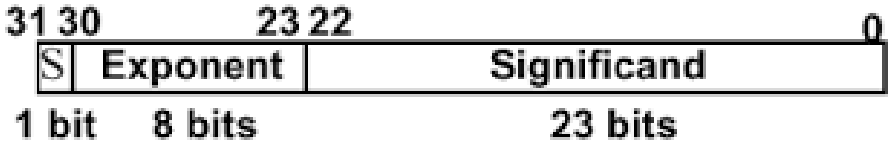
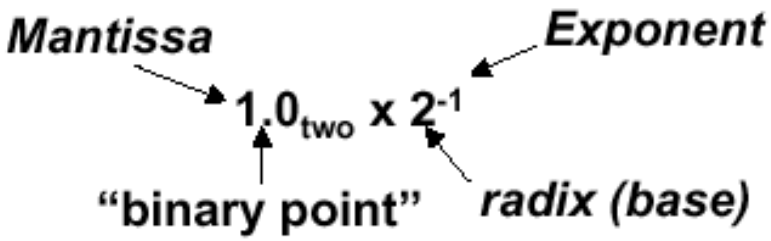
Floating Point Numbers



Example



Normalization of Floating Point Numbers

Before a floating-point binary number can be stored correctly, its mantissa must be normalized.

The process is basically the same as when normalizing a floating-point decimal number. For example, decimal 1234.567 is normalized as 1.234567×10^3 by moving the decimal point so that only one digit appears before the decimal.

The exponent expresses the number of positions the decimal point was moved left (positive exponent) or moved right (negative exponent).

Similarly, the floating-point binary value 1101.101 is normalized as 1.101101×2^3 by moving the decimal point 3 positions to the left, and multiplying by 2^3. Here are some examples of normalizations:

Binary Value	Normalized As	Exponent
1101.101	1.101101	3
.00101	1.01	-3
1.0001	1.0001	0
10000011.0	1.0000011	7