15BCE0838

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CRC LAB EXPERIMENT

LAB-3

Implement Error Detection Mechanism(Cyclic Redundancy Check)

Description :

A cyclic redundancy check (CRC) is an error-detecting code commonly used in digital networks and storage devices to detect accidental changes to raw data. Blocks of data entering these systems get a short check value attached, based on the remainder of a polynomial division of their contents.

Algorithm :

1. START

2.Enter number of Bits in data.

3.Enter data to be send.

4.Enter number of Bits in Divisor(n).

5.Enter Divisor Bits.

6.Add (n-1) zeroes at end of data to be send.

7.Apply division on senders data using xor .

8.Remainder left at end of size (n-1) will be the Senders side CRC.

9.Add remainder at end of data that will be Code word Received.

10.Again divide received code with divisor.

11.Than if remainder is 000 that means receiver code does not contain any error.

12.Hence it is Accepted

13.Else received code is rejected .

14.End

Code:

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

int main()
{
        int i,k,j,a,n,q=0,counter=0;;
        char arr[50],num[50],cnum[50];

        printf("              Registration Number : 15BCE0838\n ");
        printf("                  Name : Satyam Chouksey\n ");
        printf("                     CRC EXPERIMENT   ");
        printf("\n");
        printf("_____
_____ ");
        printf("\n");
        printf("\n");
        printf("\n");

        printf("Enter the number of bits in data : ");
        scanf("%d",&n);
        printf("Enter the data to be send : ");
        scanf("%s",&num);
        printf("Enter the number of bits in Divisor : ");
        scanf("%d",&a);
        printf("Enter the Divisor Bits : ");
        scanf("%s",&arr);
        strcpy(cnum,num);
```

```
char quot[n];
for(i=n;i<n+a-1;i++)
{
        cnum[i]='0';

}
printf("\n");
printf("Transmitter side data is : \n");
for(i=0;i<n+a-1;i++)
{
        printf("%c",cnum[i]);
}
printf("\n");
for(i=0;i<n;i++)
{
        if(cnum[i]=='1')
        {
                quot[q]='1';
                q++;
                int t=0;
                for(k=i;k<i+a;k++)
                {
                        if(cnum[k]==arr[t])
                        {
                                cnum[k]='0';
                        }
                        else
                        {
                                cnum[k]='1';
```

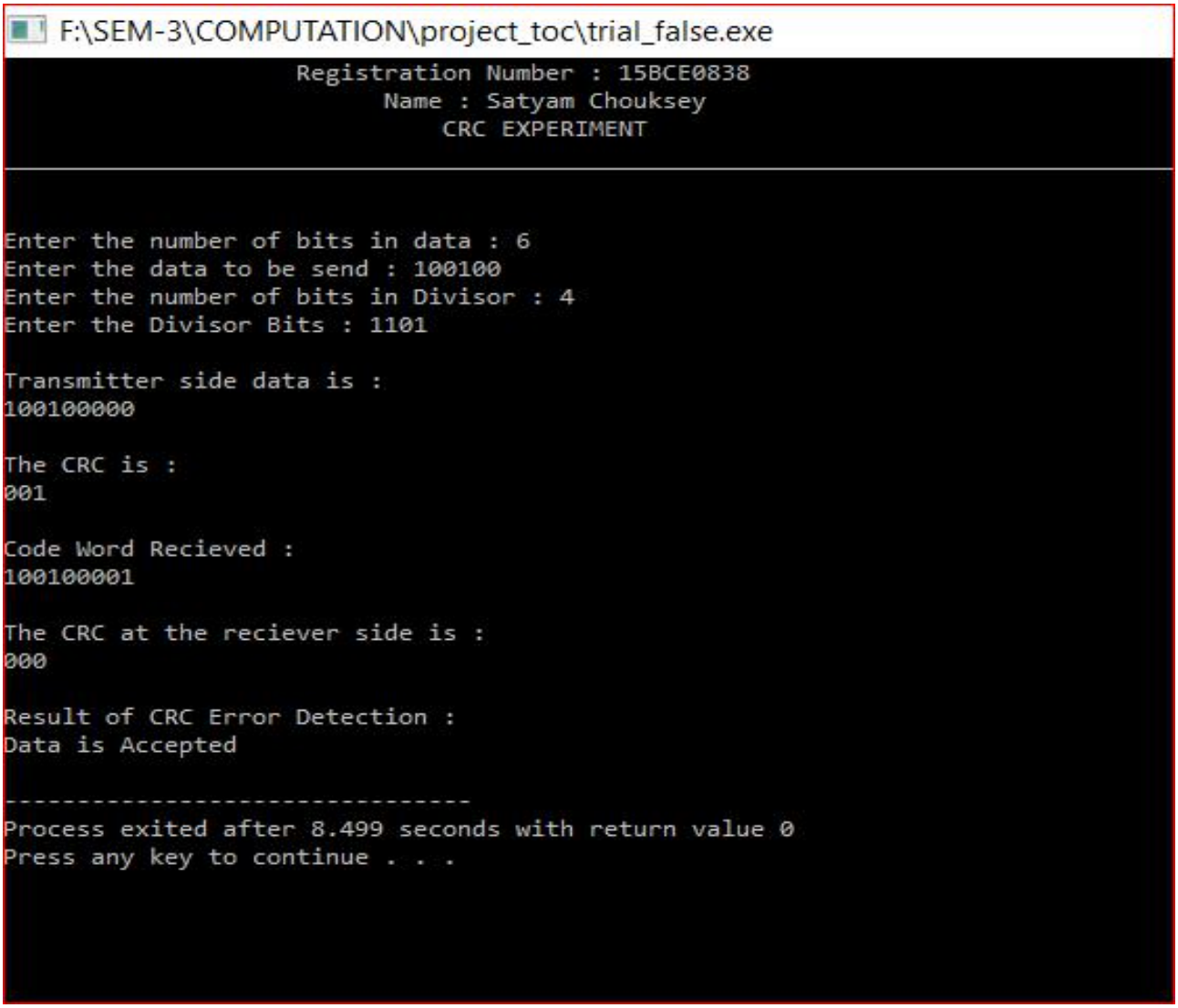
```
                        }
                        t++;
                }
        }
        else
        {
                quot[q]='0';
                q++;
                cnum[i]='0';
        }
}
printf("\n");
printf("The CRC is : \n");
for(i=n;i<a+n-1;i++)
{
        printf("%c",cnum[i]);
}
printf("\n");

