Lab Experiment 3

1. Write a program to implement Error Detection Technique using CRC Algorithm.

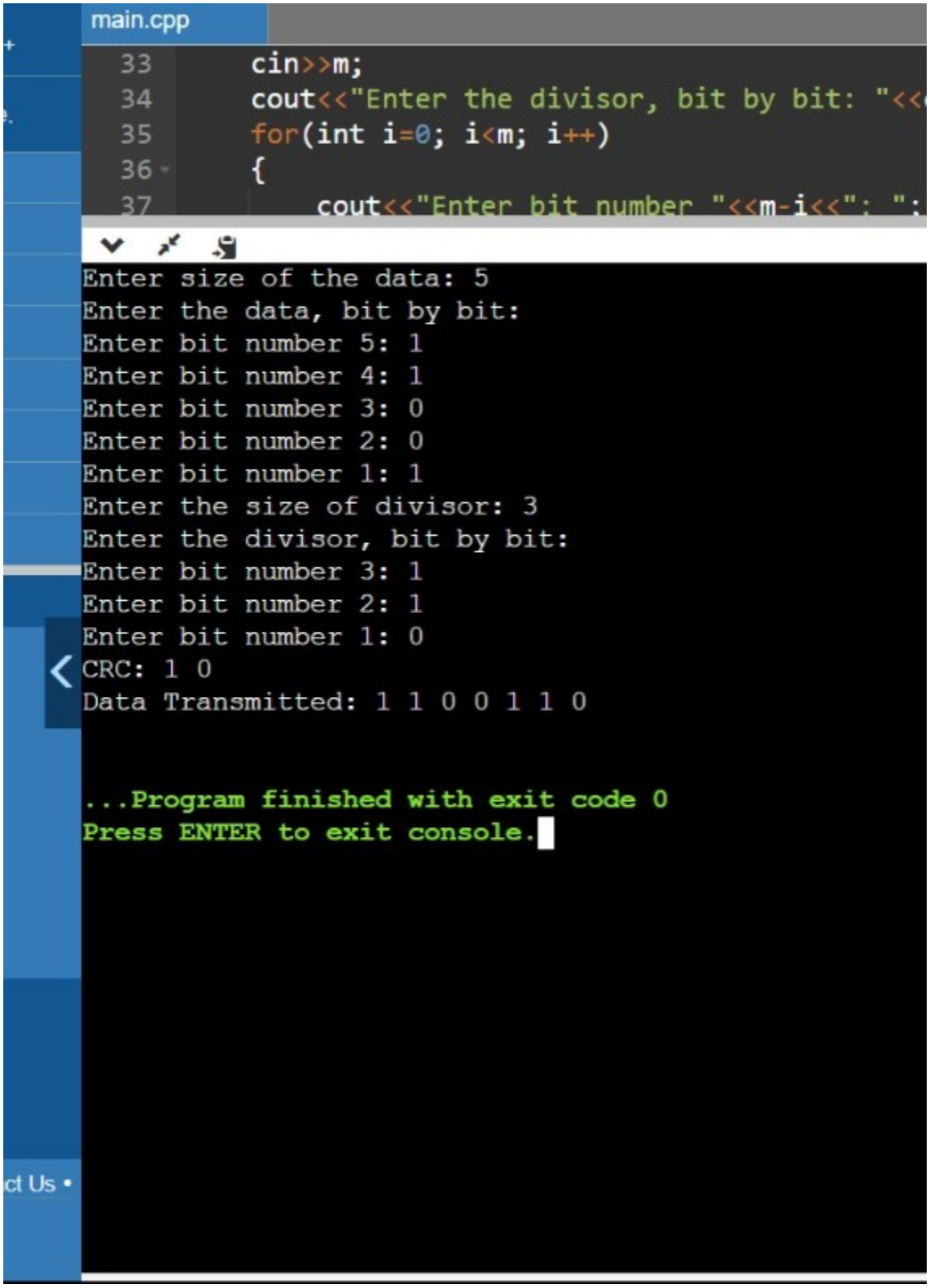
Code:

