BINARY SUBTRACTION USING 1′S AND 2′S COMPLEMENT

Now that we have learned to convert binary number to its 1â€™s & 2â€™s complement, we will move to binary subtraction using them.

Remember always the number to be subtracted or negative number is converted to 1â€™s or 2â€™s complement.

Subtraction using 1â€™s complement

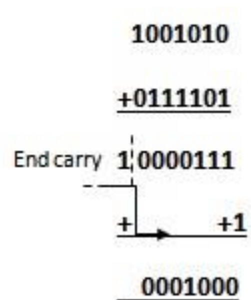
A-B

(a)Â A = **1001010**

B = 1000010

1â€™s complement of B = 0111101

Adding 1â€™s complement of B to A



ANS = 1000

(b)Â A = **1000010**

B = 1001010

1â€™s complement of B = 0110101

Adding 1â€™s complement of B to A

```
          1000010
         +0110101
No carry  1110111
```

ANS = -(1â€™s complement of 1110111) = -1000

We encountered two possible cases while subtracting using 1â€™s complement in above illustrations.

1. If there is any **end carry**, **add it** and sum obtained is the answer.
2. If there is **no carry**, answer is **â€“(1â€™s complement of the sum obtained)**.

Subtraction using 2â€™s complement

Let us take the same values used in above illustrations.

A-B

(a)Â A = **1001010**

B = 1000010

2â€™s complement of B = 0111110

Adding 2â€™s complement of B to A

```
          1001010
         +0111110
End carry 1 0001000
```

ANS = 1000

(b)Â A = **1000010**

B = 1001010

2â€™s complement of B = 0110110

Adding 2â€™s complement of B to A

```
          1000010
         +0110110
No carry  1111000
```

ANS = -(2â€™s complement of 1111000) = -1000

We encountered two possible cases while subtracting using 2â€™s complement in above illustrations.

1. If there is any **end carry**, just **ignore** it and sum obtained is the answer.
2. If there is **no carry**, answer is **â€“(2â€™s complement of the sum obtained)**.

Source: http://www.knowelectronics.org/binary-subtraction-using-1s-and-2s-complement/