Name:
Section:

Week 0 Practice Problems

Date:

Feel free to use the paper tool we made in class!

1. If you sometimes count using your fingers, odds are you can count up to 5 things on one hand (using 5 fingers). But that's if you're using "unary" notation, whereby you only have a single digit at your disposal, a finger, which you can think of as a `1`. Binary, by contrast, allows you to use two digits, `0` and `1`. How high could you count on one hand (with 5 fingers) using binary? Assume that a raised finger represents a `1` and a lowered finger represents a `0`.

2. Convert the following to decimal. Remember that "`0b`" just indicates that the number is in binary! **You must show all your work!**

   (a) `0b01000001`

   (b) `0b01101110`

   (c) `0b01110011`

3. If a computer only had 4-bit hardware, what is the result of `0b1101 + 0b0011`? Indicate whether an overflow, underflow, or no error occured.