MATH1010

Python Workshops

Introduction

Python is a high-level computer programming language, and like any other programming language, it is capable of carrying out a variety of complex tasks that would otherwise take us a long time to complete by hand.

One good point about Python is that it uses a very natural language, making it accessible to those with little or no programming experience. It is also completely free, and has a whole library of packages, each offering additional features.

For these workshops, we will be focusing on using a package called SymPy, a Computer Algebra System (CAS), which allows us to carry out mathematical calculations in a nice way.

(If you are interested in learning more about Python and its application in mathematics, you will find out in MATH2920 Computational Mathematics. This module is compulsory on many of our degree programmes and is an option on more or less all of the rest.)

Getting started with iPython

In these workshops we will be writing our code in Jupyter notebooks, which allow us to present blocks of code, markdown, and graphs together in a way that is tidy and nice to read.

Download the Workshop 1 Jupyter file from the workshops webpage. Save it to your Downloads folder on the local machine, in `C:\users\userid`, as Jupyter Notebook only looks on the local machine for files.

You should make a folder in your M drive filespace to keep your saved Jupyter notebooks; just remember that you need to copy them into the Downloads folder on the local machine whenever you want to use them, and then upload them back to your M drive once you have finished.

- Click the Windows Explorer tab on the task bar at the bottom of your screen.
- Double click Computer.
- Under the Network location heading, open the drive that is named as your university username.
- Make your folder somewhere in here.
- Name it something sensible that you will remember, such as Python.

To open a Jupyter notebook on a University cluster machine, go to

`Start > All Programs > Anaconda 3 (64-bit) > Jupyter Notebook (python35).`

This will open Jupyter in your browser. To find and open a Jupyter file you will need to make sure it is in your user space on the local machine. You should be able to open it by simply navigating to its location and clicking on it.