

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

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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:** 10-11am 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.

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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*

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Computing Examples

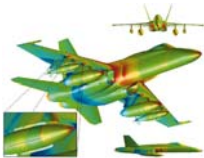


User information Assurance



Mars
Rover

Source: <http://www.physics.arizona.edu/~thews/reu/granados.htm>



Performance Simulation



Digital Special
Effects



Information Security

Other Sources: <http://coweb.cc.gatech.edu/ice-gt/274>

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Computing

- Formal Definition:
 - The use of a *computer* 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>

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Computer Science in General

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

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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

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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

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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

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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



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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**

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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

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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>

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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

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