CIS*2430

Lab 1

A whole new Java world!

OVERVIEW

1. Your TA's
2. Lab Format
3. Technology Overview
4. Netbeans walkthrough
5. First Java Program
   - Java program structure
   - Our First Class
   - How to access static methods
     - Print to screen
     - How to instance a class
   - Command line arguments
   - Run Code
6. How to compile and run code from command line
7. How to Submit assignment
8. (Optional) – Help install java and Netbeans on your laptop

LAB FORMAT

- Lab assignments will be held every other week
  - 5 lab assignments @ 2% each (completed work must be presented during lab!)
- Your first lab assignment will be next week !!!!

TECHNOLOGY OVERVIEW

- Java Version 6 or Higher
  - Make sure you test your code against this version
- The IDE will be NetBeans
  - It is installed on all lab computers and available for download free from the oracle website.
  - Runs on Windows, OS-X, Linux
- Java Docs
  - Documentation on all standard library classes, and methods

WHAT IS OBJECT ORIENTED PROGRAMING

- Object-oriented programing (OOP) is a programing paradigm using “objects” – usually instances of a class – consisting of data fields and methods together with their interactions – to design applications and computer programs. Programming techniques may include features such *as data abstraction, encapsulation, messaging, modularity, polymorphism, and inheritance*. Many modern programing languages now support OOP, at least as an option.
  - *Ref: http://en.wikipedia.org/wiki/Object-oriented_programming*

TYPES OF CLASSES WE WILL USE TODAY

- Regular class
  - Must be instanced
  - Variables are assigned and maintained by this class
  - Methods affect the variables within this class
- Static Class
  - Variables and methods do not change/are not assigned
  - This type of class may not need to be instanced
  - Regular classes can have static methods
  - Static methods are usually variable independent
- Immutable class
  - Once variables are set they do not change
  - If variables need to be changed a new class will be generated

EXTRA NOTES

- OOP vs. Procedural Design
  - Pros: Reusability, Scalability and Maintainability?
  - Cons: Efficiency
- JAVA vs. C & C++
  - Pros: Architechure independent (Portability), Memory Mgmt?
  - Cons: Bytecode vs. Machine Code

The problem with object-oriented languages is they've got all this implicit environment that they carry around with them. You wanted a banana but what you got was a gorilla holding the banana and the entire jungle.

- Joe Armstron

QUICK NOTES

- javac – command to compile a java application
  - Example: javac Lab1.java
- java - command to run java code
  - Example: javac Lab1
- System.out.println(“Static method to print to screen”);
- Scanner
  - A class that allows you to read in input from a stream
- String class is immutable
  - This means all methods return a new string with modifications
- Javadocs

SUBMIT INSTRUCTIONS

- Submit either zip file or tar.gz
  - Linux: tar -zcvf {compressed filename} {files/folders to be compressed}
  - Windows/Mac: Zip
- A readme file is required
  - Compile instructions
  - Run instructions
  - What you have implemented
  - Any bugs
  - Any other requirements as described by assignment
- All source code
  - Binaries are not necessary
- Make sure your code RUNS!
  - All code that does not run/compile gets an automatic grade of 0!
- Submit code via Moodle
  - Check that your submission was properly uploaded and that it is not corrupted!

SET UP JAVA Environment on Your Computer

- Install Java Developement Kit (JDK) with Netbeans
  - http://www.oracle.com/technetwork/pt/java/javase/downloads/jdk-netbeans-jsp-142931.html
  - Environment variable setup under Windows

    Control Panel -> System -> Advance -> Envrironment Variables -> System Variables -> Path: add JDK\bin the Path variable.

    Restart to make the change effective.

    e.g., C:\Program Files (x86)\Java\jdk1.8.0_11\bin;C:\Perl64\site\bin;... (note path strings separated by semicolon)