Introduction to Programming

CS100M Fall 2005
(CIS121 / EAS121)
Professor Daisy Fan

Today's lecture

- Course goals
- What is computer programming?
- Choosing among CS100 M, J, H
- Related courses
- Course objectives/policies (highlights)
- Example Matlab program

Course Goals

- Develop a practical intuition about problem-solving with the computer
- Develop a facility with the Matlab and Java programming environments.

Computer Programming

- Developing instructions for the computer to execute (in order to solve some problem)
- The steps must be logical
- Use a particular language *and follow the rules of the language* (grammar/syntax)

Example: *Adding songs from the internet to your music library*

- Find a website with MP3 or other audio files
- Register with the music site, if required for music downloading. (Don't steal music.)
- Click on the music file to download it onto your computer
- Drag the file to your library

Reference: iTunes

Example: *Adding songs from the internet to your music library*

- Drag the file to your library
- Click on a music file to download it onto your computer
- Find a website with MP3 or other audio files
- Register with the music site, if required for music downloading. (Don't steal music.)

These steps are out of order! Illogical!

Example: *Adding songs from the internet to your music library*

- Find a website with MP3 or other audio files
- Register with the music site, if required for music downloading. (Don't steal music.)
- Click [redacted] file to dowNload [redacted]
- file Drag your librAry to

Bad grammar (syntax)!

Key: Algorithmic Thinking

Algorithm:

A step-by-step set of rules to be followed in problem-solving.

Reference: Oxford Dictionary

Etymology of "Algorithm"

Algorithm

← Al-Kwarizmi

← Islamic mathematician/astronomer born in Baghdad in the 8th century.

Developed methods for arithmetic with the "new" Hindu/Arabic place-value system.

Computer programming is ...

- a tool used by computer scientists, engineers, and other professionals
- not computer science

Medical application: MRI

mritutor.org

- Imaging (vision)
- Software interface for display & analysis
- Data management
- Security

Course Objectives—highlights

- Develop and implement algorithms for solving problems
- Fundamental programming concepts
- Basic application of object-oriented programming
- Sort and search data
- Visualization of data

CS100: M or J?

M

- No prior programming experience
- 7 wks Matlab, 7 wks Java
- One semester of Calculus
- Math & engineering type problems

J

- No prior programming experience
- 12 wks Java,
- 2 wks Matlab
- No Calculus
- More nonnumerical problems

CS100 or CS 99?

CS99

Fundamental Programming Concepts

- A slower-paced introduction
- No prior computing or programming experience!
- Use Matlab
- Not a substitute for CS100

CS100 or CS 211?

CS211

Computers & Programming

- Use Java
- Require Java (or C++) object-oriented programming experience

ENGRI172—fall only

Computation, Information, and Intelligence

- Explore Computer Science through the lens of artificial intelligence
- A non-programming course
- Not a substitute for CS100 or CS99

CS100M Requirements—highlights

- Attend lectures and sections (labs)
- Monitor announcements on website
- Write all exams
- Do homework
- Adhere to Code of Academic Integrity

Grading

- Best 5 of six projects (25%)
- Section/Lab exercises, in-class quizzes (5%). We count best x of y items, x<y.
- Prelim 1 (10%)
- Prelim 2 (20%)
- Prelim 3 (20%)
- Final exam (30%)
- Less 10% of min{Pre1, Pre2, Pre3, Final}

Course Material

- Reading on Matlab will be available on the course website
- "*Absolute Java*" by Walter Savitch, 2nd ed.

Software

Optional (because of public labs)

- MATLAB Student Version R14
- DrJava

Consulting & Computing

- Consulting in Engineering Library computer clusters. Check course website for hours.
- Some public labs:
  - Upson B-7
  - ACCEL (Engineering Library, 2nd fl.)

Sections

Sec #	Time	Room
01	T 12:20-1:10pm	UP B7 Right & OH 245
02	T 1:25-2:15pm	UP B7 Right & HO 306
03	T 2:30-3:20pm	UP B7 Right & HO 306
04	T 3:35-4:25pm	UP B7 Right & HO 206
05	W 12:20-1:10pm	UP B7 Right & UP 205
06	W 1:25-2:15pm	UP B7 Right & HO 306
07	W 2:30-3:20pm	UP B7 Right & OH 165
08	W 3:35-4:25pm	UP B7 Right & HO 306

Academic Excellence Workshops

- Small, collaborative classes parallel to course
- Classes begin next Thursday in CLCLCL in Uris Library

CS100M	M 7:30-9:25pm
	W 2:30-4:25pm
CS100J	M 2:30-4:25pm
	F 2:30-4:25pm

What to do now?

- Pick a course (and section)
  (add/drop: lecture and section and AEW)
- Check course website
- Start reading from the "text" on course website (Sec 1.1)
- Attend lab (Upson B-7) next week