Tartalomjegyzék

Exercises

Square List

Write a function that gives square of a list. The function should have one parameter, the list :

- It returns square of the list
- If the given parameter is not a list, it returns "http://wiki.math.bme.huThe input must be a list!"http://wiki.math.bme.hu

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, `False` 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.

Pascal

The Pascal triangle consist of binomial coefficients, find details on <u>Wikipedia</u>.

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 nth character to the new letter *c*.

Return the new word after you performed the replacements.

For example replace `[(0, 'm'), (2, 'm'), (3, '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.