

5ELEN018W - Tutorial 1 Exercises

Familiarisation with Python

Implement all of the Python examples which were introduced to you in the lecture slides. Make sure that you understand all the code and ask your tutor for any questions you might have.

Dictionaries

Write a Python program which asks the user for the names and average grade of 5 students. The program creates a Python dictionary, mapping the names of the students to their average grade.

Functions

Write a Python function which accepts 2 lists containing numbers and calculates the inner product of the 2 lists.

As a reminder, the inner product of 2 lists (vectors) $a = [a_1, a_2, a_3]$ and $b = [b_1, b_2, b_3]$ is calculated as $a_1 * b_1 + a_2 * b_2 + a_3 * b_3$.

The function should accept lists of any length and return an error message if the number of elements of the first list is not the same as the second list, as in that case the inner product is not defined.

More Functions

Write a Python function which accepts a list of numbers as an argument and 2 additional arguments n_1 and n_2 . The function creates a new list using list comprehension which contains all the elements of the first list in the range between n_1 and n_2 and returns the new list to the caller.

Files

1. Write a function which accepts a filename as an argument. The function should display the number of characters in the file and the total number of lines.
2. Modify the function so that it accepts a second argument n and displays only the n -th line of the file.
3. Modify the function so that it accepts 3 arguments, a filename and 2 numbers n_1 and n_2 . The function displays all the lines between line number n_1 and n_2 inclusive.