Project - Longest Word

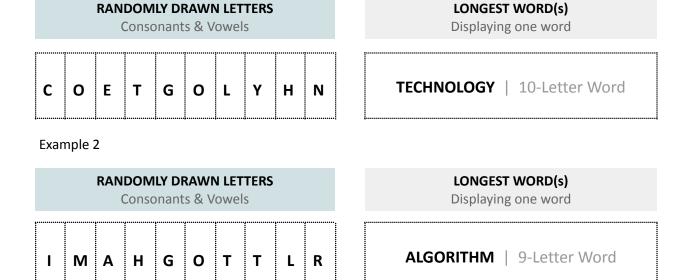
Part I

In this game, two players compete to find the longest word using randomly drawn letters (consonants and vowels).

Game principle

- The two players take turns to choose the number of vowels they wish to have in the letter draw.
- 10 letters are then drawn randomly.
- The goal is then to find the longest word possible using the drawn letters.

Example 1



Assigned work

Starting from a randomly drawn string of 10 letters (called drawn_letters), we seek to find all possible combinations (strings) of 10, then of 9, 8, 7, 6, 5, 4, 3, and finally 2 letters that can be obtained using the letters in the string drawn letters.

For example, with a string of 3 letters "ABC", we will obtain the following combinations of 3 and 2 letters:

- ABC, ACB, BAC, BCA, CAB, CBA
- AB, BA, AC, CA, BC, CB

Steps to follow

- A string is in minimal alphabetical order if its letters satisfy the relationship: s[i] <= s[i+1]
 For instance, the string "ABC" is in minimal alphabetical order.
- A string is in maximal alphabetical order if its letters satisfy the relationship: s[i] >= s[i+1]
 For example, "CBA" is in maximal alphabetical order.
- Consider the following procedure:
 - 1) Starting from a given string, find the largest terminal substring that is in maximal order. Let i be the index of the letter that is to the left of this substring.
 - 2) Find in the terminal substring located to the right of the ith letter, the closest to this ith letter among those which are superior to it. Let j be its index.
 - 3) Swap the ith letter and the jth letter.
 - 4) Rearrange the substring to the right of the ith letter so that it is in minimal order.

You have to start with a string in minimal order.

We stop when we obtain a string in maximal order.

Note: In the second part of the project, the aim is to integrate the search in a dictionary (planar tree) to find the longest word (or all the words of n letters).