

## Experiment No: 5

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### Program:

```
#include <bits/stdc++.h>

using namespace std;

string XorOperation(string data, string generator)
{
    cout << "Data to be Xored : " << data;

    int genlenth = generator.length();

    string subStr = data.substr(0, genlenth);

    int j = genlenth - 1;

    cout << endl << "Initial String : " << subStr;

    int len = data.length();

    int runned = 0;

    while (j < len)
    {
        runned++;

        if (j != genlenth - 1)
        {
            subStr += data[j];

            subStr = subStr.substr(1, genlenth);
        }

        if (subStr[0] == '0')
        {
            cout << endl << "String : " << subStr << " Skipped " << j << " ";

            j++;

            continue;
        }

        string s;
```

```

        for (int i = 0; i < genlenth; i++)
        {
            generator[i] == subStr[i] ? s += '0' : s += "1";
        }
        subStr = s;
        cout << endl << "String : " << subStr;
        j++;
    }
    subStr = subStr.substr(1, genlenth);
    cout << "\nRemainder : " << subStr << "\n\n";
    return subStr;
}

string crc()
{
    string data, generator;
    cout << "Enter data bits : ";
    cin >> data;
    cout << "Enter generator bits : ";
    cin >> generator;

    string poly(generator.length() - 1, '0');
    string encoded = data + poly;
    cout << "----- Sender ----- \n";
    string rem = XorOperation(encoded, generator);
    cout << "\n----- Receiver ----- \n";

    // string ans = XorOperation(data + SenderRem, generator);

    string sender = data + rem;

```

```
string receiver;

cout << "Enter first " << data.size() << " data bits : ";
cin >> receiver;

receiver = XorOperation(receiver + rem, generator);

string ans;

if (sender != receiver)
    ans = "No Errors Detected";
else
    ans = "Error detected";
return ans;
}

int main()
{
    cout << "Name : Aniket Tiwari" << endl;
    cout << crc();
    return 0;
}
```

## Output:

```
C:\Windows\system32\cmd.exe
```

```
D:\Programming\College Experiments\TY 5 Sem\CN LAB>EXP_5
```

```
Name : Aniket Tiwari
```

```
Enter data bits : 100100
```

```
Enter generator bits : 1011
```

```
----- Sender -----
```

```
Data to be Xored : 100100000
```

```
Initial String : 1001
```

```
String : 0010
```

```
String : 0100 Skipped 4
```

```
String : 0011
```

```
String : 0110 Skipped 6
```

```
String : 0111
```

```
String : 0101
```

```
Remainder : 101
```

```
----- Receiver -----
```

```
Enter first 6 data bits : 100100101
```

```
Data to be Xored : 100100101101
```

```
Initial String : 1001
```

```
String : 0010
```

```
String : 0100 Skipped 4
```

```
String : 0011
```

```
String : 0111 Skipped 6
```

```
String : 0101
```

```
String : 0000
```

```
String : 0001 Skipped 9
```

```
String : 0010 Skipped 10
```

```
String : 0101 Skipped 11
```

```
Remainder : 101
```

```
No Errors Detected
```