Why IEEE 754 Floating Points Work With 2s Complement Comparitors

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Made Up Floating Point Standard

The smallest real IEE 754 float is 32 bits. 8 is much easier to see

11001101

01.00

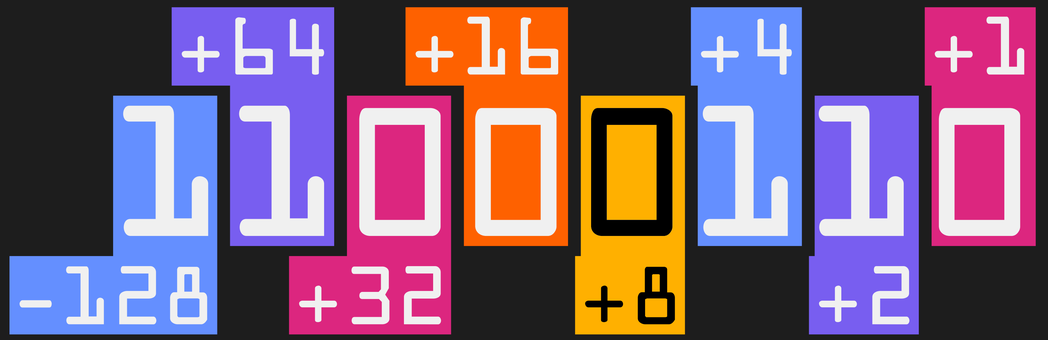
Made Up Floating Point Standard

The smallest real IEE 754 float is 32 bits. 8 is much easier to see.

This number represents the binary number -10.1101

Subtract 1 from the exponent bits to find actual exponent

Two's Complement Refresher



Why It Works: Hierarchy

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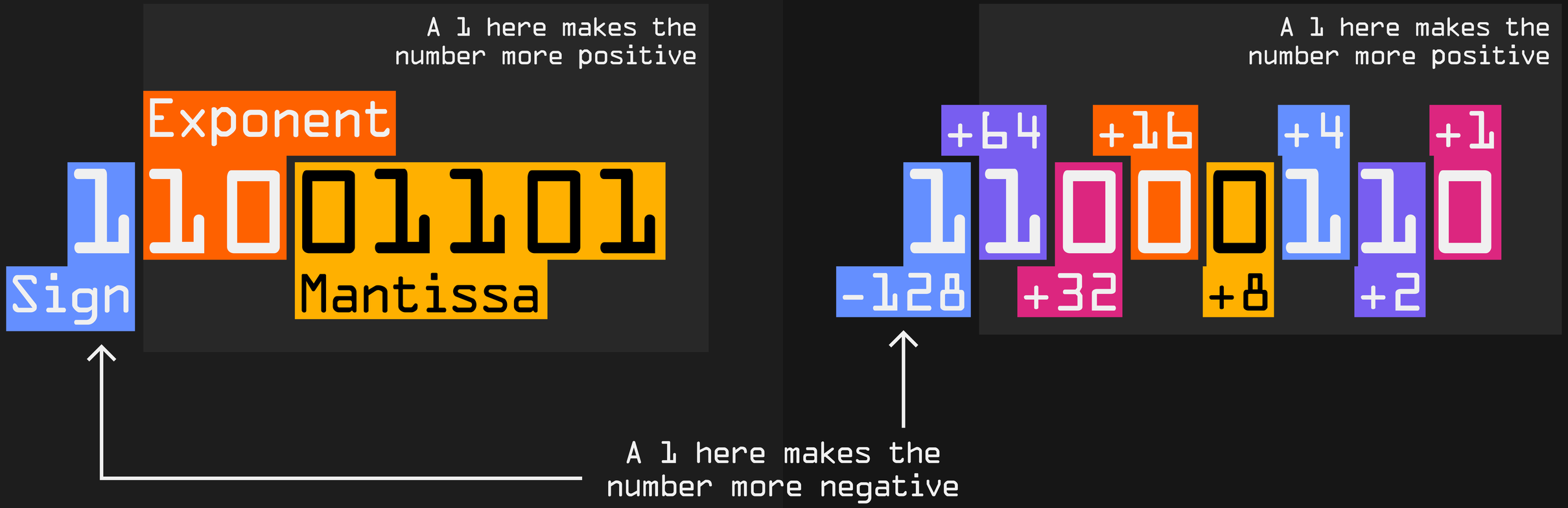
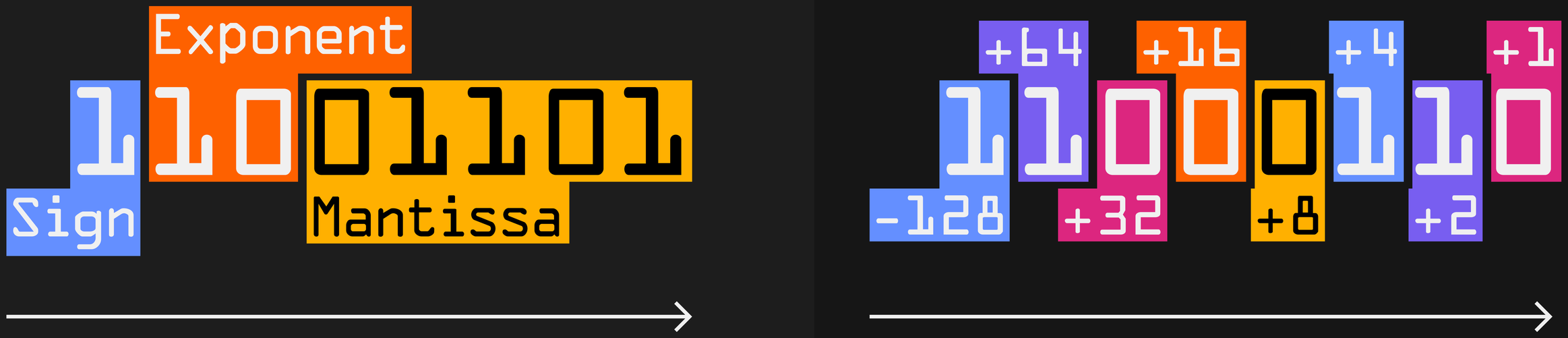


