

```

1
2 //Name -
3 //Date -
4 //Class -
5 //Lab -
6
7 import static java.lang.System.*;
8
9 public class TopLeftColumnRow implements Cipher
10 {
11     private String[][] codeBox;
12
13     public String encode(String original)
14     {
15         codeBox = new String[ (int) Math.ceil( Math.sqrt( original.length() ) ) ]
16                             [ (int) Math.ceil( Math.sqrt( original.length() ) ) ];
17         fitOriginalInBox(original);
18         return readTopLeftColumnRow();
19     }
20
21     public String decode(String encoded)
22     {
23         codeBox = new String[ (int) Math.ceil( Math.sqrt( encoded.length() ) ) ]
24                             [ (int) Math.ceil( Math.sqrt( encoded.length() ) ) ];
25         fitEncodedInBox(encoded);
26         return readTopLeftRowColumn();
27     }
28
29     private void fitOriginalInBox(String original) // used to be called
30     topLeftRowColumn()
31     {
32         int p = 0;
33         for( String[] line: codeBox )
34             for( int i = 0; i < line.length; i++ ){
35                 if(p > original.length() - 1)
36                     line[i] = "*";
37                 else
38                     line[i] = Character.toString( original.charAt(p) );
39                 p++;
40             }
41     }
42
43     private String readTopLeftColumnRow() // used to be called topLeftColumnRow()
44     {
45         String str = "";
46         for( int o = 0; o < codeBox[0].length; o++ )
47             for( int i = 0; i < codeBox.length; i++ )
48                 str += codeBox[i][o];
49         return str;
50     }
51
52     private void fitEncodedInBox(String original) {
53         int p = 0;
54         for( int o = 0; o < codeBox[0].length; o++ )
55             for( int i = 0; i < codeBox.length; i++ ){
56                 codeBox[i][o] = Character.toString( original.charAt(p) );
57                 p++;
58             }
59     }
60
61     private String readTopLeftRowColumn() {
62         String str = "";
63         for( int o = 0; o < codeBox.length; o++ )
64             for( int i = 0; i < codeBox[0].length; i++ )
65                 str += codeBox[o][i];

```

```
66
67     return removeStar( str );
68 }
69
70 private static String removeStar(String str) {
71     String ret = "";
72     for( char c: str.toCharArray() )
73         if(c != '*')
74             ret += c;
75
76     return ret;
77 }
78 }
```