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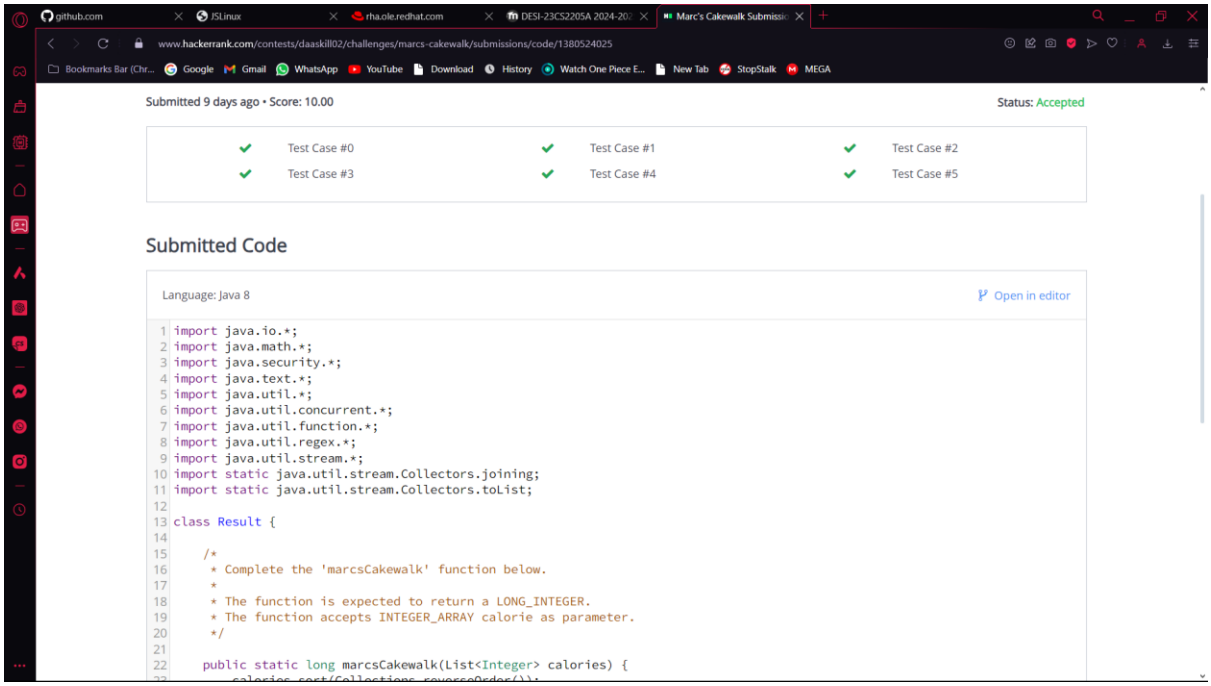
Week-2 Skill-2

Q1) Marc loves cupcakes, but he also likes to stay fit. Each cupcake has a calorie count, and Marc can walk a distance to expend those calories. If Marc has eaten cupcakes so far, after eating a cupcake with calories he must walk *at least* miles to maintain his weight.

Example

If he eats the cupcakes in the order shown, the miles he will need to walk are . This is not the minimum, though, so we need to test other orders of consumption. In this case, our minimum miles is calculated as .

Given the individual calorie counts for each of the cupcakes, determine the minimum number of miles Marc must walk to maintain his weight. Note that he can eat the cupcakes *in any order*.



Q2) Given a square grid of characters in the range ascii[a-z], rearrange elements of each row alphabetically, ascending. Determine if the columns are also in ascending alphabetical order, top to bottom. Return YES if they are or NO if they are not.

