Comparing Integer Representations
Negation and Zeroes

Hi! And welcome to the "Best Integer Representation" competition!

Here, we'll choose who gets to be the world's standard for computer integers! But first, let's introduce our contestants:

Unsigned

Sign Magnitude

One's Complement

Two's Complement

Bias

-127_{10}
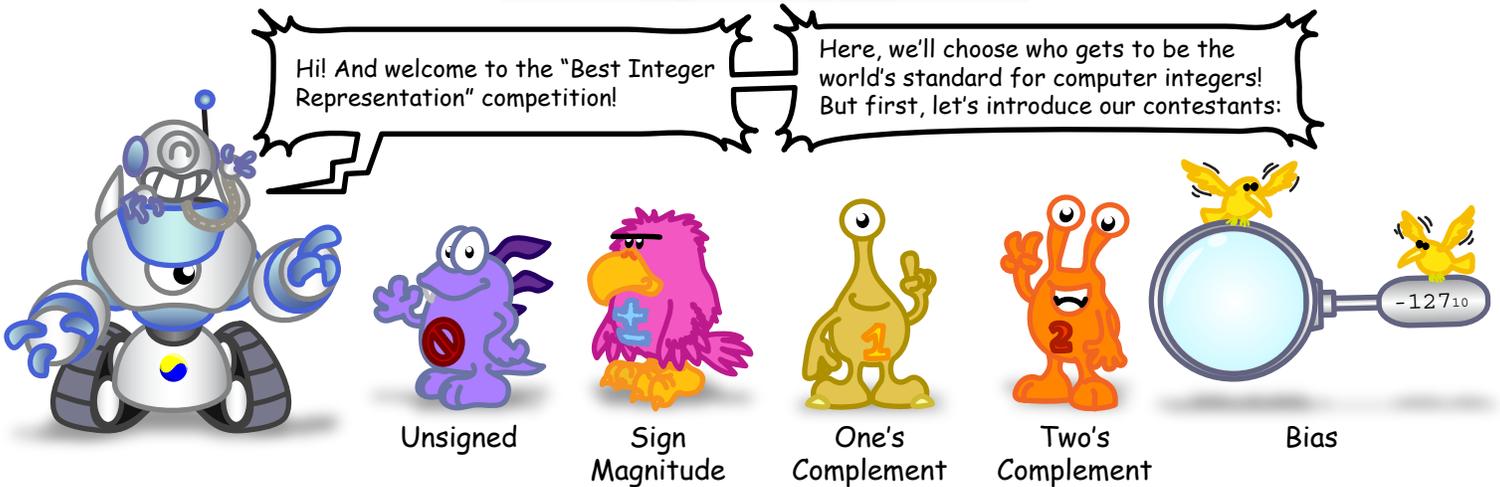
In this competition, we'll use 8-bit numbers. Now let's get started!

Round 1 - Negation

Round 1 is easy. Just tell me how you negate a number!

Um...

Flip sign bit

Flip all bits

Flip all bits and add 1

Subtract from 127_{10}

-127_{10}

0

1

1

1

1
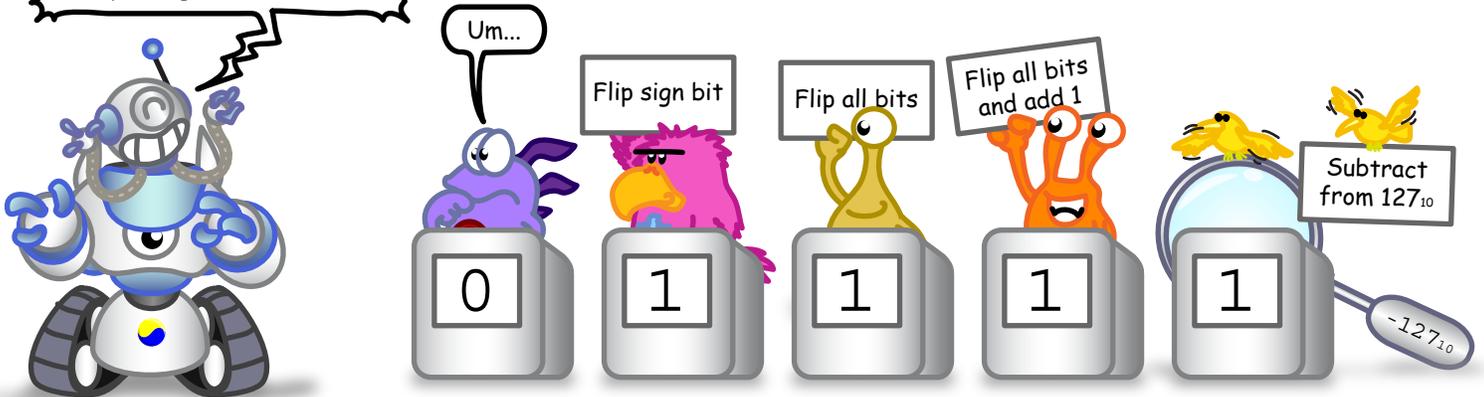
Oh, dear! It looks like Unsigned can't negate. But this competition has only started, so Unsigned still has a chance of catching up to the others.

Round 2 - Zeroes

Now for Round 2! Show me all the ways you represent zero!

0000 0000

0000 0000
1000 0000

0000 0000
1111 1111

0000 0000

0111 1111

-127_{10}

2

2

2

3

2
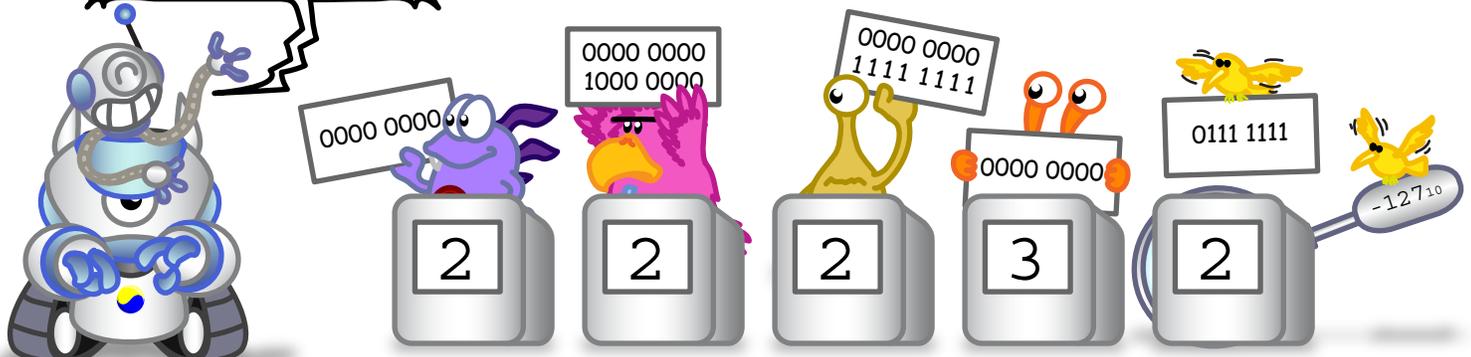
Now things are getting interesting! Unsigned and Two's Complement get two points each for having one zero and being able to represent zero with all zero bits. Bias's zero isn't all zero bits, but it gets a point for having only one zero. And though they have two zeroes, Sign Magnitude and One's Complement get a point for having a zero of all zero bits.

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