Introduction to Python

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Admin

- Lecturers
  - Dr Thomas Monks; thomas.monks@soton.ac.uk
  - Dr Carlos Lamas-Fernandez; C.Lamas-Fernandez@soton.ac.uk
- Lectures
  - Weeks 18: Monday 14:00 - 15:00 58/1067
  - Weeks 19-22: Mondays 14:00 - 15:00 54/4011
- Labs (Class 1)
  - Weeks 18-20, 22: Friday 11:00 14:00 44/1061
  - Week 21: Tuesday 13:00 - 15:00 58/1045 and 58/1047
  - Week 21: Tuesday 16:00 - 18:00 44/1061
- Labs (Class 2)
  - Weeks 18-20: Tuesdays 16:00 - 18:00 25/1009
  - Weeks 21: Tuesday 16:00 - 18:00 44/1061
  - Weeks 22: Thursday 09:00 - 11:00 25/1009
- **Drop-in help session. Weeks 18-20, 22. Friday 13:00-14:00**

Overview of course

- Learn how to code in Python!
- Learn the basics of scientific computing using Python

Another way to look at the course

- Learning about the basic nuts and bolts of Python
- Learning to put these together and to start to think like a programmer
- Learning some more advanced Pythonic techniques to enhance your programs
- Giving yourself the platform to go onto bigger and better things!

What is Python?

A general purpose programming language that aims to improve software quality and developer productivity.

Software quality

- Python code is readable and hence easy to maintain, change and fix

Developer productivity

- Python is easy to use: we will write our first program using just one line of code!
- Python has a batteries included approach to development = less code!
- Python is operating system independent e.g. code can run on Windows, Mac or Linux.

Yes it is named after Monty Python

What can I create with Python?

Python has been used in the creation of a number of well know modern software applications. E.g.

- Youtube
- Spotify
- Dropbox
- Instagram

Python and data

Python is now used extensively by **data scientists**

- **NumPy** – the fundamental package for numerical computation
- SciPy library – numerical algorithms and analysis toolboxes
- Matplotlib – high quality 2D plotting tools
- Pandas – high performance and easy to use data structures
- SciKit Learn – Machine learning

One of the benefits of using a python analysis package is that you can mix in all of the power of general purpose python which is often missing from specialist packages.

Are there any downsides to Python?

Python code is slower than other programming languages like Java, C or C++
But not always
Some parts of python are written in C.
These bits are very fast. E.g. file input / output and specialist analysis packages.
My view is that for most applications the productivity benefits outweigh the downsides

Installation on your own computer

We are going to use Python 3.x

We will upload some instructions about how to install it on your own laptop

In a nutshell install Anaconda

What does Python code look like?

```
print('Hello world')
```

```
>> Hello world
```

The End