ACOM1900 Intro. to Programming: Introduction

Roy Ruddle

with thanks to Tony Jenkins & Nick Efford
(CR11 and previous ACOM1900 material)

Overview

- Objectives
- Module overview
- Getting started

Objectives

- Module
  - Programming & software engineering
    - Basic techniques
    - Design
    - Debugging & testing
    - Structured vs. object-oriented
  - Illustrated using Python
- You!
  - Why are you here?
  - Specific goal?

Programs & programming

- Program
  - Sequence of instructions that specifies how to perform a computation
- Programming
  - The act of writing a program
  - A skill, acquired through technical skill and experience
  - Part art, part science

"A programmer is a craftsman"

Programming languages

- Computer CPUs
  - Primitive devices that process very low-level instructions
- Human language
  - Too complex/vague/imprecise to be translated easily into CPU instructions
- So we need an intermediate form
  - Programming language
  - Python
    - Easier to learn than many other languages
    - Quick to get started
    - You can do "real" work with it

Module overview

- Lectures
- Assignments (most weeks)
- Lab sessions: 12-2pm Wed
- Assessment
  - 30% programming: deadline 25 Feb
  - 30% design: deadline 10 Mar
  - 40% programming: deadline 28 Apr
- Communication: acom1900@comp.leeds.ac.uk
- Recommended text
  - Telles, M. (2007). *Python power!* ISBN-13: 978-1-59863-158-6

Getting started

- Install Python
  - and DrPython IDE (preferably)
  - or decent text editor
- Buy *Python power*

Python fundamentals (1)

- Professionalism

```
# This is a comment
x = 1 # And so is this
```

- Indentation
  - Defines programme's meaning
- Strings can use
  - 'single quotes'
  - or "double quotes"
- Reserved words (p24-34)
  - and, break, for, if, return, while, etc.

Python fundamentals (2)

- Variables
  - Memory address that can be changed
  - Where you place your data
- Variable names
  - Start with character or underscore
    - Not a number (but can contain them)
    - a, _a, a1 (but not 1a)
  - Case sensitive (axb, axB, Axb, AxB)
  - Should be meaningful (not 'a'!)
- Array indices start at ZERO
  - a[0], a[1] ... a[n-1]

Python fundamentals (3)

- Scope
  - Where a variable may be accessed
  - Affected by
    - Global vs. local variable
    - Where defined
    - Indentation
- Operators (p42-53)

  + - * /

  += -= *= /=

  % (modulo; remainder)

Simple program

```
#!/usr/bin/python
#
# helloworld.py
# Print 'hello world'
# Roy Ruddle, 26 Nov 2007
#
print 'hello world'
```


Summary

- Objectives of module
- Fundamentals of Python

- Assignments
  - Install Python etc.
  - Complete Introduction worksheet