**Using complements in subtraction**

**Using 2´s complement in subtraction :**

 Instead of subtraction a number , we can add it’s$ $2's comp, and disregard the last carry.

***EX***: decimal

 7 111 111

 -5 -101 1´s 010 2´s 011

 2 1+ 1 010 + ve. No.

 X carry 011

***EX***: 13 1101 1101

 -10 1010 1´s 0101 2´s 0110

 3 1+ 1 0011 +ve. No.

 0110 X carry

***EX***: 4 100 100

 -7 -111 1´s 000 2´s 001+

 -3 1+ 101

 001 No carry -ve. No.

 So 101 100 011

**Using 1´s complement in subtraction :**

 Instead of subtracting a number we add the 1´s complement of the number , the last carry is then added to the number to get the final answer .

***EX***: 7 111 111

010 +

 -5 - 101 1´s

 2 carry 1 001

 + ve. No. 1 +

010

**EX:** 3 011 011

 -5 101 1’ s 010 +

 101

 No carry - ve. No.

 101 010

**Binary division :**

The standard division format is:

 Dividend =quotient

 Divisor

The divisor can be subtracted from the dividend a number of times equal to the quotient. For example in decimal:

21 21-7=14 1st

7

 14-7=7 2nd

 7-7=0 3rd so quotient= 3

In binary:

***EX:*** 1100

 100

100 0100 1's comp. 1011 2's comp. 1100

 1100

 1100 +

X 1 1000 q=1

 1100+

X 1 0100 q=2

 1100 +

X 1 0000 q=3 the result

***EX:*** Divide 1010 by 101:

101 0101 1's comp. 1010 2's comp. 1011

 1010

 1011 +

X 1 0101 q=1

 1011 +

X 1 0000 q=2 the result