EX NO: **RAIL FENCE TECHNIQUE** REG NO:210701290

DATE:

AIM:-

To implement the rail fence transposition technique using java.

ALGORITHM:-

STEP 1: Get the message from the user.

STEP 2: Divide the message info into rows.

STEP 3: Write diagonally.

STEP 4: Read by column & print the result as output.

PROGRAM:-

```
import java.util.Scanner;
public class Main {
   // Encryption function
   public static String encrypt(String plaintext, int rails) {
      StringBuilder ciphertext = new StringBuilder();
      for (int i = 0; i < rails; i++) {
         for (int j = i; j < plaintext.length(); j += rails) {
            ciphertext.append(plaintext.charAt(j));
         }
      }
      return ciphertext.toString();
   }
```

```
// Decryption function
public static String decrypt(String ciphertext, int rails) {
    StringBuilder plaintext = new StringBuilder();
    int length = ciphertext.length();
    int rows = (int) Math.ceil((double) length / rails);
    int columns = rails;
    char[][] railMatrix = new char[rows][columns];
    int k = 0;
    // Fill rail matrix with '*' as a placeholder
    for (int i = 0; i < rows; i++) {
        for (int j = 0; j < columns; j++) {
            railMatrix[i][j] = '*';
        }
    }
    // Place characters of ciphertext in the rail matrix
    for (int i = 0; i < columns; i++) {
        for (int j = 0; j < rows; j++) {
            if (k < length) {
                railMatrix[j][i] = ciphertext.charAt(k++);
            }
        }
    }
```

```
        // Read characters from the rail matrix to get the plaintext
        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < columns; j++) {
                if (railMatrix[i][j] != '*') {
                    plaintext.append(railMatrix[i][j]);
                }
            }
        }
        return plaintext.toString();}
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter plaintext: ");
        String plaintext = scanner.nextLine();
        System.out.print("Enter number of rails: ");
        int rails = scanner.nextInt();
        // Encrypt plaintext
        String ciphertext = encrypt(plaintext, rails);
        System.out.println("Encrypted ciphertext: " + ciphertext);
        // Decrypt ciphertext
        String decryptedtext = decrypt(ciphertext, rails);
        System.out.println("Decrypted plaintext: " + decryptedtext);
    }
}
```

OUTPUT:-

```
Enter plaintext: Kris
Enter number of rails: 3
Encrypted ciphertext: Ksri
Decrypted plaintext: Krsi
```

RESULT:-