Binary Key (Positive Side)

Position	*10*	*9*	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*	*0*
Binary Bit	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Value	***1024***	***512***	***256***	***128***	***64***	***32***	***16***	***8***	***4***	***2***	***1***

Binary Key (Negative side)

Position	*-10*	*-9*	*-8*	*-7*	*-6*	*-5*	*-4*	*-3*	*-2*	*-1*
Binary Bit	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Value	$\frac{1}{1024}$	$\frac{1}{512}$	$\frac{1}{256}$	$\frac{1}{128}$	$\frac{1}{64}$	$\frac{1}{32}$	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$

1. Convert the following to binary
   a. 354
   b. 7.375

Solution:

354 =>

354 is close to 256 on the table below therefore, we turn the bit at the 8th position **ON**(1)

8	*7*	*6*	*5*	*4*	*3*	*2*	*1*	*0*
1	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
256	***128***	***64***	***32***	***16***	***8***	***4***	***2***	***1***

We now do subtraction: 354-256=98

98 is close to 64 on the table below therefore, we turn the bit at the 6th position **ON**(1)

8	*7*	*6*	*5*	*4*	*3*	*2*	*1*	*0*
1	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
256	***128***	***64***	***32***	***16***	***8***	***4***	***2***	***1***

We now do subtraction: 98-64=34

34 is close to 32 on the table below therefore, we turn the bit at the 5th position **ON**(1)

8	*7*	*6*	*5*	*4*	*3*	*2*	*1*	*0*
1	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**
256	***128***	***64***	***32***	***16***	***8***	***4***	***2***	***1***

We now do subtraction: 34-32=2

2 is close to 2 on the table below therefore, we turn the bit at the 1th position **ON**(1)

8	*7*	*6*	*5*	*4*	*3*	*2*	*1*	*0*

1	0	1	0	0	0	0	1	0
256	***128***	***64***	***32***	***16***	***8***	***4***	***2***	***1***

The finally 354= 101000010

7.375=>

Divide number into two parts:

7 and 0.375

Following the previous procedure,

7-4=3

3-2=1

1

Represented as

1	1	1
4	***2***	***1***

7=111

For the 0.375 part, we continue multiplying by 2 until we get an integer

Solution:

Multiplier	Number	Integer Part(Result)	Description
2	0.375		Multiply by 2 and take the Integer part as the result
2	0.75	0	2 x 0.375 = 0.75 (take the integer, which is 0 as the result)
2	(1.5), 0.5	1	2 x 0.75 = 1.5 (take the integer, which is 1 as the result) If the integer part is greater than 0, then replace it with 0. So we replace (1) in 1.5 with(0) to become 0.5.
2	(1)0	1	2 x 0.5 = 1 (take the integer, which is 1 as the result).Replace 1 with 0 and we get 0 so we have completed our solution.
Write the results from **top to down, so we have 011**			

We now combine the results as 7.375 = 111.011

If you need any further clarification, you can contact me. 0246102372