2.18: Introduction to Programming for Geoscientists

Course Overview

October 2015

Structure of the Course

- Course notes: http://ggorman.github.io/Introduction-to-programming-for-geoscientists

- Book: "A Primer on Scientific Programming with Python" by Hans Petter Langtangen

- 8 weeks of lecturing by:
  - Gerard Gorman, g.gorman@imperial.ac.uk
  - Christian Jacobs, c.jacobs10@imperial.ac.uk
  - Assisted by an awesome team of TAs.

- Assessment: 100% (practical, open book) exam

Motivation

- ▶ Basic programming skills are essential

- ▶ Enormous data sets – need to process/manipulate these

- ▶ Automating a repetitive task

- ▶ Extending existing software to do what you want

- ▶ Computer simulations of volcanic eruptions, seismic wave propagation, sediment transport, ...

Teaching Style

- Passive lecturing for 3 hours is ineffective
  - Typical adult student can maintain focus for 15-20 minutes
  - Programming is a practical skill - you learn by doing.

- This course uses blended learning: short (10 minute) lectures + longer practicals (30-40 minutes).

- Completing the exercises is key!!!!!!

- Solutions posted online after each lecture.

- Red and green sticky notes
  - Green: positive feedback
  - Red: negative feedback / "I need help"

Programming Language

- Python: a modern, general-purpose, high-level programming language

- Widely used in science & engineering

- Popular first language

- We will write and execute our Python programs using the IPython Notebook (opened up in either Anaconda or Canopy on your computers).