Experiment - 13

Aim: To write program for error detecting
code using CRC - CCITT (16-bits).

```c
#include<stdio.h>
#include <string.h>

#define N strlen(gen-poly)

char data[28];
char check value[28];
char gen-poly[10];
int data-length, i, j;

void XOR()
{
    for (j=1; j<N; j++)
        check_value[j] = ((check-value[j] == gen-poly[j])?
        '0':'1');
}

void receiver()
{
    printf("Enter the received data:");
    scanf("%s", &data);
    printf("Data received: %s", data);
    crc();
    for (i=0; (i<N-1) ff check_value[i]!='1'; i++)
        if(i<N-1)
            printf("\n Error detected \n\n");
        else
            printf("\n No error detected \n\n");
```

```
}

void crc()
{
    for(i=0; i<N; i++)
        check-value [i] = data[i];
    do
    {
        if (check-value [0] == '1')
            xor ();
        for (j=0; j<N-1; j++)
            check-value [j] = check-value [j+1];
        check-value [j] = data [i++];
    } while (i <= data-length + N-1);
}

int main()
{
    printf (" \n Enter data to be transmitted");
    scanf (" %s", &data);
    printf (" \n Enter the divisor polynomial: ");
    scanf (" %s", gen-poly);
    data-length = strlen (data);
    for (i = data-length; i < data-length+N-1; i++)
        data [i] = '0';
    printf ("\n Data padded with n-1 zeros: %s",
            data);
    crc();
    printf (" \n CRC value is : %s" check value);
    for (i = data-length; i < data-length+N-1;
         i++)
        data [i] = check-value [i-data-length];
```

```
printf ("\n final codeword to be sent:/.s "data);
printf ("\n _ _ _ _ \n");
receiver ();
return 0;
}
```

Output :
Enter the data to be transmitted : 101100
Enter the divisor polynomial : 1001
Data padded with n-1 zeroes : 101100000
CRC value is : 001
final code word to be sent : 101100001
Enter the received data : 101100001
No error detected.
Enter the dataword to be transmitted : 1010110
Enter the divisor polynomial : 1011
Data padded with n-1 zeroes : 1010110000
CRC value is : 001
final codeword to be sent : 1010110 001
Enter the received data : 10001000
Error detected.