

# README

## Introduction

This is a program which implements the Rail Fence Cipher encryption algorithm in two methods using java language.

## Instruction to Run:

The zip file contains the original java code files in two separate folders, each using different method to implement this algorithm:

❖ Folder “Method1” contains two java code files: RailFenceCipher.java, Key.java

➤ It encrypts the code in this way:

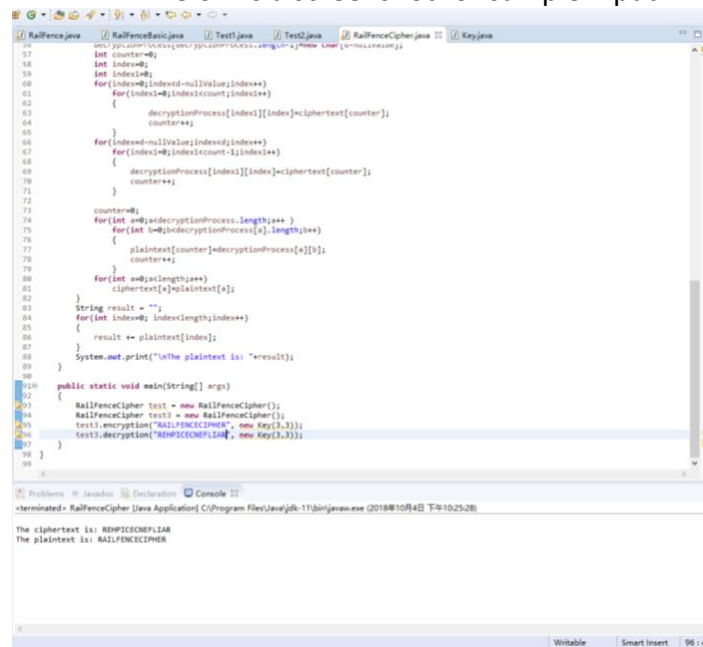
- if the plaintext is RAILFENCECIPHER with depth=4

```
R F E H
A E C E
I N I R
L C P
```

- then the ciphertext will be RFEHAECEINIRLCP

➤ To run this java program, you need to open the RailFenceCipher.java and type in your plaintext or ciphertext with key(d, r), save and compile all java files and run RailFenceCipher.java

- Below is a screenshot for sample input RAILFENCECIPHER and Key(3,3)



```
26  int counter=0;
27  int index=0;
28  int index=0;
29  for(index=0;index<plaintext.length();index++)
30  {
31      for(index=0;index<count;index++)
32      {
33          decryptionProcess[index][index]=ciphertext[counter];
34          counter++;
35      }
36      for(index=0;index<count-1;index++)
37      {
38          decryptionProcess[index][index]=ciphertext[counter];
39          counter++;
40      }
41      counter++;
42      for(index=0;index<decryptionProcess.length;index++)
43      {
44          for(index=0;index<decryptionProcess[index].length;index++)
45          {
46              plaintext[counter]=decryptionProcess[index][index];
47              counter++;
48          }
49      }
50      for(index=0;index<plaintext.length;index++)
51      {
52          ciphertext[index]=plaintext[index];
53      }
54      String result = "";
55      for(index=0; index<length;index++)
56      {
57          result += plaintext[index];
58      }
59      System.out.println("The plaintext is: "+result);
60  }
61  }
62  public static void main(String[] args)
63  {
64      RailFenceCipher test = new RailFenceCipher();
65      RailFenceCipher test1 = new RailFenceCipher();
66      test1.encrypt("RAILFENCECIPHER", new Key(3,3));
67      test1.decrypt("RFEHAECEINIRLCP", new Key(3,3));
68  }
69  }
```

terminated - RailFenceCipher [Java Application] C:\Program Files\Java\jdk-11\bin\javaw.exe (2018/10/4日 下午10:25:28)

The ciphertext is: RFEHAECEINIRLCP  
The plaintext is: RAILFENCECIPHER

- ❖ Folder “Method2” contains four java code files: RailFence.java, RailFenceBasic.java, Test1.java, Test2.java
  - it encrypt the code in this way:
    - if the plaintext is RAILFENCEIPHER with depth=4

```
R . . . . . N . . . . . H . .
. A . . . E . C . . . P . E .
. . I . F . . . E . I . . . R
. . . L . . . . . C . . . . .
```

- then the ciphertext will be RNHAECPEIFEIRLC
- To run this java program, you need to compile all java files and run Railfence.java with input and key(depth, round)
  - Below is a screenshot for sample input RAILFENCEIPHER and Key(4,3)

The screenshot shows an IDE with four tabs: RailFence.java, RailFenceBasic.java, Test1.java, and Test2.java. The RailFence.java file is open, showing the following code:

```
1 import java.util.*;
2 class RailFence{
3     public static void main(String args[])throws Exception
4     {
5         RailFenceBasic rf=new RailFenceBasic();
6         Scanner scn=new Scanner(System.in);
7         int depth, round;
8
9         String plainText,cipherText,decryptedText;
10
11         System.out.println("Enter plain text:");
12         plainText=scn.nextLine();
13
14         System.out.println("Enter depth for Encryption:");
15         depth=scn.nextInt();
16
17         System.out.println("Enter round for Encryption:");
18         round=scn.nextInt();
19
20         cipherText=rf.Encryption(plainText,depth, round);
21         System.out.println("Encrypted text is:\n"+cipherText);
22
23         decryptedText=rf.Decryption(cipherText, depth, round);
24
25         System.out.println("Decrypted text is:\n"+decryptedText);
26
27     }
28 }
29 }
```

The console output at the bottom shows the execution of the program:

```
<terminated> RailFence [Java Application] C:\Program Files\Java\jdk-11\bin\javaw.exe (2018年10月4日 下午9:50:52)
Enter plain text:
RAILFENCEIPHER
Enter depth for Encryption:
4
Enter round for Encryption:
3
Encrypted text is:
RNHAECPEIFEIRLC
Decrypted text is:
RAILFENCEIPHER
```