Example

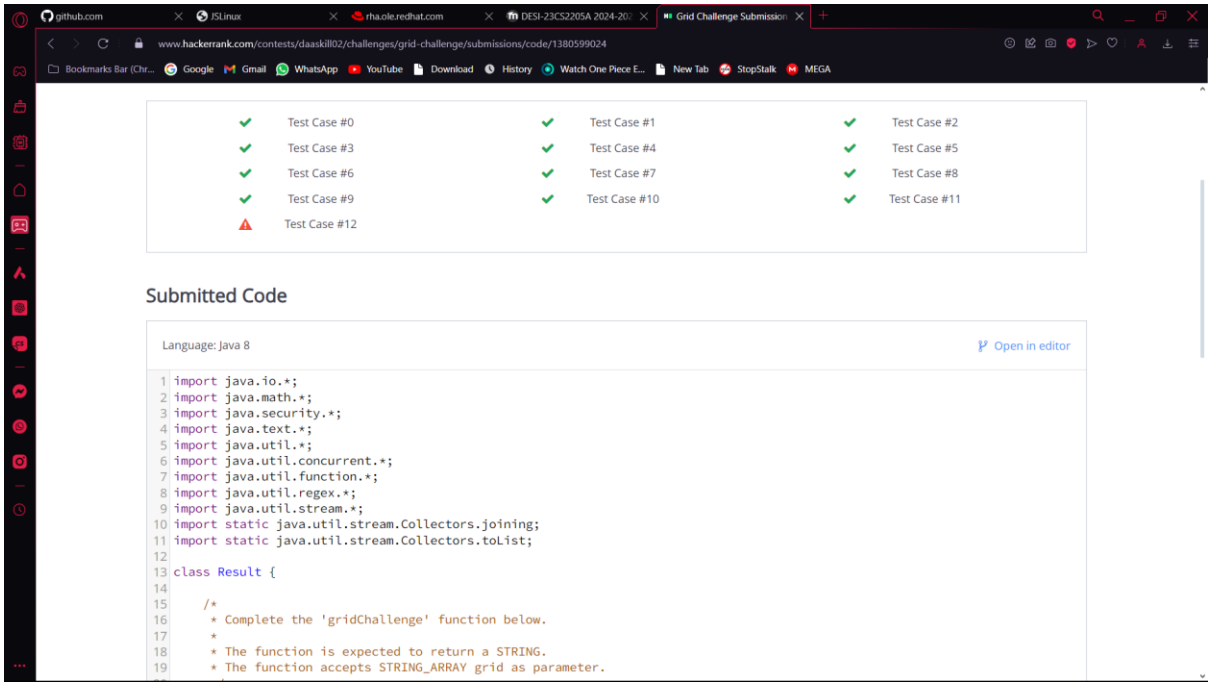
The grid is illustrated below.

a b c

a d e

e f g

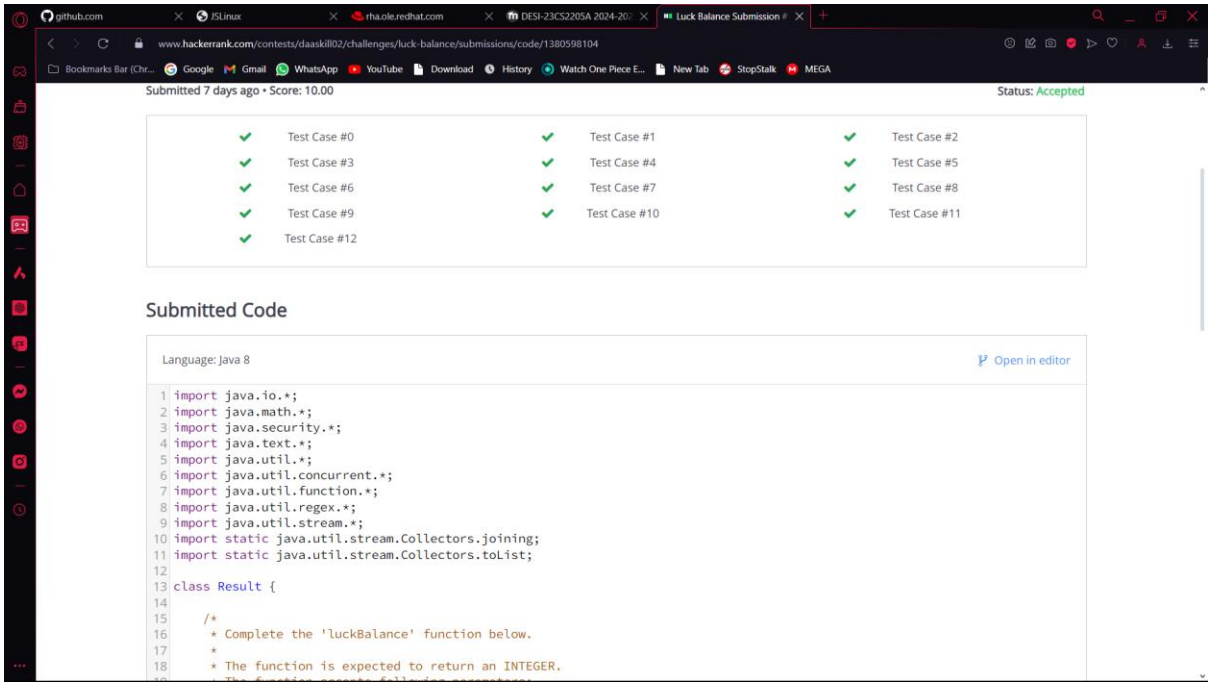
The rows are already in alphabetical order. The columns a a e, b d f and c e g are also in alphabetical order, so the answer would be YES. Only elements within the same row can be rearranged. They cannot be moved to a different row.



