**Using complements in subtraction**

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

Instead of subtraction a number , we can add it’s2'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