

# Competence 0 [C0.py]

## Guidance notes

Competence checks ensure that you know the building blocks necessary for the assignment.

If you struggle, we can tackle issues **before** they impact your ability to do the assignment.

Competence checks are intended to be straightforward and take no more than 30 minutes.

Course notes and recommended texts are permitted. **No discussion. No Googling.**

**Competence 0** is worth zero marks. Competence 1, 2, 3, 4 are each worth 5%.

Upload to Blackboard as a **working** Python3 script. No Jupyter. No cut-and-paste from the terminal.

## References

Tutorial; NumPy; SciPy; matplotlib; PH-113 Python Primer; SciPy Lectures; SciPy cookbook

## Suggested imports

```
import numpy as np
```

## Lists

Make a list containing the integers 1...10 and store this in a variable called a. [1 marks]

## Simple functions

Make a function in Python called f which embodies  $f(x) = x^2 + 2x + 1$ . [1 marks]

## arrays

Use `np.linspace` to make an array of 1000 values from 0 to 1. Store the result in a variable called x. [1 marks]

*Hint: Type `np.linspace?` in the IPython window to see a reminder of how to use it*

## Using functions on arrays and iterables

Apply the function `np.exp` to every value in x and store the result in y. [1 marks]

*Hint: You can pass a whole array to most numpy functions.*

Apply the function `np.exp` to every value in a and store the result in b. [1 marks]

*Hint: Use list comprehension to iterate over the values in a list.*