Practical no 3

AIM: Write program to implement the following Transposition Cipher Techniques

   a)Rail Fence Cipher   b)Simple Columnar Technique

Code:

```java
import java.util.Scanner;

import java.util.logging.Level;

import java.util.logging.Logger;


public class Rails {


    String Encrypytion(String plainText,int depth) throws Exception{

        int r=depth, len = plainText.length();

        int c= len/depth;

        char mat[][] = new char[r][c];

        int k=0;


        String cipherText="";


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

            for (int j=0; j<r; j++) {

                if(k!=len) {

                    mat[j][i] = plainText.charAt(k++);

            }

        }

    }

    for(int i=0 ;i<r ;i++) {
```

```
            for (int j=0; j<c; j++){

                cipherText += mat[i][j];


            }

        }

    return cipherText ;

    }

String Decryption(String cipherText,int depth)throws Exception{

    int r=depth,len=cipherText.length();

    int c=len/depth;

    char mat[][]=new char[r][c];

    int k=0;

    String plainText="";

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

        for(int j=0;j<c;j++){

            mat[i][j] =cipherText.charAt(k++);

        }

    }

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

        for(int j=0;j<r;j++){

            plainText += mat[j][i];


        }

    }

    return plainText ;

}

public static void main(String[] args) {

 try {
```

```
System.out.println("INS Practical Performed by krunal 713");

System.out.println("----*--Encrypting string using RailFence cipher--*----");

Rails rf = new Rails();

Scanner scn = new Scanner(System.in);

int depth;

String plainText,cipherText,decryptedText;

System.out.println("Enter Plain Text");

plainText=scn.nextLine();

System.out.println("Enter depth for Encryption:");

depth=scn.nextInt();

while(plainText.length()%depth!=0){

    plainText+='X';

}

cipherText=rf.Encrypytion(plainText, depth);

System.out.println("Encrypted text is:\n" + cipherText);

decryptedText=rf.Decryption(cipherText, depth);

decryptedText=decryptedText.replace("X","");

System.out.println("Decrypted text is :\n"+decryptedText);

}catch (Exception ex){

    Logger.getLogger(Rails.class.getName()).log(Level.SEVERE,null,ex);

}

}

}
```

```
INS Practical Performed by krunal 713
----*--Encrypting string using RailFence cipher--*----
Enter Plain Text
kunal
Enter depth for Encryption:
2
Encrypted text is:
knluaX
Decrypted text is :
kunal
```

```
INS Practical Performed by krunal 713
----*--Encrypting string using RailFence cipher--*----
Enter Plain Text
krunal
Enter depth for Encryption:
2
Encrypted text is:
kuarnl
Decrypted text is :
krunal
```

b) Simple Columnar Technique

```
package prac3b;

import java.io.BufferedReader;

import java.io.*;

import java.io.InputStreamReader;

import java.util.logging.Level;

import java.util.logging.Logger;


public class Sct {

public static void main(String[] args) {


try {

        System.out.println("INS Practical performed by krunal dhavle ");

        System.out.println("---simple column transposition ");

        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));

        System.out.println("Enter your plain text");

        String accept = br.readLine();

        System.out.println("Enter of rows ");

        int r = Integer.parseInt(br.readLine());

        System.out.println("Enter the cols");

        int c = Integer.parseInt(br.readLine());

        int count = 0;

        char table[][] = new char[r][c];

        for (int i = 0; i < r; i++)

        {

                for (int j = 0; j < c; j++)
```
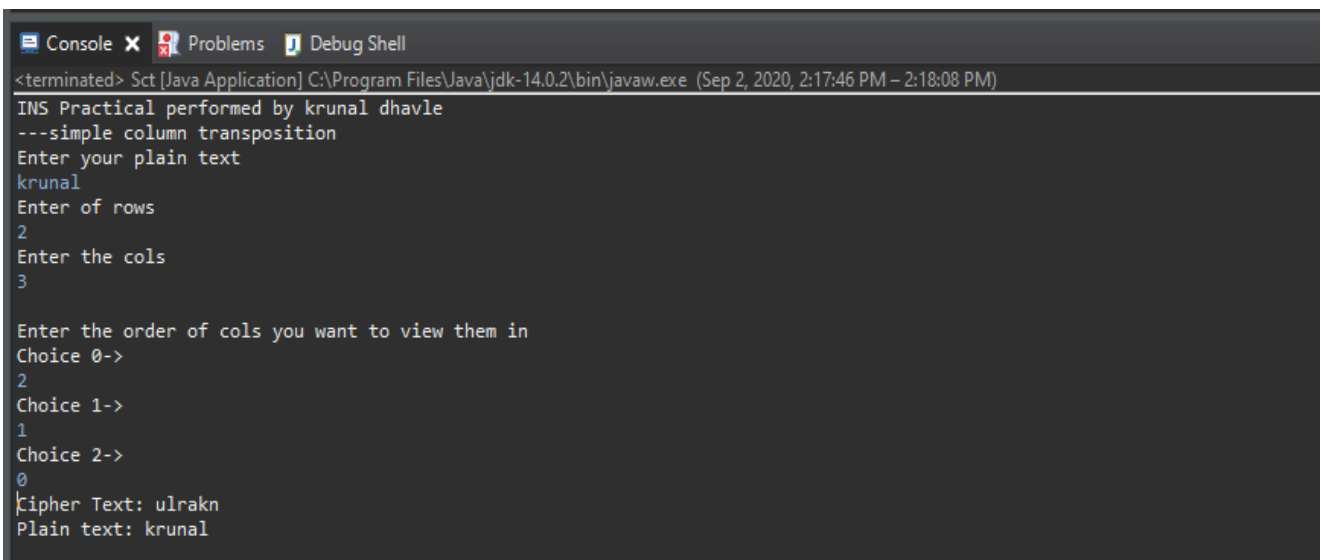
```java
                {
                        table[i][j] = accept.charAt(count);

                        count++;

                }

        }
System.out.println("\nEnter the order of cols you want to view them in");

int choice[] = new int[c];

for (int k = 0; k < c; k++)

{

        System.out.println("Choice " + k + "-> ");

        choice[k] = Integer.parseInt(br.readLine());

}
String cipher = "", plain = "";

for (int j = 0; j < c; j++)

{

        int k = choice[j];

        for (int i = 0; i < r; i++)

        {

                cipher += table[i][k];

        }

}
cipher = cipher.trim();

System.out.println("Cipher Text: "+cipher);

char mat[][] = new char[r][c];

int t = 0;

for (int j = 0; j < c; j++)

{

        int k = choice[j];
```

```
        for (int i = 0; i < r; i++)

        {

                mat[i][k] = cipher.charAt(t++);

        }

}

for (int i = 0; i < r; i++)

{

        for (int j = 0; j < c; j++)

        {

                plain += mat[i][j];

        }

}

plain = plain.trim();

System.out.println("Plain text: "+plain);

}

catch (IOException ex)

{

        Logger.getLogger(Sct.class.getName()).log(Level.SEVERE, null, ex);

}}}
```

```
Console ✕  Problems  Debug Shell
<terminated> Sct [Java Application] C:\Program Files\Java\jdk-14.0.2\bin\javaw.exe  (Sep 2, 2020, 2:17:46 PM – 2:18:08 PM)
INS Practical performed by krunal dhavle
---simple column transposition
Enter your plain text
krunal
Enter of rows
2
Enter the cols
3

Enter the order of cols you want to view them in
Choice 0->
2
Choice 1->
1
Choice 2->
0
Cipher Text: ulrakn
Plain text: krunal
```