

Computer Networks

Lab Assignment -3

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Implement Data Link Layer Framing Methods

1.Implement the character framing method.

Aim: To implement java code for character framing method

Code:

```
package p1;

import java.io.*;
import java.util.*;

class CharCount
{
    public static void main(String args[])
    {
        Scanner k=new Scanner(System.in);

        System.out.print("enter a string\t");

        String str=k.next();

        Character c = new Character(str.charAt(0));

        String s = c.toString();

        int p = Integer.parseInt(s);

        int i;
```

```

int m=str.length();
for(i=0;(p+i)<=m;)
{
    if(p==((str.substring(i,p+i).length()))
    {

        Character c1 = new Character(str.charAt(p));

        String s1 = c1.toString();

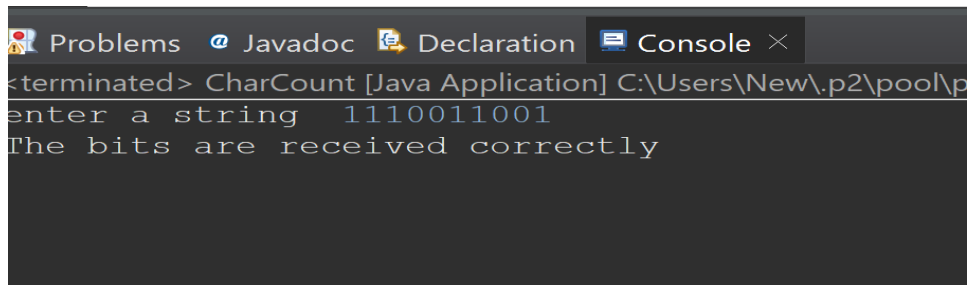
        i+=p;

        p=Integer.parseInt(s1);

    }
}
if(i==m)
{
    System.out.println("The bits are received correctly");
}
else
{
    System.out.println("The bits are not received correctly");
}
}
}

```

Output:

A screenshot of a Java IDE's console window. The window has tabs for 'Problems', 'Javadoc', 'Declaration', and 'Console'. The 'Console' tab is active, showing the output of a Java application. The text in the console is: '<terminated> CharCount [Java Application] C:\Users\New\.p2\pool\p', 'enter a string 1110011001', and 'The bits are received correctly'.

```
<terminated> CharCount [Java Application] C:\Users\New\.p2\pool\p
enter a string 1110011001
The bits are received correctly
```

2.Implement the character-stuffing framing method.

