# CS 330 Homework 2A

1. Convert these decimal values to 32-bit 2's complement. Give your answers in hex.

   (a) 4255

   (b) $-292$

2. Convert these 32-bit 2's complement hex values to decimal.

   (a) `1F3B 650A`

   (b) `8421 7310`

3. What is the range of numbers (most negative to most positive) that can be represented using the following schemes? Give your answers in binary, hex, and decimal.

   (a) 5-bit unsigned

   (b) 8-bit 2's-complement

   (c) 12-bit 2's-complement

4. Work the following arithmetic problems, assuming that each hex quantity is given in 16-bit 2's complement. Give your answers in hex. In each case, state whether or not overflow has occurred.

   (a) `01F0 + 2715`

   (b) `ABCD + 32E0`

   (c) `FEED - BEEF` (Hint: Convert to the equivalent addition problem first.)

   (d) `2211 - 80DF` (Hint: Convert to the equivalent addition problem first.)

5. Perform the following size conversions on 2-s complement hex numbers, if possible. Give your answer in hex. If the conversion cannot be done exactly, explain why.

   (a) Convert the 8-bit quantity `07` to 16-bits.

   (b) Convert the 16-bit quantity `90A3` to 32-bits.

   (c) Convert the 32-bit quantity `FFFF FFFF` to 16-bits.

   (d) Convert the 16-bit quantity `C001` to 8-bits.