Q3) Lena is preparing for an important coding competition that is preceded by a number of sequential preliminary contests. Initially, her luck balance is 0. She believes in "saving luck", and wants to check her theory. Each contest is described by two integers, and :

- is the amount of luck associated with a contest. If Lena *wins* the contest, her luck balance will *decrease* by ; if she *loses* it, her luck balance will *increase* by .
- denotes the contest's *importance rating*. It's equal to if the contest is *important*, and it's equal to if it's *unimportant*.

If Lena loses no more than *important* contests, what is the maximum amount of luck she can have after competing in all the preliminary contests? This value *may* be negative.



Q4) Given an array of stick lengths, use of them to construct a non-degenerate triangle with the maximum possible perimeter. Return an array of the lengths of its sides as integers in non-decreasing order.

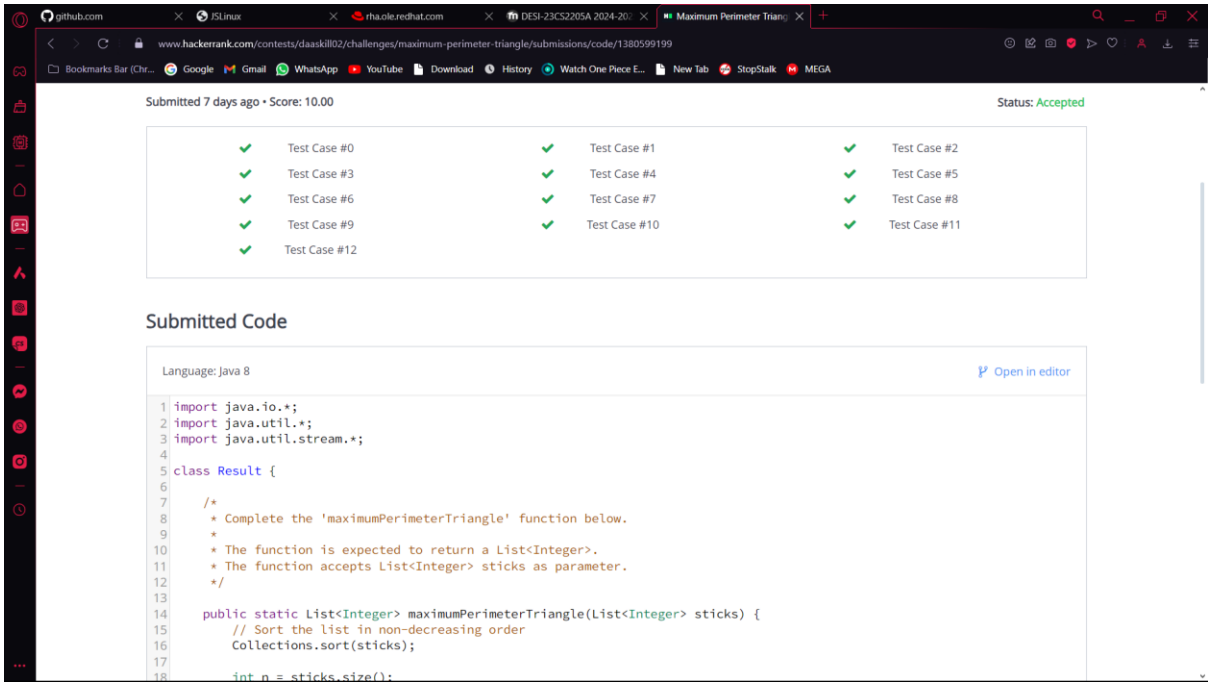
If there are several valid triangles having the maximum perimeter:

