

PROGRAM 1c

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- 2K18/SE/041

Aim:- Write a C++ program to implement data link layer - Byte Stuffing.

Theory:- In byte stuffing, a special byte called the escape character (ESC) is stuffed before data section of the frame when there is a character with the same pattern as the flag byte. If the ESC sequence is found in the message byte, then another ESC byte is stuffed before it. Whenever the receiver encounters the ESC character, it deletes it from the data section and treats the next character as data, not a delimiting flag.

CODE:-

```
#include<stdio.h>

#include<iostream>

#include<bits/stdc++.h>

using namespace std;

int main(){

    char input[100];

    cout<<"Enter Data: ";

    for(int i=0;i<20;i++){

        cin>>input[i];

    }

    cout<<"\nFlag: 11111111\n";

    cout<<"\nEscape Seq: 00000000\n";

    cout<<"\nOutput after byte stuffing:";

    cout<<"11111111 ";
```

```
int count=0,ce=0;
for(int i=0;i<20;i++){
    if(input[i]=='1'){
        if(count==7){
            cout<<" ";
            for(int j=0;j<8;j++){

                cout<<"0";
            }
            cout<<" ";
            count=0;
        }
        else{
            count++;
        }
    }
    else{
        count=0;
    }
    if(input[i]=='0'){
        if(ce==7){
            cout<<" ";
            for(int j=0;j<8;j++){
                cout<<"0";
            }
        }
    }
}
```

```
        cout<<" ";
        ce=0;
    }
    else{
        ce++;
    }
}
else{
    ce=0;
}
cout<<input[i];
}

cout<<" 11111111";
return 0;
}
```

OUTPUT:-

```
C:\Users\Ashish\Desktop\program1c.exe
Enter Data: 0011010101111111111000110
Flag: 11111111
Escape Seq: 00000000
Output after byte stuffing:11111111 0011010101111111 00000000 1110 11111111
-----
Process exited after 1.921 seconds with return value 0
Press any key to continue . . .
```

Learning Outcome:- We have successfully implemented byte stuffing and we learnt its application in computer network.