

## Computational Physics Assignment 1: Lists and Arrays in Python

**(a)** Write a Python code that generates two lists  $a$  and  $b$  with 500 elements. Choose the values of the elements randomly using the function `random` from library `random`.

**(b)** Generate another list  $c$  and assign the sum of each element of  $a$  and  $b$  to the corresponding element of list  $c$ . In other words, calculate

$$c[i] = a[i] + b[i] \quad (1)$$

for every value of  $i$ . **(c)** Calculate the minimum, maximum, and average of the elements of  $a$ ,  $b$  and  $c$ .

**(d)** Repeat **(a)-(c)** using numpy arrays instead of lists. Calculate the time it takes to execute **(a)-(c)** using lists and arrays. Analyze the execution speeds for each of the operations in **(a)-(d)** and find whether it is faster to use lists or arrays.