Exercise class 3

Introduction to Programming and Numerical Analysis

Class 3

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Functions

Classes

Exercises

You've also learned about **floats** and **NumPy**: You'll get to know them when you use them, so I won't say much on either.

Python Functions

Whenever we may want to perform the same operation more than once, **functions** are handy.

- Functions are a block of code that performs a specific task and can be easily repeated.
- Functions take **inputs**, perform some operation, and return an **output**.

It is generally bad practice to write the same code more than once - if you have a task that is repeated, you should define a function.

Python Data Science Toolbox part I is all about functions.

Global and local scopes

Variables can exist in either **global** or **local** scope.

- Global scope variables are kept in memory and can be **accessed at any time**, while your code is running.
- Local scope variables are passed to or created inside a function and are **deleted from memory** when the function has finished running.

Global scope variables may sound handy - but be careful! You can quickly lose track of your globals, which can cause bugs.

- Make sure to restart your kernel and run code from the top every once in a while to get rid of unwanted globals.

Classes

You have seen many different types of variables, each with their different methods and attributes.

- ints, floats, lists, dicts, np.arrays...

We can create our own types of variables using **Classes**

- We can define which attributes our class has.
- We can define methods associated with the class.
- Class-based coding keeps everything nicely structured.

Classes are a really nice way to structure your code, and you will probably see them used in this course.

Time for exercises

Last time for DataCamp courses!

- Introduction to Data Science in Python
- Intermediate Python
- Python Data Science Toolbox (Part 1)
- Python Data Science Toolbox (Part 2)

Otherwise:

- Run code from lectures - make sure you understand what's going on
- If you're feeling ambitious, have a look at Problem Set 1.

Next time

Problem set 1: Solving the consumer problem

- Loops
- Functions, including lambda-functions
- Some NumPy tools
- Plotting (next week)
- Optimization with and without constraints (next week)
- Numerical solvers (next week)
- Extra: Classes