Aim: To implement java code for character-stuffing framing method

Code:

```
package p2;

import java.io.*;
import java.util.*;
import java.lang.*;

class Stuffing
{
    public static void main(String args[])
    {
        Scanner k =new Scanner (System.in);

        System.out.println("enter the string\t");

        String s=k.nextLine();

        String str1;

        String str2="";

        int i,m,j;

        m=s.length();

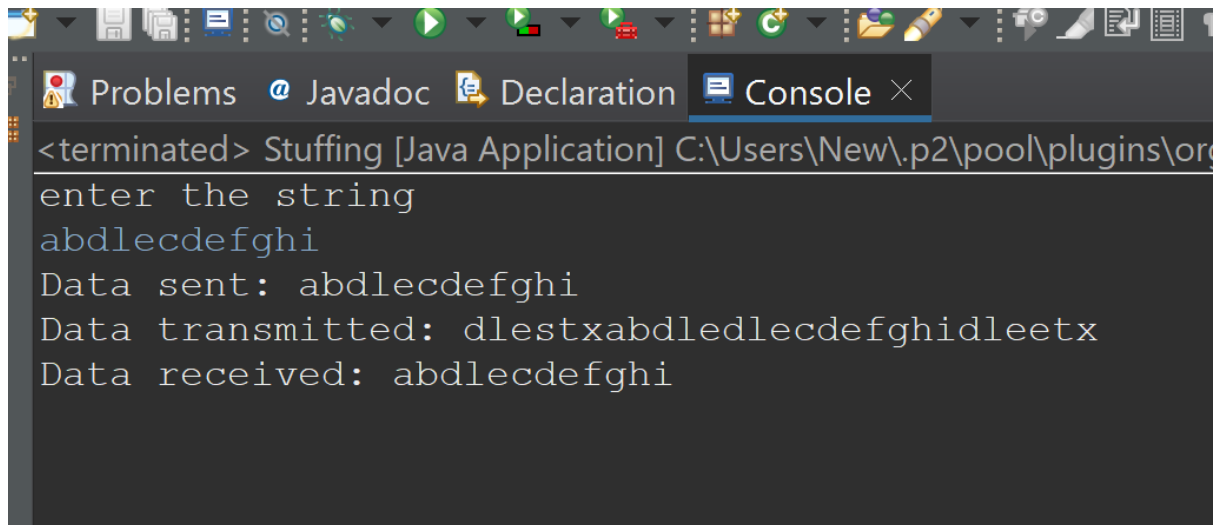
        System.out.println("Data sent: "+s);
```

```

str1="dlestx";
for(i=0;i<=m-1;i++)
{
    if((s.charAt(i)=='d')&&(s.charAt(i+1)=='l')&&(s.charAt(i+2)=='e'))
    {
        str1=str1+"dle";
    }
    str1=str1+s.substring(i,i+1);
}
str1=str1+"dleetx";
int p=str1.length();
System.out.println("Data transmitted: "+str1);
for(i=6;i<p-6;i++)
{
    if((str1.charAt(i)=='d')&&(str1.charAt(i+1)=='l')&&(str1.charAt(i+2)=='e')&&(str1.charAt(i+3)=='d')&&(str1.charAt(i+4)=='l')&&(str1.charAt(i+5)=='e'))
    {
        i=i+3;
    }
    str2=str2+str1.substring(i,i+1);
}
System.out.println("Data received: "+str2);
}

```

Output:



```
<terminated> Stuffing [Java Application] C:\Users\New\.p2\pool\plugins\org...
enter the string
abdlecdefghi
Data sent: abdlecdefghi
Data transmitted: dlestxabdledlecdefghidleetx
Data received: abdlecdefghi
```

3.Implement the bit stuffing framing method.

Aim: To implement java code for bit stuffing framing method

Code:

```
package p2;

import java.util.*;

public class BitStuffing

{

    public static void main(String[] args)

    {

        Scanner sc=new Scanner(System.in);

        System.out.print("Enter the value: ");

        String d1 = sc.nextLine();

        String remaining = new String();

        String output=new String();

        int counter = 0;

        for(int i=0;i<d1.length();i++)

        {
```

```

        if (d1.charAt(i)!='1' && d1.charAt(i)!='0')
        {
            System.out.println("Enter valid Binary values");
            return;
        }
        if(d1.charAt(i) == '1')
        {
            counter++;
            remaining = remaining + d1.charAt(i);
        }
        else
        {
            remaining = remaining + d1.charAt(i);
            counter = 0;
        }
        if(counter == 5)
        {
            remaining = remaining + '0';
            counter = 0;
        }
    }

    String new1="|01111110 | "+remaining+" | 01111110|";
    System.out.println("Stuffed data:");
    for(int k=0;k<=(28+d1.length());k++)
    {
        System.out.print("-");
    }

```

```

System.out.println();

System.out.println(" "+new1);

for(int k=0;k<=(28+d1.length());k++)
{
    System.out.print("-");
}

System.out.println();

counter=0;

for(int i=0;i<remaining.length();i++)
{

    if(remaining.charAt(i) == '1')
    {

        counter++;

        output = output + remaining.charAt(i);

    }
    else
    {

        output = output + remaining.charAt(i);

        counter = 0;

    }

    if(counter == 5)
    {

        if((i+2)!=remaining.length())
        {

            output = output + remaining.charAt(i+2);

```

```

    }
    else
    {
        output=output + '1';
    }
    i=i+2;
    counter = 1;
}

}
System.out.println("Destuffed BIT is: "+output);
}
}

```

Output:

```

<terminated> BitStuffing [Java Application] C:\Users\New\.p2\pool\
Enter the value: 1100111111010
Stuffed data:
-----
|01111110 | 11001111101010 | 01111110|
-----
Destuffed BIT is: 1100111111010

```