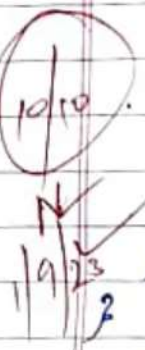
CYCLE-2.

Write a prog. to detect error usig CRC-CCITT(16 bit

```
#include<stdio.h>
#include<conio.h>

char m[50],g[50],r[50],q[50],temp[50];

void crc(int n){
  int i,j;
  for(i=0;i<n;i++)
     temp[i]=m[i];
  for(i=0;i<n-16;i++){
     if(r[0]=='1'){
        g[i]='1';
        cdram();
     }
     else{
        q[i]='0';
        shift();
     }
     r[16]=m[17+i];
     r[17]='\0';
     for(j=0;j<=17;j++)
        temp[j]=r[j];
  }
  q[n-16]='\0';
}

void cdram(){
  int i,j;
  for(i=1;i<=16;i++)
     r[i-1]=((int)temp[i]-48)^((int)g[i]-48)+48;
}
```

```
void shift(){
    int i;
    for(i=1; i<=16; i++)
        r[i-1] = r[i];
}

void crctrans(int n){
    int i, k=0;
    for(i=n-16, i<n; i++){
        m[i] = ((int)m[i]-48)^((int)r[k+1]-48)+48;
    }
    m[i] = '\0';
}

void main()
    int n, i=0;
    char ch; int flag=0;

    printf("Enter the frame bits: ");
    while((ch==getc(stdin))!='\n'){
        m[i++] = ch;
        n = i;
    for(i=0; i<16; i++)
        m[n++] = '0';
        m[n] = '\0';

    printf("Msg after appending 16 zeroes: %s", m);

    for(i=0; i<16; i++)
        g[i] = '0';
        g[0] = g[4] = g[11] = g[16] = '1'; g[17] = '\0';

    printf("In generator: %s\n", g);
```

```
crc(n);
printf("\n quotient: %s", q);
caltrans(n);

printf("\n transmitted frame: %s", m);
printf("\n Enter transmitted frame: ");
scanf("\n %s", &m);

printf("CRC checking");
crc(n);
printf("\n Last Remainder: %s", s);

for(i=0; i<16; i++){
    if(n[i] != '0')
        flag = 1;
    else
        continue;
    if(flag == 1)
        printf("Error during transmission!");
    else
        print("Received frame is correct!");
}
```



OUTPUT:

Enter frame bits: 1011

Msg after appending 16 zeroes: 1011 0000000000000000

Generator: 1000 1000 0001 00001

Quotient: 1011

Transmitted frame: 1011 1011 0001 0110 1011

Enter transmitted frame: 1011 1011 0001 0110 1011

Last remainder: 0000 0000 0000 0000

Received frame is correct.

```
Enter the frame bits:1011
Message after appending 16 zeros:1011000000000000000
generator:10001000000100001


quotient:1011
transmitted frame:10111011000101101011
Enter transmitted freme:10111011000101101011
CRC checking


last remainder:0000000000000000

Received freme is correct
```