SCALA

A FUNCTIONAL AND OBJECT-ORIENTED PROGRAMMING LANGUAGE

Benedict R. Gaster / @cuberoo_

UWE BRISTOL
University of the West of England

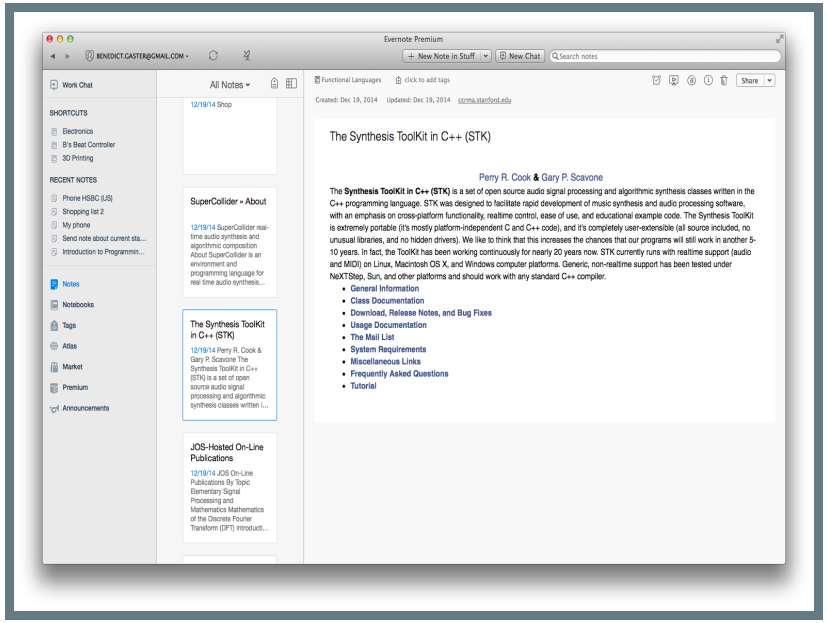
bettertogether

COMPUTER PROGRAMMING

Provide instructions so computer can peform tasks

COMPUTER PROGRAMMING

Prepackged software provides fixed solution, e.g.:



COMPUTER PROGRAMMING

- Allows you to write the software
- Allows you to tell the computer what to do

MACHINE LANGUAGES

- Low-level
- Verbose
- Prone to errors

NATURAL LANGUAGES

- Examples include English and French
- Ambigious and hard for computer to process
  - "The peasants are revolting" (http://simple.wikipedia.org/wiki/Ambiguity)

HIGH-LEVEL LANGUAGES

A middle ground

PROGRAMMING

Fun, creative, and satisfying

PROGRAMMING

Enables real world interaction with huge number of

- devices, e.g. smartphones, desktop computers, ...
- sensors
- controllers

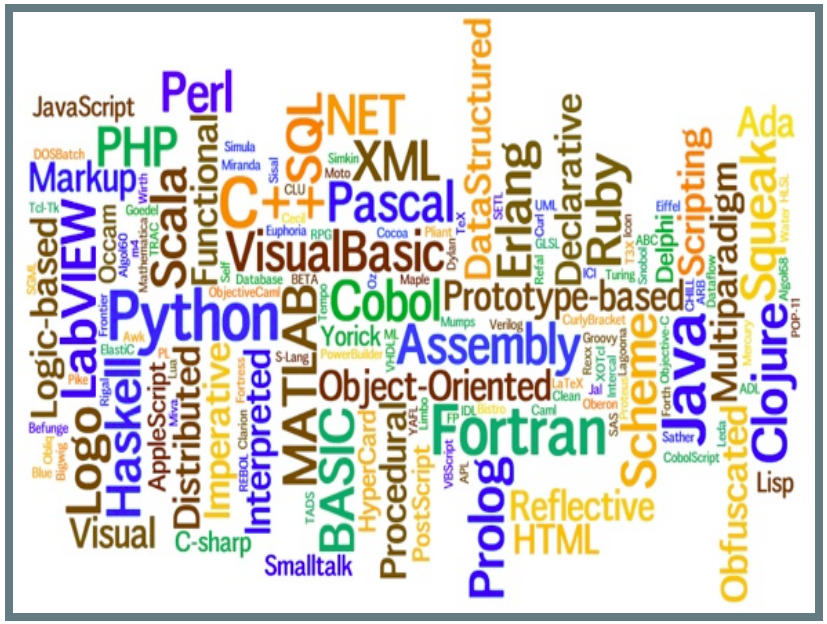
PROGRAMMING

- Found in all walks of life
- not only computer scientists write computer programs

BEGIN PROGRAMMING

First off, one must learn a programming language

WHICH PROGRAMMING LANGUAGE?



KNOW MANY PROGRAMMING LANGUAGES

Most "real" projects use multiple languages

FOR THIS COURSE

WHY SCALA?

- Scala is object-oriented---every value is an object
- Scala is an functional---every function is a value
- Scala is statically typed---helps catch errors early
- Scala is based on the Java Virtual Machine (JVM)
  Fully compatable with Java!