1. Choose the one with the *longest maximum side*.
2. If more than one has that maximum, choose from them the one with the *longest minimum side*.
3. If more than one has that maximum as well, print any one them.

If no non-degenerate triangle exists, return .

Example

The triplet will not form a triangle. Neither will or , so the problem is reduced to and . The longer perimeter is .

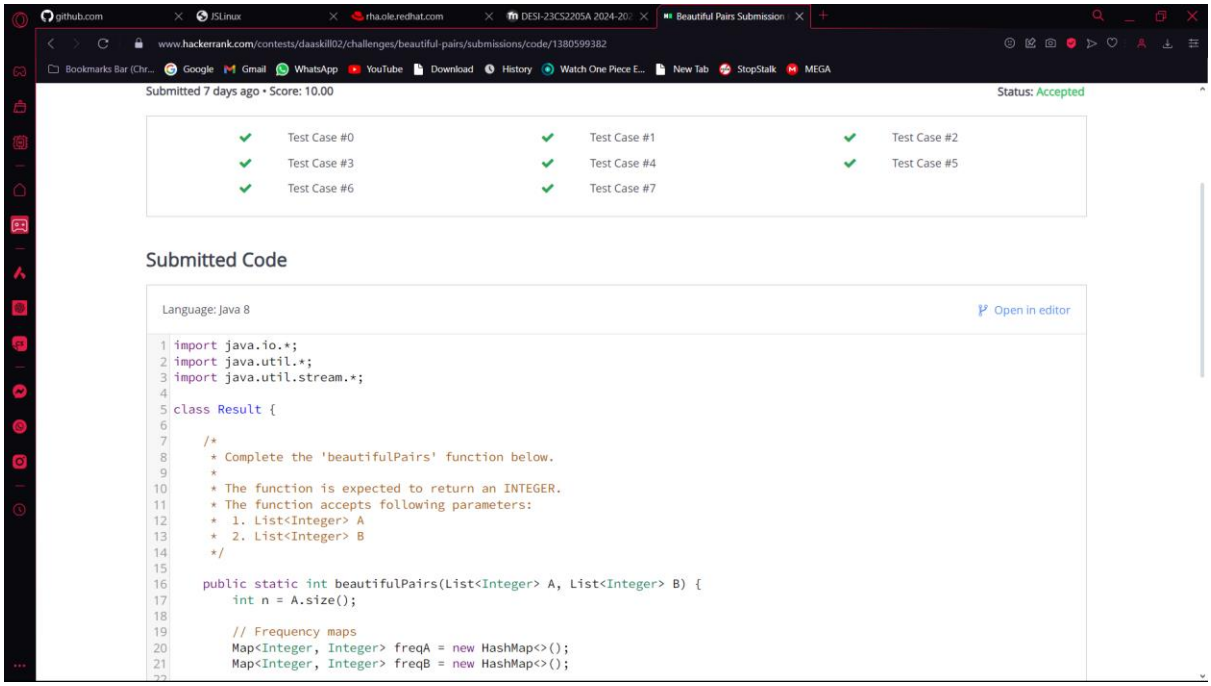


Q5) You are given two arrays, and , both containing integers.

A pair of indices is *beautiful* if the element of array is equal to the element of array . In other words, pair is *beautiful* if and only if . A set containing beautiful pairs is called a *beautiful set*.

A beautiful set is called *pairwise disjoint* if for every pair belonging to the set there is no repetition of either or values. For instance, if and the beautiful set is not pairwise disjoint as there is a repetition of , that is .

Your task is to change **exactly** element in so that the size of the pairwise disjoint beautiful set is maximum.



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