4. Tutorial/practical exercises

Exercise 1

Write a python function that takes two points *A* and *B* (in the form of two tuples) then computes the distance *AB*.

Exercise 2

Write a Python function that takes an array of floats and a scale parameter then multiplies all the list elements by the scale.

Exercise 3

Write a function that computes the sum of the digits of an integer as well as the number of its digits. For instance, for the number 235, the function should return 10 and 3.

Exercise 4

1. Write your a function that computes the number of occurrences of a value `v` in an array `arr`.
2. Use your function to write another one that computes the most frequent element in an the array.

Exercise 5

1. Write a Python function that returns `True` or `False` depending on whether its argument is prime or not.
2. Use your function to write another one that returns an array containing the *n* first prime numbers (*n* is an argument of the function). If *n* is omitted, then the function returns the first ten prime numbers.

Exercise 6

1. Write a Python function that takes an arbitrary number of arguments and then indicates if they are all the same.
2. Write a Python function that indicates if an arbitrary number of arguments are pairwise distinct.

Exercise 7

Write a Python function that takes an array of booleans and two other arrays as arguments. The function returns a new array combining the the second and the third arrays as follows: for each element in the first array, if it is `True` take a value from the second array; otherwise take a value from the third array.

For instance, if the function is given `[True,False,True]` , `[1,4,9]` and `[0,5,10]` then the function returns the array `[1,5,9]` .