

CMSC 313 Spring 2024

Quiz 1

Full Name _____ Student ID _____

For every exercise, show your work. Not showing complete work will result in penalties. For exercises that require you to change a base within the problem, you must show your work for the conversion, regardless of how short the number is, unless specified. If you have an opportunity to use the conversion shortcut taught in class/on the slides, you can use it. For exercises that require you to change a base within the problem, you must identify the base in your final solution. “0x” counts as base identification for hexadecimal. Box your final answer.

Exercise 1. (10 pts) Convert 1010.101_2 to decimal (base 10).

Exercise 2. (10 pts) Convert 189.4_{10} to binary (base 2).

Exercise 3. (10 pts) Convert $10001011101011011111000000001101_2$ to hexadecimal (base 16).

Exercise 4. Compute the following using 2's complement with 8 bits. Leave your answer in 2's complement form. You may need to convert to 2s complement. If the result needs more than 8 bits to compute, write "OVERFLOW". If a computation will overflow, show either a) why the sum is out of bounds (using > or < sign) or b) that the Positive+Positive=Negative or Negative+Negative=Positive rule holds.

a) (5pts) $00110100_2 + 01010110_2$

b) (5pts) $00110100_2 - 01010110_2$