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package playfaircipher;
import java.util.Scanner;
public class PlayfairCipher {
 public static String encrypt(String text, String keyInput) {
text = text.toLowerCase().replace("j", "i").replaceAll("[^a-z]", "");
keyInput = keyInput.toLowerCase().replace("j", "i").replaceAll("[^a-z]", "");        //
حذف التكرارات من المفتاح
  int[] fr = new int[26];
     String key = "";
    for (char c : keyInput.toCharArray())
{           if (fr[c - 'a'] == 0) {
     key += c;
   fr[c - 'a'] = 1;            }        }        // تجهيز النص
   String pt = "";
 for (int i = 0; i < text.length(); i++) {
   if (i != text.length() - 1 && text.charAt(i) == text.charAt(i + 1))
        pt += text.charAt(i) + "x";
      else
         pt += text.charAt(i);        }
   if (pt.length() % 2 == 1)
    pt += 'z';        // إنشاء مصفوفة المفتاح
  char[][] matrix = new char[5][5];
    fr = new int[26];
   fr['j' - 'a'] = 1;
 int index = 0;
  for (int i = 0; i < 5; i++)
  for (int j = 0; j < 5; j++) {
       if (index < key.length()) {
       matrix[i][j] = key.charAt(index++);
  fr[matrix[i][j] - 'a'] = 1;               } else {                  for (int q = 0; q < 26; q++)
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{                    if (fr[q] == 0) {
matrix[i][j] = (char) (q + 'a');
          fr[q]=1;
               break;                    }                }              }          }        // تابع البحث
   java.util.function.Function<Character, int[]> search = c -> {
  for (int i = 0; i < 5; i++)
      for (int j = 0; j < 5; j++)
       if (matrix[i][j] == c)
      return new int[]{i, j};
   return null;        };        // التشفير
StringBuilder result = new StringBuilder();
  for (int i = 0; i < pt.length(); i += 2) {
   char a = pt.charAt(i), b = pt.charAt(i + 1);
   int[] pos1 = search.apply(a), pos2 = search.apply(b);
      if (pos1[0] == pos2[0])
      result.append(matrix[pos1[0]][(pos1[1] + 1) %
5]).append(matrix[pos2[0]][(pos2[1] + 1) % 5]);
else if (pos1[1] == pos2[1])
    result.append(matrix[(pos1[0] + 1) % 5][pos1[1]]).append(matrix[(pos2[0] + 1) %
5][pos2[1]]);
         else
     result.append(matrix[pos1[0]][pos2[1]]).append(matrix[pos2[0]][pos1[1]]);        }
      return result.toString().toUpperCase();    }
 public static void main(String[] args) {
Scanner scanner = new Scanner(System.in);
   System.out.println("=== Playfair Cipher - Encryptor ===");
     System.out.print("أدخل النص الأصلي: ");
 String plainText = scanner.nextLine();
  System.out.print("أدخل الكلمة المفتاحية: ");
      String key = scanner.nextLine();
 String encrypted = PlayfairCipher.encrypt(plainText, key);
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System.out.println("النص المشفّر: " + encrypted);
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