Why It Works: Hierarchy

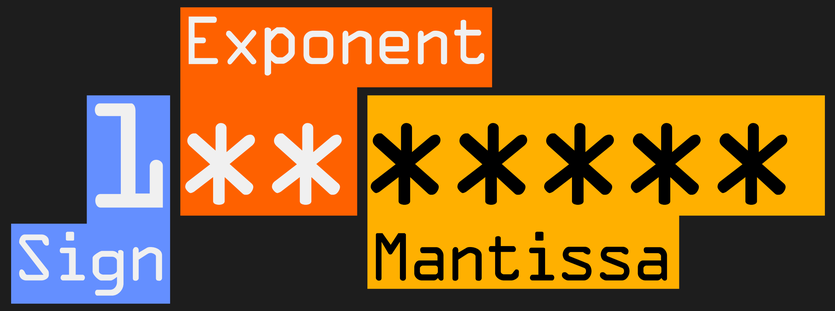


The rightward direction makes less impact

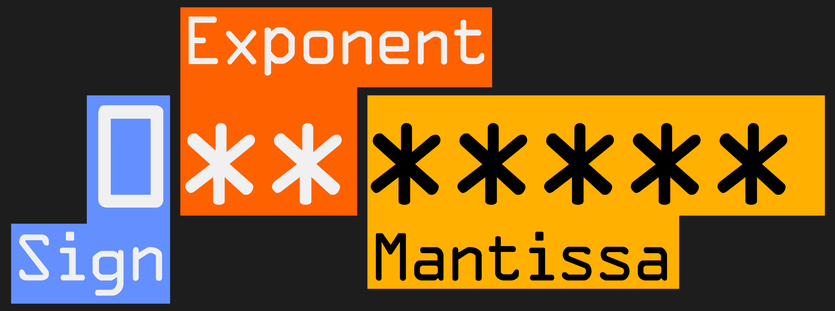
Examples

1. Numbers with a different sign
2. Same sign, different exponent
3. Same sign, same exponent, different mantissa

Different Sign

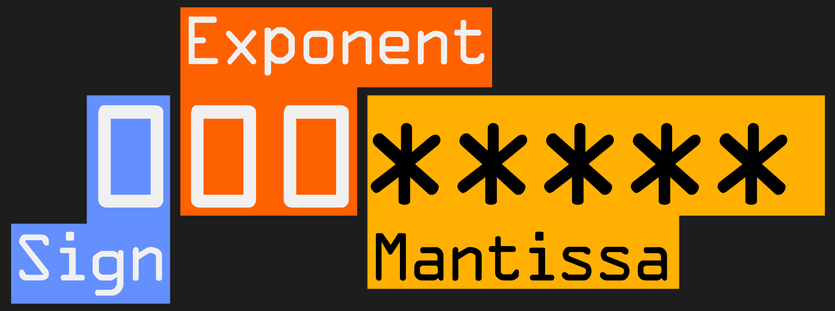


negative something

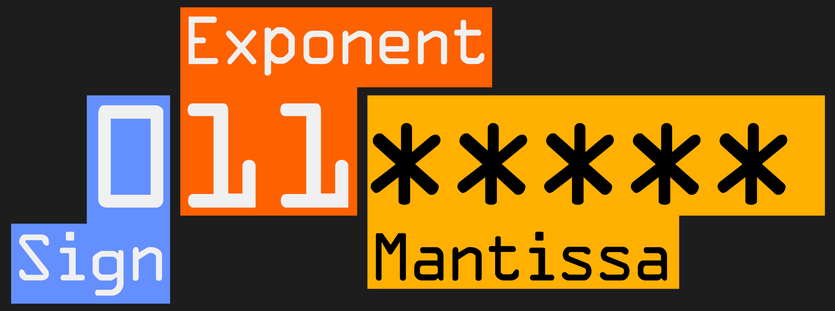


positive something

Different Exponent



Positive something times 2^-1



Positive something times 2^2

Different Mantissa

1.00111

1.10000