# PART 2

**1)**First, we need to convert decimal 0.0098 to binary represantation.Our integer part is 0 so we need to convert the fractional part.I did this part like this:

0.0098 \* 2 = 0.0196 #Generate 0 and continue 0

0.0196 \* 2 = 0.0392 #Generate 0 and continue 0

0.0392 \* 2 = 0.0784 #Generate 0 and continue 0

0.0784 \* 2 = 0.1568 #Generate 0 and continue 0

0.1568 \* 2 = 0.3136 #Generate 0 and continue 0

0.3136 \* 2 = 0.6272 #Generate 0 and continue 0

0.6272 \* 2 = 1.2544 #Generate 1 and continue with the rest 1

0.2544 \* 2 = 0.5088 #Generate 0 and continue 0

0.5088 \* 2 = 1.0176 #Generate 1 and continue with the rest 1

0.0176 \* 2 = 0.0352 #Generate 0 and continue 0

…

We must continue like this till the nothing remains.But it will continue endlessly.So we can’t present the real value.But we can present the closest value.If we continue like this we will get 0.0000001010000010010000001011012 result.

0000001010000010010000001011012 =1.010000010010000001011012 \* 2^-7

First bit is sign bit, other 8 bit are exponent bit and remaining 23 bit are mantissa bit.Our sign bit is 0 because our value is positive. We can present maximum 127 value with 8 bit and we must add -7 because of 2^-7. Our exponent part is 127 – 7 = 120 = 011110002.We must truncate the 1 value and our mantissa part is 01000001001000000101101112.

The final result is: **00111100001000001001000000101101**

0 01111000 01000001001000000101101

Sign Exponent Mantissa

**2)** We need to convert 110000010111000000000000000000002 to decimal.First we must divide this value to sign, exponent and mantissa.Our first bit is sign bit, other 8 bit are exponent and remaining 23 bit are mantissa.

1 10000010 11100000000000000000000

Sign Exponent Mantissa

The value wil be negative because our sign bit is 1.If we convert to exponent to decimal:

0 \* 2^0 + 1 \* 2^1 + 0 \* 2^2 + 0 \* 2^3 + 0 \* 2^4 + 0 \* 2^5 + 0 \* 2^6 + 1 \* 2^7 = 130

130-127=3

Our exponent part is 2^3. Our mantissa part is 1.11100000000000000000000. If we denormalize this:

1.111000000000000000000002 \* 2^3 = 1111.000000000000000000002 = 11112

Now convert this value to decimal:

1 \* 2^0 + 1 \* 2^1 + 1 \* 2^2 + 1 \* 2^3 = 15

And our sign bit is 1.So our result must be negative.

The final result is : **-15**

# PART 3

**STEP 1)** First, pick 2 value from unsorted sequence.

**STEP 2)** Compare them and assign the lower one to temporal variable.

**STEP 3)** Pick another value from unsorted sequence.

**STEP 4)** Compare it with the temporal variable and assign the result to temporal variable.

**STEP 5)** Continue like that till the all values used and finally our temporal variable will be the lowest value from this unsorted sequence.

**STEP 6)** Write the temporal variable and remove this value from unsorted sequence.

**STEP 7)** Turn back to step 1 till the all values sorted.