Name:_____ Section:___ Andrew Id: _____

15-110 Fall 2018 Quiz 1

*** 15 minutes**
*** No calculators, no notes, no books, no computers.**
*** Show your work when possible!**
*** 100 pts total -- #1-6 are 15 pts each, #7 is 10 pts**

1. Represent 14 as an 8-bit unsigned binary number

2. Represent the string 'C2b' to decimal numbers using length-prefix encoding.
   Hint: here are some ascii values: 'A' is 65, 'a' is 97, and '0' is 48

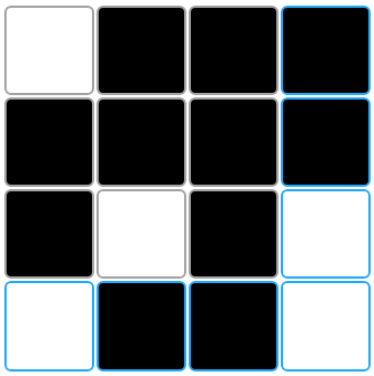
3. What is the largest unsigned int that can be represented in 3 bits? Give your answer in base 10.

4. Show the work to compute 43 - 14 using 10's complement

5. Show the work to compute 83 * 42 using lattice multiplication

6. Show the 5 additions needed to compute 11 * 13 using Egyptian multiplication

7. Say we saw this image from the Parity Card Trick website, after we set up the board properly and after a bit was flipped:



Which bit was flipped, in (row, col) notation, where we start counting at 0 not 1 (so the top row is row 0, and the left column is col 0)?