

My floating point number is: **-9.84375**

Sign is negative: 1

Exponent:

$$9.84375 = \frac{315}{32} * \frac{1}{2^3} = \frac{315}{256}$$

Exponent is $3 + 127 = 130$ (1000 0010)

Mantissa:

$$\frac{315}{256} - \frac{256}{256} = \frac{59}{256}$$

Can subtract $\frac{1}{8}$:

$$\frac{59}{256} - \frac{32}{256} = \frac{27}{256}$$

Can subtract $\frac{1}{16}$:

$$\frac{27}{256} - \frac{16}{256} = \frac{11}{256}$$

Can subtract $\frac{1}{32}$:

$$\frac{11}{256} - \frac{8}{256} = \frac{3}{256}$$

Can subtract $\frac{1}{128}$:

$$\frac{3}{256} - \frac{2}{256} = \frac{1}{256}$$

Can subtract $\frac{1}{256}$:

$$\frac{1}{256} - \frac{1}{256} = 0$$

Parts of mantissa: $\frac{1}{8} + \frac{1}{16} + \frac{1}{32} + \frac{1}{128} + \frac{1}{256}$

0011 1011 0000 0000 0000 000

Binary and Hexadecimal:

Big Endian: 1100 0001 0001 1101 1000 0000 0000 0000

Little Endian: 0000 0000 1000 0000 0001 1101 1100 0001

Hexadecimal: 0x00801dc1

My floating point number in hex is: **0x00c01f40**

Little Endian: 0000 0000 1100 0000 0001 1111 0100 0000

Big Endian: 0100 0000 0001 1111 1100 0000 0000 0000

Sign is (0) positive

Exponent:

1000 0000

$$128 - 127 = 1$$

Exponent is 1

Mantissa:

0011 1111 1000 0000 0000 000

$$\frac{1}{8} + \frac{1}{16} + \frac{1}{32} + \frac{1}{64} + \frac{1}{128} + \frac{1}{256} + \frac{1}{512} = \frac{127}{512}$$

Add 1:

$$\frac{127}{512} + \frac{512}{512} = \frac{639}{512}$$

Multiply by 2^1 :

$$\frac{639}{512} * 2 = \frac{639}{256}$$

Fraction to floating point number

$$\frac{639}{256} = 2 \frac{127}{256}$$

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| 2.49609375 |
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