Introduction to Programming
with Java, for Beginners

Welcome

General Information

- Instructor:
  - Diana Palsetia (palsetia@seas.upenn.edu)
  - Location: 174 Moore, Office Hours: M: 1-2, 3-4 pm, W: 11-12 Noon

- Assistants:
  - TA: Leon Hermans
    - Email: leonoh@seas.upenn.edu, Office Hours: Monday 4:30-5:30, Thursday 1:30-2:30 and Saturday 2-3, Location: TBA
  - TA/Grader: Laxmi Nair (Email: laxmi@seas.upenn.edu, Office Hours & Location: TBA)

- Meeting Times:
  - T: 11-12 Noon in Towne 311
  - R: 11-12 Noon in Moore 207

Introduction

- ESE112 involves 2 components:
  - Engineering Lab w/ Theory (60%)
  - Computer Programming Recitation (40%)
    - Java Programming Language

- Java Placeout Exam
  - Sept 6: 2-3 pm in Levine 307
  - Sept 7: 10-11 am in Moore 101 (RCA Lab)
  - More info on topics visit http://www.seas.upenn.edu/~ese112/ESE112placeout.pdf
  - Type of questions: Java concepts, reading and understanding java program output. Writing parts of program in java language.

Computer Programming

- Computer Programming is sub-field of Computer Science

- It involves learning how to translate a complex problem/simulation/game in to a computing solution
Computing Examples

- User Information Assurance
- Digital Special Effects
- Performance Simulation
- Information Security
- Mars Rover

Source: http://www.physics.arizona.edu/~thews/reu/granados.html
Other Sources: http://coweb.cc.gatech.edu/~gt/gtSSE12 4/15

Computing

- Formal Definition:
  - The use of a computer to process data or perform calculations
- Early computers were people
- Advancement in electronics enabled computing devices that were faster than man
  - A computer no longer tied to the desk anymore!!
  - E.g. PDA, Cell phones

Source: http://cannon.sfsu.edu/~gmarcy/cswa/history/pick.html

Computer Science in General

- Computer Science is the study of
  - What can we do with computers?
  - Automate a known solution
  - How can we best do it
  - Investigate things we don’t know
  - Example: The Blue Brain Project by EPFL & IBM started in July 2005

How does CS fit with Engineering?

- Computer Science partners well with many fields: finance, engineering, graphics, linguistics, genetics, multimedia, etc.
- Its theoretical foundation lies in
  - Mathematics
  - Electrical engineering
- Where does Programming Craft fit in with ESE112?
  - Serve to computationally solve some of the engineering concepts that will be introduced
**Programming Languages**

- Computer Programming
  - Is telling the computer how to do something
  - Wikipedia Definition: Applies specific programming languages to solve specific computational problems with solutions

- Programming Languages
  - Unlike human languages
    - Designed for instructing computers to solve problems
    - The listener (the compiler) is exacting & unforgiving (grr!)
  - Like human languages
    - They have a grammar
    - We will be learning grammar for Java Programming Language

**Programming Language Syntax**

- Syntax is the grammar of the language
  - The Listener a.k.a Compiler will point out every syntax error
    - Analogous to rules in English Language:
      - Missing a period after sentence
      - Rules using verbs, nouns etc..
  - Error messages may be helpful
    - Often, they are not
    - You gain experience with error messages after a while

**Program**

- Writing a computational solution in a programming language
  - Known as writing a program

- When the computer carries out your solution
  - Running or Executing a program

- Computer Software/Application
  - Is made of one or more programs

**Programming Language Semantics**

- Semantics is the meaning of the program
  - We learn the semantics after we run or execute the program
  - Basically we observe the output
  - After the executing program, the semantics of the program may or may be correct
  - Semantic errors cause your answers to be wrong
    - E.g. Add the juice of three onions to a cake recipe
    - You may or may not get error messages
    - E.g. Error Message – Dividing a number by zero
  - If your program is not doing what you want it to do, though it runs, the error is semantic
Programming - The Craft

- People have different tastes in programming, but many values are held in common
- Programming is an art as well as a craft
- There are concepts fundamental to all programming languages
  - We will practice the fundamentals using Programming Language called Java
  - Java also has additional feature called Object Oriented Programming (OOP) model
    - Design problems/programs such that they correspond to real world entities

Our Web Site

- This site is our primary communication vehicle: http://www.seas.upenn.edu/~ese112
- Become familiar with it!!
- For homework/lab work submission (Digital Dropbox on Blackboard)
  https://courseweb.library.upenn.edu

Logistics

- Grades
  - 3 Exams: 55% (15%, 15%, 25%)
  - Homeworks: 30%
  - Lab: 15% (attendance grade! – 2 grace days, after which there is penalty for not attending)

- Late Policy for labwork & homework: 15% off per day upto 4 days and then no credit

- No makeup exams are scheduled. Conflict? Schedule in advance