

# **Tute 7**

**COMP1521 24T2**

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# content

- 2's complement
- ieee 754
- more bitwise

# 2's complement

## encode/decode

if msb is 0, same as normal conversion

if msb is 1 negate and add 1.

the same forwards and backwards.

# IEEE-754

$$(-1)^{sign} \times (1 + frac) \times 2^{exp-127}$$

**exp** the 8 bits following the sign bit (as a value in the range 0..255)

**frac** the least significant 23 bits, interpreted as negative powers of 2. So the msb is  $2^{-1}$ , next is  $2^{-2}$ , and so on.

Good IEE-754 Calculator: [www.h-schmidt.net/FloatConverter/IEEE754.html](http://www.h-schmidt.net/FloatConverter/IEEE754.html)