Practical – 7

Aim: Write a program to generate binary code in case of arithmetic coding.

```java
import java.util.*;

class prac7 {

    public static void main(String args[]) {

        System.out.println("Enter number of characters");

        Scanner sc=new Scanner(System.in);

        int n=sc.nextInt();

        ArrayList<String> keys=new ArrayList<String>();

        ArrayList<Float> values=new ArrayList<Float>();

        System.out.println("Enter character and its f value");

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

            String temp=sc.next(

            float t=sc.nextFloat();

            keys.add(temp);

            values.add(t);

        }

        sc.nextLine();

        System.out.println("Enter input string");

        String input=sc.nextLine();

        int len=input.length();

        float l[]=new float[len+1];

        float u[]=new float[len+1];

        l[0]=0;

        u[0]=1;

        for(int i=1;i<=len;i++){

            String cur=input.substring(i-1, i);

            int curindex=-1;

            float fp,f;
```

```
                    for (int j = 0; j < keys.size(); j++) {

                        if(cur.equals(keys.get(j))){

                            curindex=j;

                            break;

                        }

                    }

                    if(curindex==0){

                        fp=0;

                        f=values.get(0);

                    }

                    else{

                        fp=values.get(curindex-1);

                        f=values.get(curindex);

                    }

                    l[i]=l[i-1]+(u[i-1]-l[i-1])*fp;

                    u[i]=l[i-1]+(u[i-1]-l[i-1])*f;

                }

                Float tag=(l[len]+u[len])/2;

                System.out.println("Tag:"+tag);

        }

}
```

Output:

```
<terminated> prac7 [Java Application] C:\Program Files\Java\jre1.8.0_201\bin\javaw.exe (28-Mar-2019, 12:28:19 AM)
Enter number of characters
3
Enter character and its f value
1 0.8
2 0.82
3 1
Enter input string
1321
Tag:0.772352
```