

COMPUTER NETWORKS AND SECURITY LABORATORY

Assignment No. 4 A

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Ques :- Write a program for error detection and correction for 7/8 bits ASCII codes using Cyclic Redundancy Code (CRC).

Solution :-

Program :

//Lab Assignment : Write a program for error detection and correction for ASCII codes using CRC.

```
#include <stdio.h>
#include <string.h>
int main() {
    int i,j,keylen,msglen,flag=0;
    char input[100], key[30],temp[30],quot[100],rem[30],key1[30];

    printf("Enter Data: ");
    scanf("%s",input);
    printf("Enter Key: ");
    scanf("%s",key);
    keylen=strlen(key);
    msglen=strlen(input);
    strcpy(key1,key);
    for (i=0;i<keylen-1;i++) {
        input[msglen+i]='0';
    }
    for (i=0;i<keylen;i++)
        temp[i]=input[i];
    for (i=0;i<msglen;i++) {
        quot[i]=temp[0];
        if(quot[i]=='0')
            for (j=0;j<keylen;j++)
                key[j]='0'; else
            for (j=0;j<keylen;j++)
                key[j]=key1[j];
        for (j=keylen-1;j>0;j--) {
            if(temp[j]==key[j])
```

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        rem[j-1]='0'; else
        rem[j-1]='1';
    }
    rem[keylen-1]=input[i+keylen];
    strcpy(temp,rem);
}
strcpy(rem,temp);
printf("\nQuotient is ");
for (i=0;i<msglen;i++)
    printf("%c",quot[i]);
printf("\nRemainder is ");
for (i=0;i<keylen-1;i++)
    printf("%c",rem[i]);

printf("\nFinal data is: ");
for (i=0;i<msglen;i++)
    printf("%c",input[i]);

for (i=0;i<keylen-1;i++)
    printf("%c",rem[i]);

printf("\n");
char temp1[20];
printf("Enter recieved data: ");
scanf("%s",temp1);

for (i=0;i<keylen;i++)
    temp[i]=temp1[i];
for (i=0;i<msglen;i++) {
    quot[i]=temp[0];
    if(quot[i]=='0')
        for (j=0;j<keylen;j++)
            key[j]='0'; else
            for (j=0;j<keylen;j++)
                key[j]=key1[j];
    for (j=keylen-1;j>0;j--) {

```

```

        if(temp[j]==key[j])
            rem[j-1]='0'; else
            rem[j-1]='1';
    }

    rem[keylen-1]=temp1[i+keylen];
    strcpy(temp,rem);
}
strcpy(rem,temp);
printf("\nQuotient is ");
for (i=0;i<msglen;i++)
    printf("%c",quot[i]);
printf("\nRemainder is ");
for (i=0;i<keylen-1;i++)
    printf("%c",rem[i]);

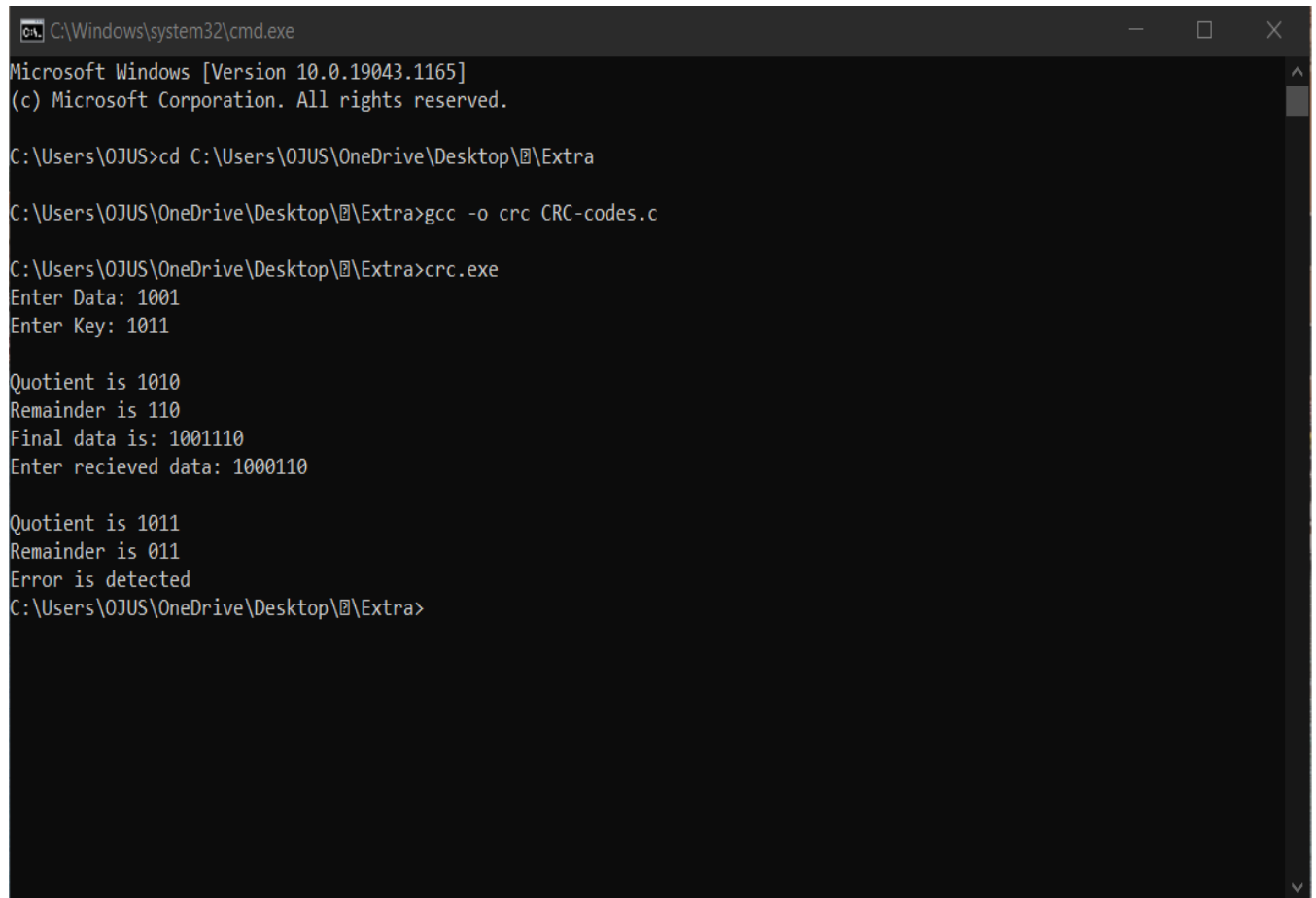
flag=0;
for (i=0;i<keylen-1;i++)
{
    if(rem[i]=='1')
    {
        flag=1;
        break;
    }
    else
        flag=0;
}
if(flag==0)
    printf("\nNo Error");
else
    printf("\nError is detected");

return 0;

}

```

Output :



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.19043.1165]
(c) Microsoft Corporation. All rights reserved.

C:\Users\OJUS>cd C:\Users\OJUS\OneDrive\Desktop\Extra

C:\Users\OJUS\OneDrive\Desktop\Extra>gcc -o crc CRC-codes.c

C:\Users\OJUS\OneDrive\Desktop\Extra>crc.exe
Enter Data: 1001
Enter Key: 1011

Quotient is 1010
Remainder is 110
Final data is: 1001110
Enter recieved data: 1000110

Quotient is 1011
Remainder is 011
Error is detected
C:\Users\OJUS\OneDrive\Desktop\Extra>
```