WHY SCALA?

Widely used, e.g. the web application library Scalatra used by:

- BBC
- Netflix
- Guardian News Paper

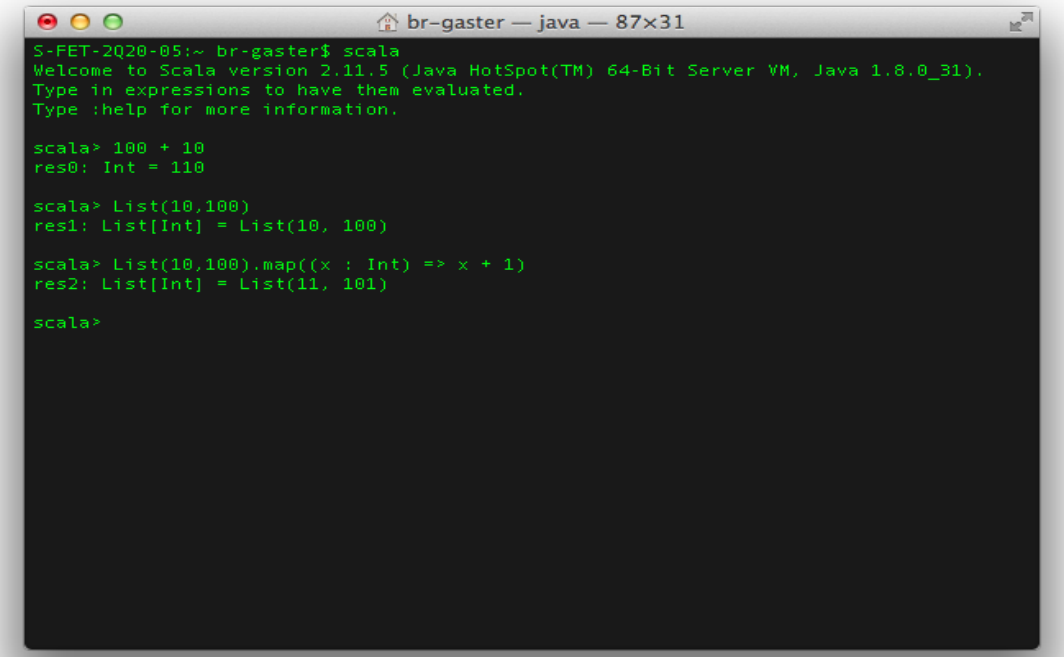
SETUP

- Main website: http://www.scala-lang.org/
- Download and install Scala 2.11.5 binaries for your system
- You will need a text editor (e.g. edit, vi, emacs, ...)
  - We will look at Intergrated Development Environments (IDE) later

PLAYING WITH SCALA

- The Scala tools provides a wide selection of utilites for developing Scala progams
- The command tool scala, a Read–eval–print loop (REPL) tool, allows interactive development of programs
- Great for learning to program or a new language

