CIS 351 Sample NR2 Problem

03 January 2022

NR2: Two's Complement

To receive credit, you *must* show your work.

(a) Convert -42 from decimal to and *eight-bit* two's complement number:

(b) Convert 11010100 from two's complement to decimal:

(c) What is the range of integers that can be represented using 8 two's complement bits?

(d) How many bits are needed to store integers between -76 and 37 (*inclusive*) using two's complement?

(e) Write the six *successive* two's complement numbers by using the pattern. Do *not* convert to decimal or any other number base. Add notes to the right documenting your thought process. (You need only enough notes to convince me that you didn't just convert to base 10 on a scratch sheet of paper.)

$x : 11100001$

$x + 1:$ _____

$x + 2:$ _____

$x + 3:$ _____

$x + 4:$ _____

$x + 5:$ _____

$x + 6:$ _____