



Scientific Programming in Java

Introductory Talk (Part 2)

Dr Will Hossack
Department of Physics and Astronomy
The University of Edinburgh

W.Hossack@ed.ac.uk
<http://www.ph.ed.ac.uk/~wjh>





Why Learn a Language

All computer programs written in a Computing language, so it's the fundamental tool/skill in computing.

Also most packages have a user Language (eg Office tools use Visual-Basic).

Use of a package beyond “basic menus” involves a “Programming Language”, most languages have the same basic syntax.

Now is a good time to start!



Uses of Java

The Java languages has multiple uses, these being:

- **JavaScript:** Short sections of Java in Web pages to extent HTML.
- **Applets:** Small, self contained Java programs inserted into Web pages, run by your Browser.
- **Applications:** Stand alone programs that run on the local computer.

We will **ONLY** be writing Applications in this course, mainly concentrating of the syntax of the language.

Once you understand the basic programming ideas, other uses are much easier!



Why teach Java

- Modern, well designed language with many useful features.
- Machine independent, runs on Windows, Unix, Mac all identically.
- Consistent syntax with easy “object-oriented” structure (more in future courses)
- Built-in graphics, network, multimedia, Web compatible.
- Well placed to take over from C/C++.
- “Best guess” for most used language in “a few years” (when you graduate)

Currently numerical support rather poor but
Improving with new libraries.



What is a Program ?

- Set of Instructions which is loaded into computer memory.
- Ability to create, set and manipulate variables and arrays of variables.
- Executed in strict order.
- Control execution order with conditional tests and loops.
- Written in High-Level language (Java)
- Compiled to Low-Level instructions.
- Run on the computer, under the control of the “Operating system”

Sounds complex, much easier to explain using an example

Elements of Program