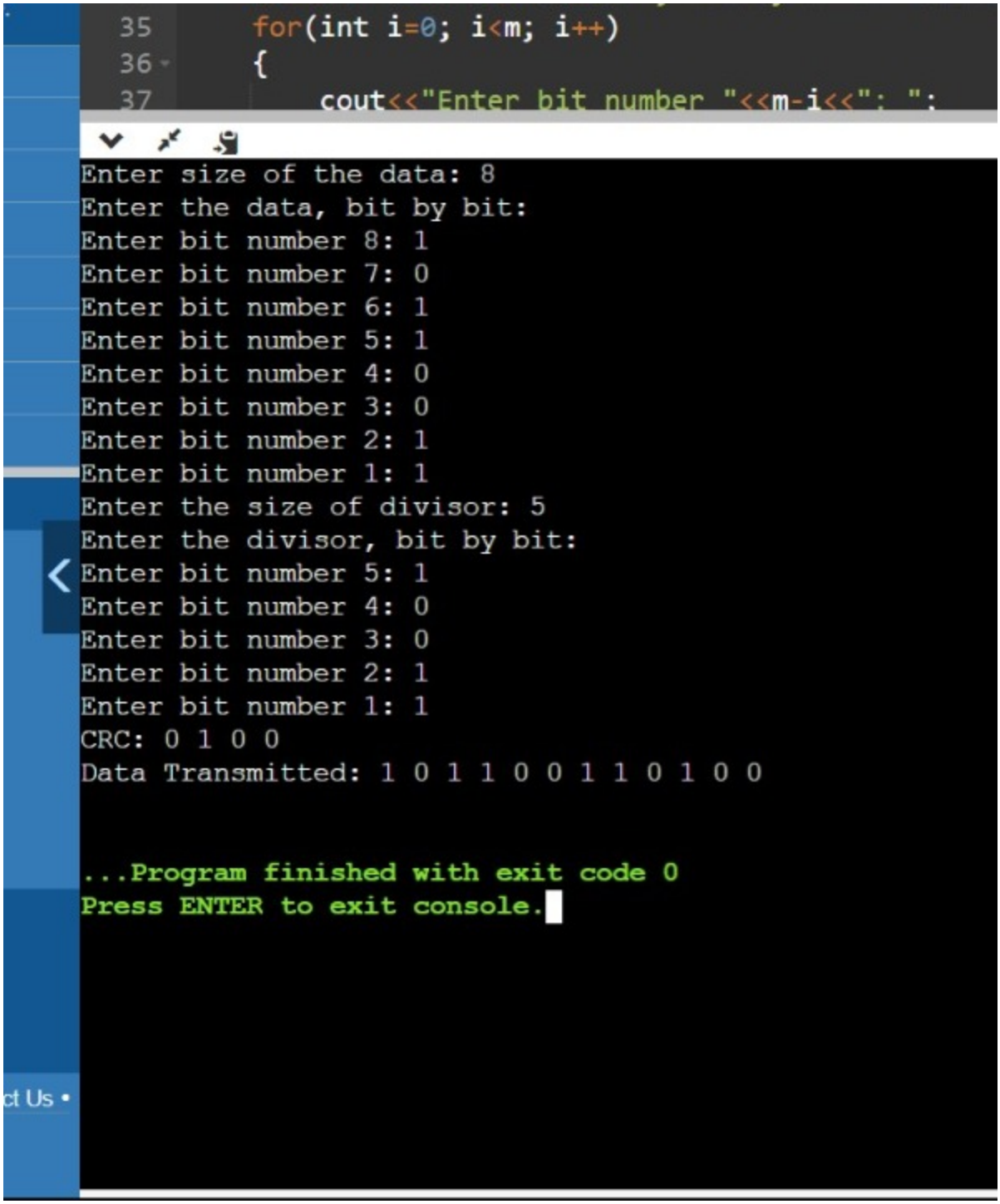
```
#include<iostream>
using namespace std;
int n, m, data[20], divisor[10], temp[20], b;
char a;
int* divide() {
   for(int i=0; i<n; i++)
   {
      if(divisor[0]==temp[i])
      {
         for(int j=0, k=i; j<m+1; j++, k++)
         {
            if(temp[k]^divisor[j]==1)
               temp[k]=1;
            else
               temp[k]=0;
         }
      }
   }
   return temp;
}
```

```
void input()
{
    cout<<"Enter size of the data: ";
    cin>>n;
    cout<<"Enter the data, bit by bit: "<<endl;
    for(int i=0; i<n; i++)
    {
        cout<<"Enter bit number "<<n-i<<": ";
        cin>>data[i];
        temp[i]=data[i];
    }
    cout<<"Enter the size of divisor: ";
    cin>>m;
    cout<<"Enter the divisor, bit by bit: "<<endl;
    for(int i=0; i<m; i++)
    {
        cout<<"Enter bit number "<<m-i<<": ";
        cin>>divisor[i];
    }
    m--;
    for(int i=0; i<m; i++)
    {
        temp[n+i]=0;
```

```
    }
}
void sender()
{
    int* sender;
    sender = divide();
    cout<<"CRC: ";
    for(int i=0; i<m; i++)
    {
        data[n+i]=sender[n+i];
        cout<<sender[n+i]<<' ';
    }
    cout<<endl<<"Data Transmitted: ";
    for(int i=0; i<n+m; i++)
        cout<<data[i]<<' ';
    cout<<endl;
}
int main()
{
    input();
    sender();
}
```

Output:


main.cpp
33 cin>>m;
34 cout<<"Enter the divisor, bit by bit: "<<
35 for(int i=0; i<m; i++)
36 {
37 cout<<"Enter bit number "<<m-i<<": ";
Enter size of the data: 5
Enter the data, bit by bit:
Enter bit number 5: 1
Enter bit number 4: 1
Enter bit number 3: 0
Enter bit number 2: 0
Enter bit number 1: 1
Enter the size of divisor: 3
Enter the divisor, bit by bit:
Enter bit number 3: 1
Enter bit number 2: 1
Enter bit number 1: 0
CRC: 1 0
Data Transmitted: 1 1 0 0 1 1 0
...Program finished with exit code 0
Press ENTER to exit console.


35 for(int i=0; i<m; i++)
36 {
37 cout<<"Enter bit number "<<m-i<<": ";
Enter size of the data: 8
Enter the data, bit by bit:
Enter bit number 8: 1
Enter bit number 7: 0
Enter bit number 6: 1
Enter bit number 5: 1
Enter bit number 4: 0
Enter bit number 3: 0
Enter bit number 2: 1
Enter bit number 1: 1
Enter the size of divisor: 5
Enter the divisor, bit by bit:
Enter bit number 5: 1
Enter bit number 4: 0
Enter bit number 3: 0
Enter bit number 2: 1
Enter bit number 1: 1
CRC: 0 1 0 0
Data Transmitted: 1 0 1 1 0 0 1 1 0 1 0 0
...Program finished with exit code 0
Press ENTER to exit console.