

Floating point Representation : $5 \cdot 375_{10}$

Step 1: Convert decimal to Binary

First we take integer part : 5

$$2 \overline{) 5} \quad \rightarrow \quad 1$$

4

1

$$2 \overline{) 2} \quad \rightarrow \quad 0$$

2

0

$$2 \overline{) 1} \quad \rightarrow \quad 1$$

$$5_{10} = 101_2$$

Now we take fraction : $0 \cdot 375_{10}$

$$0 \cdot 375 \times 2 = 0 + 0 \cdot 75$$

$$0 \cdot 75 \times 2 = 1 + 0 \cdot 50$$

$$0 \cdot 50 \times 2 = 1 + 0 \cdot 00$$

$$0 \cdot 375_{10} = 0 \cdot 011_2$$

$$5 \cdot 375_{10} = 101 \cdot 011_2$$

$$\text{Step 1: } 5 \cdot 375_{10} = 101.011_2$$

Step 2: Converting Binary to Sci Notation: 101.011_2

Scientific ^{Notation} Review.

Convert 631.65_{10}

$$631.65_{10} \xrightarrow[\text{Notation}]{\text{scientific}} 6.3165 \times 10^2$$

Convert Binary to Scientific Notation of
 101.011_2

$$1.01.011_2 \xrightarrow[\text{Notation}]{\text{scientific}} 1.01011 \times 2^2$$

Scientific Conversion of 101.011×2^2 is

$$1.01011 \times 2^2$$

Step 2: Scientific Notation Conversion : 1.01011×2^{10}
 1.01011×2^2

Step 3: Add Biased Exponent

$$\text{Biased offset} = 7$$

$$1.01011 \times 2^{2+7} = 1.01011 \times 2^9$$

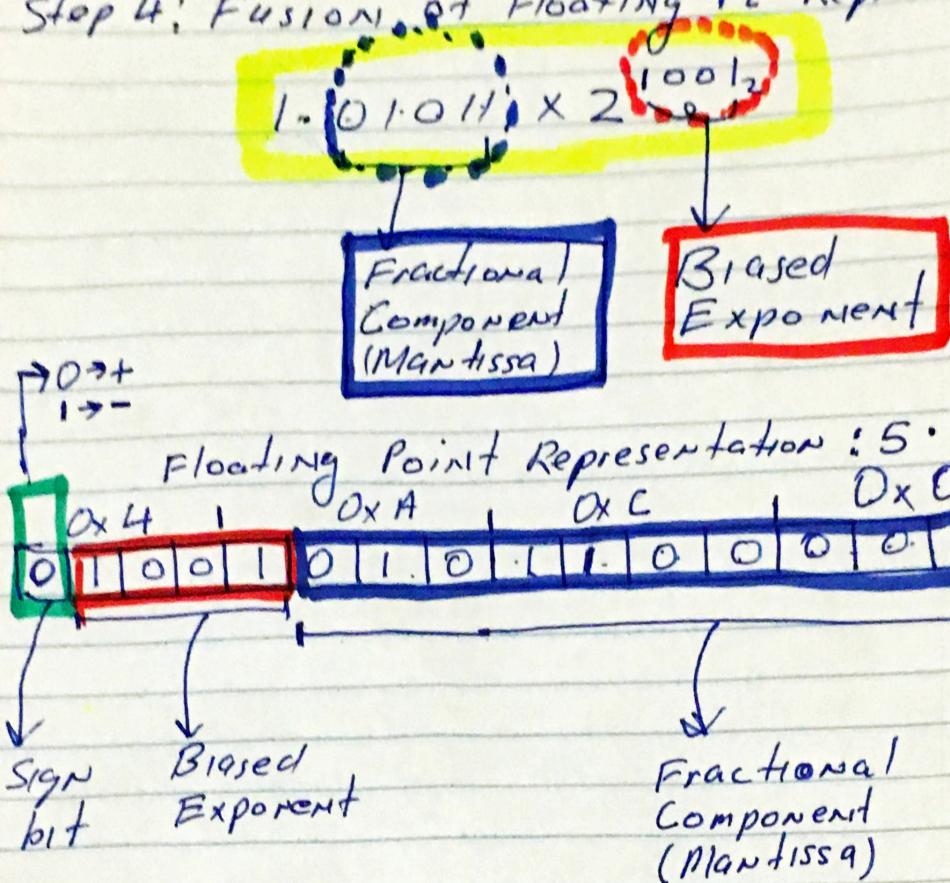
$$= 1.01011 \times 2^{1001_2}$$

$$q_{10} = 1001_2$$

Step 2: Scientific Notation : $+1.01011 \times 2^2$

Step 3: Biased Exponent = $9_{10} = 1001_2$

Step 4: Fusion of Floating Pt Representation.



Step 5: Convert to Hex : 5.375_{10}

0x 4AC0

$$K = 2^{N-1} - 1 = 2^{4-1} - 1 = 2^3 - 1 = 8 - 1 = 7$$

N = # of bits used to store Biased offset