

CS100M/CIS121/EAS121

Introduction to Computer Programming

Spring 2004
Lecture 1
Course Overview

Announcements

- No CS100M sections this week
- No TA office hours this week
- DIS's office: 1-2:30 today, 5137 Upson Hall... regular hours, appt times TBA
- CS100M/CIS121/EAS121:
 - <http://www.cs.cornell.edu/cs100m/2004sp>
- Partner list for assignments

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Why Are You Here?

- Requirement to take intro programming?
- Deciding between M or J or CS211?
- CIS121/EAS121?
- Self improvement? Intellectual curiosity?

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Why am I here?

- Teach you to program using MATLAB and Java
 - Problem decomposition and solving
 - Structured code and language elements
 - Basic data structures
 - Testing and debugging strategies
- Demonstrate applications in computational science
- Motivate you to develop skills and appreciation

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Course Description

- CS100: Introduction to Computer Programming
 - CS100M: ½ MATLAB, ½ Java
 - CS100J: 6/7 Java, 1/7 MATLAB
 - no experience assumed!
- CIS/EAS 121:
 - Just the MATLAB ½ of CS100M

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Choosing J or M?

- Content?
 - J: discrete, e.g., number guess
 - M: continuous, e.g., find root
- Direction?
 - engineering
 - CS
- Style?
 - MATLAB and Java
 - the class

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CIS/EAS 121

- Learn to program only with MATLAB
- Take followup course:
 - CIS122/EAS150: Application of FORTRAN in the Earth & Environmental Sciences
 - others in development?
- Administration:
 - Be part of CS100M! (same homework, exams, labs)
 - Some separation (partners, final exam)

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CS211

- Are you experienced?
- How experienced?
 - C++?
 - Objects? Classes? Inheritance? Polymorphism?
- CS211 can replace CS100!
 - take another engineering distribution course later
 - make up 1 technical credit

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CS99

- Introduction to the introduction of programming
- Not offered in Spring: Summer, Fall
- Assumes trepidation or desire for “pre-experience”
- Doesn't satisfy any requirements

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CS100: Topics

- Problem solving, algorithms, pseudocode
- Language elements, arrays, strings, characters
- Control structures, functions & methods
- Basic searching and sorting algorithms
- Plotting and data analysis
- OOP: encapsulation, inheritance, polymorphism
- Program development

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AEW

- Academic Excellence Workshop
 - additional material, parallel to course
 - cooperative environment
 - pass/fail, attendance
- See Section 6.3 on Syllabus
 - Sec 2, Wed, 7:30pm-9:25pm, Course ID: 544-076
 - Sec 4, Mon, 2:30pm-4:25pm, Course ID: 583-024

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Course Mechanics

- **Staff:** people, places, offices, contact info
- **Classes:** lecture and section
- **Classwork:** exercises, assignments, prelims, final exam, Code of Academic Integrity
- **Software:** CMS, MATLAB, Dr. Java, labs
- **Reading material:** books, notes on website

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Course Staff

- Instructor (me): David I. Schwartz,
dis@cs.cornell.edu, 5137 Upson
- Course administrator: Kelly Patwell,
patwell@cs.cornell.edu, 5147 Upson
- Lots of teaching assistants
- Lots of consultants: B101 Carpenter
- Where are we? Office hours?
See Staff link!

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Classes

- Lecture:
 - pick one lecture on Tue and one on Thu
 - identical content!
- Section:
 - every week, mandatory!
 - run in computer lab (ACCEL, Blue Room in Carpenter)
 - weekly exercise

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Classwork: Homework

- Exercises
 - in-class: weekly lab, sometimes lecture
 - occasionally home
 - binary grading
- Assignments
 - 6, large portion of course grade
 - grading: 5 for correctness, 5 for style
 - partners!

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Code Of Academic Integrity

- Three levels: course, CS dept, Cornell
- See links on website!
- The gist for assignments:
 - don't share code
 - don't work with more than the allowed number
 - rules for partners? See Section 8.2 in Syllabus

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Course Grades

- **Breakdown:**
 - Exercises (E) = 5% (all exercises)
 - Assignments (P) = 25%
 - Prelim 1 (T1) = 10%, Prelim 2 (T2) = 20%, Prelim 3 (T3) = 20%
 - Final (F) = 30%
 - drop lowest 10% of an exam
- **Cutoffs (see CS10J):**
 - 92: at least A-
 - 80: guarantees at least a B-
 - 65: guarantees at least a C-
 - 50: guarantees that you will not receive an F.

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Classwork: Exams

- Prelims
 - 3 prelims: 2/26 (ML), 3/18 (ML), 4/20 (JV)
 - Prelim 2 (+ a little bit) if CIS/EAS 121 final
 - dates, info, review online
 - conflicts? See link to registrar online
- Final Exam
 - May 18
 - about 1/3 MATLAB, 2/3 Java

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Software

- MATLAB
 - www.mathworks.com
 - bookstore, labs
- Java
 - DrJava
 - J2EE SDK 1.4.2 (the JDK)
 - www.djjava.org
- More info? See website

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Books

- CS100M/CIS121/EAS121: MATLAB Programming for Engineers, Chapman
- CS100M: An Introduction to Computer Science and Programming, Savitch
- Optional books?
- Posting of readings? See lecture notes online!

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What is programming?

- Definition: *automating problem solving*
- Problems?
 - “build application that solves...”
 - “build application that does...”
- Tools for solutions?
 - thought
 - pencil and paper
 - computers!

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Process

- Steps:
 - Problem stated
 - Problem written
 - Design conceived
 - Code written
 - Code tested
- Iteration!

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Example

- Write a program that says Hello, World!
- Thought process:
 - Start program
 - Output message
 - End program

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Solutions

- MATLAB:
`disp('Hello, world!')`
- Java

```
public class Hello {  
    public static void main(String[] args) {  
        System.out.println("Hello, world!");  
    }  
}
```

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