Tartalomjegyzék

Exercises

Mean nearest

Write a function that finds an element in a list which is the nearest to the mean of the list. There should be one parameter, the list.

Increasing sublists

Write a function that finds increasing sublists with a given length within a given list. The function should have two parameters:

- a list *l*
- and a natural number *n*
- return the list of *n*-long increasing sublists of *l*

Break down to subtasks:

- first return the list of all *n*-long sublists of *l*
- Check whether a sublist is increasing

Name conflict

We are throwing a party and there are a lots of unknown people there. We write their names in a list. Write a python function that decides whether there is a duplicate in the names (two person with the same name).

The function should have one parameter: the list of names.

Return `True` if there are at least two people with the same name, </tt>False</tt> is all the names are unique.

Hint:

Mind that do not compare ones name to itself, only to other's names.

Pronunciation

In Hungarian there are a lots of vowels and some words are hard to pronounce if there are a lots of consonants in them. For example *"http://wiki.math.bme.huelorozza"http://wiki.math.bme.hu* has a good number of vowels, but the Slovakian *"http://wiki.math.bme.huzmrzlina"http://wiki.math.bme.hu* has too many consonants.

Write a python function that decides whether a word has too many consonants or not.

- Call the function `pronunciation`
- with one parameter: *word*, the word in question
- return the string `"http://wiki.math.bme.huHard"http://wiki.math.bme.hu` if the number of consonants are more (or equal) than twice the number of vowels.
- return `"http://wiki.math.bme.huEasy"http://wiki.math.bme.hu` otherwise.

Food courses

Suppose you have a really strict diet and you have a given number of calories what you should eat for dinner. You walk in a restaurant and they have the menu of soups and main dishes. Every item on the menu has a calorie value.

Can you choose the right dishes to exactly match your calorie intake?

Write a python function

- called `dishes`
- that have three parameters:
    - ♦ *calorie*, the number of calories you should eat
    - ♦ *soups*, a list containing calorie values for the soups
    - ♦ *mains*, a list containing calorie values for the main dishes
- You should return `True` if there is a two-course meal that fits your diet (`False` otherwise).

Pascal

The Pascal triangle consist of binomial coefficients, find details on Wikipedia.

Write a function that calculates some lines of the triangle and returns it as a list of lists. First list is `[1]`, second is of length 2, and so on.

The function should have one parameter: *n*, the number of rows to calculate.

For example the result of `pascal(4)` should be:

```
[[1],
[1, 1],
[1, 2, 1],
[1, 3, 3, 1]]
```

Use the fact that a coefficient is the sum of the two elements above it.

Replacement

Write a function with two parameters: *word* is a string, and *replaces* a list of pairs where every pair is a number-character pair, like: `(n, c)`. You should replace the characters in *word* according to the *replaces*. On pair represents that you should replace the *n*th character to the new letter *c*.

Return the new word after you performed the replacements.

For example replace `[(0, 'm'), (2, 'm'), (2, 'm')]` in `"http://wiki.math.bme.hupuppy"http://wiki.math.bme.hu` you get `mummy`.

Name generator

You write a computer game where you have to choose name of your player. The name consists of a first name and a last name where the names come from a given list of possibilities.

Generate all the possible names composed from the list of first names and list of last names.

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