for(i=0;i<n;i++)
{
        cnum[i]=num[i];

}
printf("\n");
printf("Code Word Recieved : ");
printf("\n");
for(i=0;i<n+a-1;i++)
{
```

```
        printf("%c",cnum[i]);

}
printf("\n");

/* Reciever side*/

for(i=0;i<n;i++)
{
        if(cnum[i]=='1')
        {
                quot[q]='1';
                q++;
                int t=0;
                for(k=i;k<i+a;k++)
                {
                        if(cnum[k]==arr[t])
                        {
                                cnum[k]='0';
                        }
                        else
                        {
                                cnum[k]='1';
                        }
                        t++;
                }
        }
        else
        {
```

```
                quot[q]='0';
                q++;
                cnum[i]='0';
        }
}
printf("\n");
printf("The CRC at the reciever side is : \n");
for(i=n;i<a+n-1;i++)
{
        printf("%c",cnum[i]);
}
printf("\n");
printf("\n");
for(i=0;i<a;i++)
{

        if(cnum[i]=='0')
        {
                counter++;
        }

}
printf("Result of CRC Error Detection : ");
printf("\n");
if(counter==a)
        {
                printf("Data is Accepted \n");
        }
else
```

```
        {
                printf("Data is not Accepted Successfully");
        }


        return 0;

}
```

Output :


F:\SEM-3\COMPUTATION\project_toc\trial_false.exe
Registration Number : 15BCE0838
Name : Satyam Chouksey
CRC EXPERIMENT
Enter the number of bits in data : 6
Enter the data to be send : 100100
Enter the number of bits in Divisor : 4
Enter the Divisor Bits : 1101
Transmitter side data is :
100100000
The CRC is :
001
Code Word Recieved :
100100001
The CRC at the reciever side is :
000
Result of CRC Error Detection :
Data is Accepted
Process exited after 8.499 seconds with return value 0
Press any key to continue . . .