PLAYING WITH SCALA

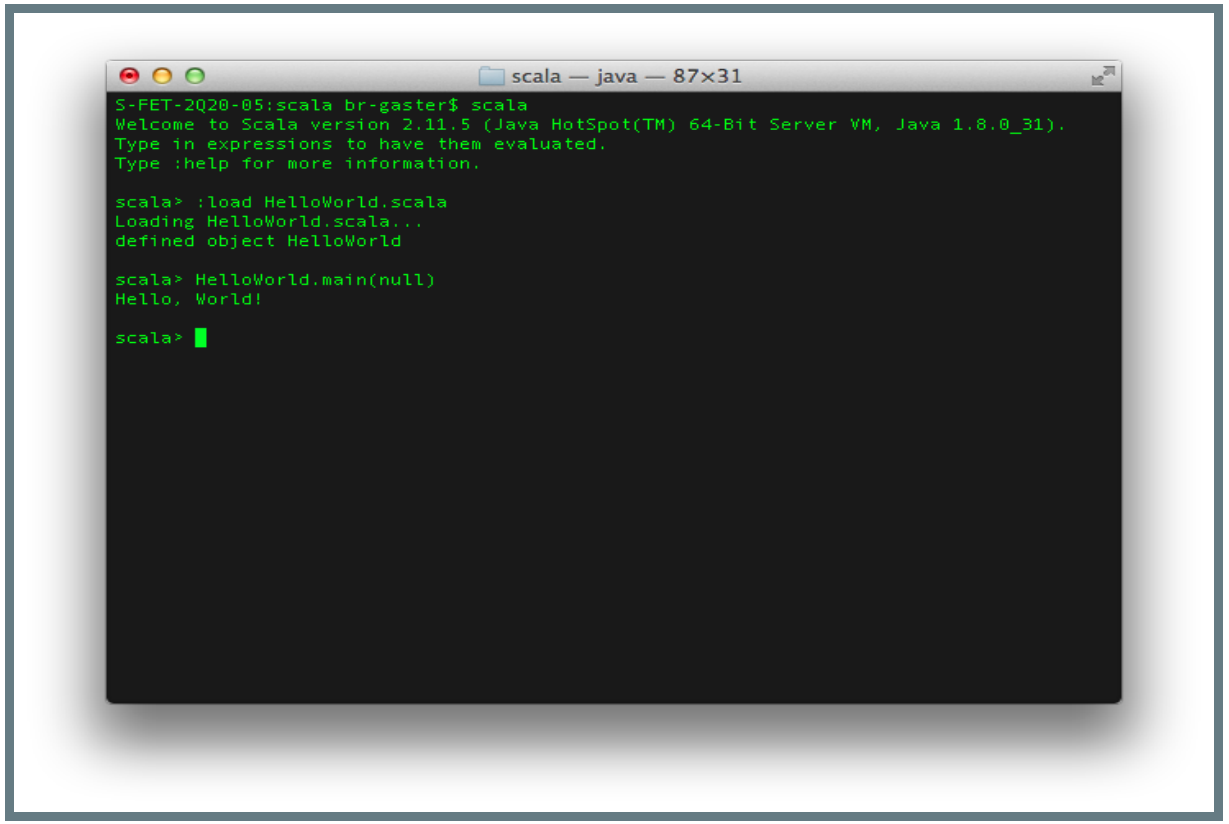


HELLO WORLD

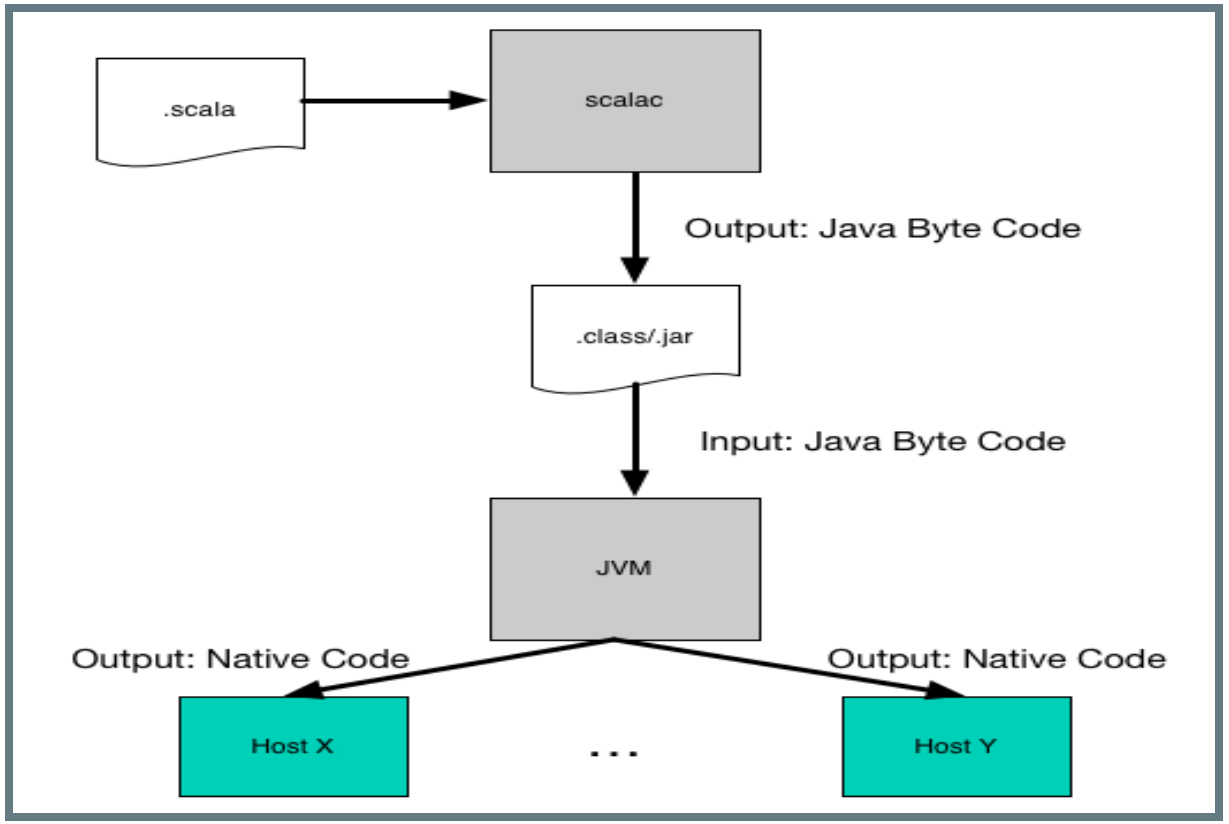
Create a program by typing it into text editor, call it HelloWorld.scala

```
object HelloWorld {
   def main(args: Array[String]) {
      println("Hello, World!")
   }
}
```

RUNNING HELLO WORLD



SCALA COMPILIATION FLOW



SBT - THE INTERACTIVE BUILD