

main.cpp



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Output

Clear

```
1 #include<iostream>
2 using namespace std;
3 int main() {
4     int data[10];
5     int dataatrec[10],c,c1,c2,c3,i;
6     cout<<"Enter 4 bits of data one by one\n";
7     cin>>data[0];
8     cin>>data[1];
9     cin>>data[2];
10    cin>>data[4];
11    //Calculation of even parity
12    data[6]=data[0]^data[2]^data[4];
13    data[5]=data[0]^data[1]^data[4];
14    data[3]=data[0]^data[1]^data[2];
15    cout<<"\nEncoded data is\n";
16
17    for(i=0;i<7;i++)
18        cout<<data[i];
19    cout<<"\n\nEnter received data bits one by one\n";
20    for(i=0;i<7;i++)
21        cin>>dataatrec[i];
22    c1=dataatrec[6]^dataatrec[4]^dataatrec[2]^dataatrec[0];
23    c2=dataatrec[5]^dataatrec[4]^dataatrec[1]^dataatrec[0];
24    c3=dataatrec[3]^dataatrec[2]^dataatrec[1]^dataatrec[0];
25    c=c3*4+c2*2+c1 ;
26    if(c==0) {
27        cout<<"\nNo error while transmission of data\n";
28    }
```

```
Enter 4 bits of data one by one
1
0
1
0

Encoded data is
1010010

Enter received data bits one by one
1
0
1
0
0
1
0

No error while transmission of data

=== Code Execution Successful ===
```

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```
21    cin>>dataatrec[i];
22    c1=dataatrec[6]^dataatrec[4]^dataatrec[2]^dataatrec[0];
23    c2=dataatrec[5]^dataatrec[4]^dataatrec[1]^dataatrec[0];
24    c3=dataatrec[3]^dataatrec[2]^dataatrec[1]^dataatrec[0];
25    c=c3*4+c2*2+c1 ;
26    if(c==0) {
27        cout<<"\nNo error while transmission of data\n";
28    }
29    else {
30        cout<<"\nError on position "<<c;
31        cout<<"\nData sent : ";
32        for(i=0;i<7;i++)
33            cout<<data[i];
34        cout<<"\nData received : ";
35        for(i=0;i<7;i++)
36            cout<<dataatrec[i];
37        cout<<"\nCorrect message is\n";
38        //if erroneous bit is 0 we complement it else vice versa
39        if(dataatrec[7-c]==0)
40            dataatrec[7-c]=1;
41        else
42            dataatrec[7-c]=0;
43        for (i=0;i<7;i++) {
44            cout<<dataatrec[i];
45        }
46    }
47    return 0;
48 }
```

```
Enter 4 bits of data one by one
1
0
1
0

Encoded data is
1010010

Enter received data bits one by one
1
0
1
0
0
1
0

No error while transmission of data

=== Code Execution Successful ===
```

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