COMP1521 Week 7

Two's complement and floating point numbers

The three parts of a floating-point number

Formula: sign * (1 + fraction) * 2^(exponent - 127)

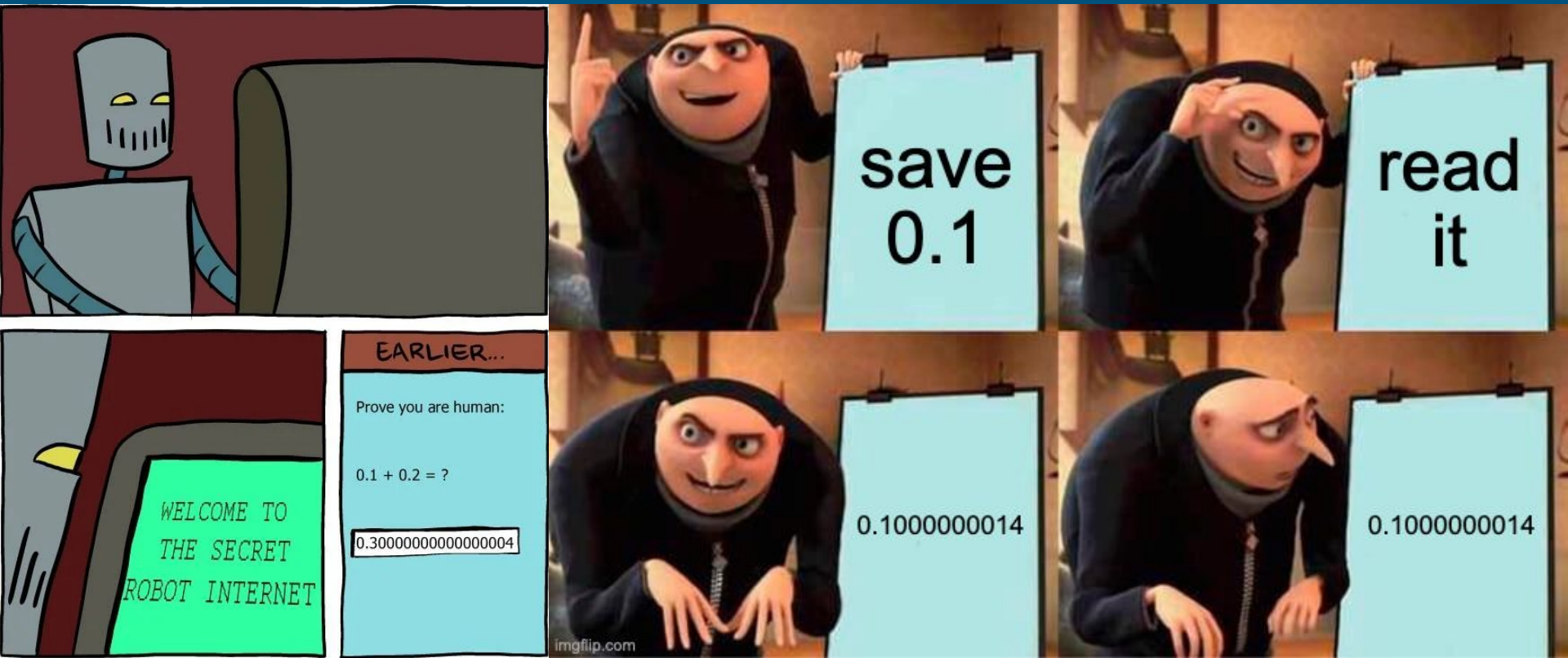
Useful converter:

https://www.h-schmidt.net/FloatConverter/IEEE754.html

Special numbers:

- NaN
  - “Not a number”
  - Exponent is all 1s, and fraction is non-zero.
- Inf
  - Exponent is all 1s, fraction is 0, and sign is 0 (positive).
- -Inf
  - Exponent is all 1s, fraction is 0, and sign is 0 (positive).
- Zero/-Zero
  - Exponent is 0, and fraction is 0.

Any problems with floating point numbers?



Two’s Complement

- Method of representing signed integers
- To convert positive to it’s negative two’s complement equivalent (and back again):
  - Flip all the bits
  - Add 1
- This means “higher” negative numbers (e.g. -1), have a “higher” unsigned value that “lower” negative numbers (e.g. -3000)