

lab-7

Q Write a Program for error detecting code using CRC-CCITT

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

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

```
#define N strlen(g)
```

```
char t[28], cs[28], g[10];
```

```
int a, e, c;
```

```
void xorfunction() {
```

```
    for (c = 1; c < N; c++)
```

```
        cs[c] = ((cs[c] == g[c]) ? '0' : '1');
```

```
}
```

```
void crc() {
```

```
    for (e = 0; e < N; e++)
```

```
        cs[e] = t[e];
```

```
    do {
```

```
        if (cs[0] == '1')
```

```
            xorfunction();
```

```
        for (c = 0; c < N - 1; c++)
```

```
            cs[c] = cs[c + 1];
```

```
        cs[c] = t[e++];
```

```
    } while (e <= a + N - 1);
```

```
int main ()
```

```
    printf ("Enter data: ");
```

```
    scanf ("%s", t);
```

```
    printf ("Enter generating polynomial: ");
```

```
    scanf ("%s", g);
```

```
    printf ("-----");
```

```
    printf ("Generating polynomial: %s", g);
```



```
a = strlen(t);
```

```
for (e=a; e<a+N-1; e++)
```

```
    t[e] = '0';
```

```
printf("-----");
```

```
printf("Padded data is: %s", t);
```

```
printf("-----");
```

```
crc();
```

```
printf("CRC is: %s", cs);
```

```
for (e=a; e<a+N-1; e++)
```

```
    t[e] = cs[e-a];
```

```
printf("-----");
```

```
printf("Final data to be sent: %s", t);
```

```
printf("-----");
```

```
printf("Test error detection 0(yes) 1(no)? : ");
```

```
scanf("%d", &e);
```

```
if (e==0)
```

```
{
```

```
    do{
```

```
        printf("Enter the position where error is to  
        be inserted");
```

```
        scanf("%d", &e);
```

```
    }
```

```
    while (e==0 || e>a+N-1);
```

```
    t[e-1] = (t[e-1] == '0') ? '1' : '0';
```

```
    printf("Erroneous data: %s\n", t);
```

```
}
```

```
crc();
```

```
for (e=0; e<N-1; e++) (cs[e] != '1') ? e++;
```

```
if (e<N-1)
```

```
    printf("Error detected");
```

```

else
    printf("No error detected");
return 0;
}

```

Output:

Enter data : 10110101

Enter generating polynomial : 1010

Generating polynomial: 1010

padded data is: 10110101000

Crc is (Remainder): 000

Final data to be sent: 10110101000

Test error detection 0(yes) 1(no)? 0

Enter the position where error is to be inserted: 2

Erroneous data: 111010101000

Error detected

WV
29-12-22