CN-lab Cycle-2

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Q. Write a program for error detecting code using CRC-CCITT (16-bits).

```
#include<stdio.h>
char m[50], g[50], r[50], q[50], temp[50];
void caltrans(int);
void crc(int);
void calram();
void shift1();
int main()
{
int n, i=0;
char ch, 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("Message after appending 16 zeros: %s", m);
for(i=0; i<=16; i++)
g[i]='0';
g[0]=g[4]=g[11]=g[16]='1'; g[17]='\0';
printf("\n generator: %s\n", g);
crc(n);
printf("\n\n quotient : %s\n", q);
caltrans(n);
printf("\n transmitted frame : %s", m);
printf("Enter transmitted frame:");
scanf("\n%s", m);
crc(n);
```

```
printf ("\n\n last remainder : %s", r);
for (i=0; i<16; i++)
if (r[i] != '0')
flag = 1;
else
continue;
if (flag == 1)
printf ("Error during transmission");
else
printf ("\n\n Received frame is correct");
void crc (int n)
{ int i, j;
for (i = 0; i<n; i++)
temp[i] = m[i];
for (i=0; i<16; i++)
 r[i] = m[i];
printf ("\n intermediate remainder \n");
for (i=0; i<n-16; i++)
 { if (r[0] == '1')
 { q[i] = '1'
 [redacted]
 calxor();
 } else
 { q[i] = '0';
 shift1();
 }
 r[16] = m[17+i];
 r[17] = '\0';
```

```
printf("\n remainder %d: %s", i+1, r);
for(j=0; j<=17; j++)
temp[j] = r[j];
}
q[n-16] = '\0';
}
void calram()
{
int i, j;
for(i=1; i<=16; i++)
r[i-1] = ((int)temp[i] - 48) ^ ((int)q[i] - 48) + 48;
}
void shift1()
{
int i;
for(i=1; i<=16; i++)
r[i-1] = r[i];
}
void caltrans(int n)
{
int i, k=0;
for(i= n-16; i<n; i++)
m[i] = ((int)m[i] - 48) ^ ((int)r[k++] - 48) + 48;
m[i] = '\0';
}
```