29/12/2022 Write a program to Error detection using CRC CITT (16)

```
#include <stdio.h>
#include <string.h>
#define N strlen(gen)

char data[28];
char check[28];
char gen[28];
int data_length, i, j;

void XOR()
{
  for (j=1; j<N; j++)
  {
     if(check[j] == gen[j])
     { check[j] = '0';
     }
     else
     {
       check[j] = '1';
     }
  }
}

void reciever()
{
 printf("Enter the recieved data :");
 scanf("%s", data);
 printf("Data recieved : %s", data);
 crc();
for(i=0; (i<N-1) && (check[i]!='1'); i++);
  if (i<N-1)
```

```
        printf("\n Error detected");
    else
        printf("\n No error detected");
}
void crc()
{
    for(i=0; i<N; i++)
        check[i] = data[i];
    do
    {
        if(check[0] == '1')
            XOR();
        for(j=0; j<N-1; j++)
            check[j] = check[j+1];
        check[j] = data[i++];
    } while(i<= data_length + N-1);
}
int main()
{
    printf("\nEnter data word :");
    scanf("%s", data);
    printf("\nEnter the generating polynomial:");
    scanf("%s", gen);
    data_length = strlen(data);
    for(i=data_length; i< data_length+N-1; i++)
        data[i] = '0';
```

```
printf("\n Data padded with zeros : %s",
                                    data);
crc();
printf("\n CRC or check value is %s", check);
for(i=data_length; i<data_length+N-1; i++)
  data[i]=check[i-data_length];
printf("Final data to be sent %s", data);
 reciever();
 return 0;
}
```

O/P-1

Enter data word : 10110101 01

Enter generating polynomial : 1010
Data padded with zeros : 10110101 01000

CRC is : 000
Final data to be sent : 10 11010101 000
Enter the recieved data : 10110101 01000
Data recieved : 10110101 01
No Error detected

O/P-2

Enter data word : 10110101 01
Enter generating polynomial : 1010
Data padded with zeros : 10110101 01000

CRC is: 000
Final data to be sent: 10110101010 1000
Enter the received data: 10110101010 1001
Data received: 10110101010 1001
Error detected

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