the output string in the program with your favorite quote from a movie or TV show. Use the Unix `script` command to record yourself assembling and running the program. (Do not include any editing!) Then, submit both the source code and the sample run:

```
submit cs313_park proj0 hello.asm typescript
```