Plan for Today

- Introductions
- Course Logistics
- Meet Karel the Robot
Who Are We?

Sarai Gould
B.S. Symbolic Systems ‘16
CS Specialist @ Synapse School

Laura Cruz-Albrecht
B.S. Computer Science ‘18
M.S. Computer Science ‘19
What is CS106A?
What is Computer Science?

- The art of using computing to solve complex problems
  - Specify instructions that computers execute, usually in a programming language
- Applicable to art, medicine, linguistics, and more
- Touches many aspects of our daily lives
There are many awesome programs you may one day write...
Computer Graphics
Personal Assistants

Hi, how can I help?
Autonomous Surgery
Self Driving Cars
Games
Image Processing

Loaded image VanGogh-StarryNight.png.

Load Image
Save Image
Overlay Image
Compare To Image
Rotate Left
Rotate Right
Flip Horizontal
Negative
Green Screen
Blur
Crop
Equalize

(x=203, y=244) (R=132, G=173, B=136)
Internet Applications
What is CS106A?

- **Programming Methodology**
  - Focus on computational problem solving, not syntax
  - Develop good software engineering style
  - Use the **Java** programming language
  - No former programming experience required

- **Topics include**
  - Karel the Robot
  - Text-based programs
  - Graphics and animation
  - Games
  - And more...
Why Java?

Job Postings Containing Top Languages

<table>
<thead>
<tr>
<th>Language</th>
<th>Posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Java</td>
<td>66K</td>
</tr>
<tr>
<td>Python</td>
<td>62K</td>
</tr>
<tr>
<td>Javascript</td>
<td>38K</td>
</tr>
<tr>
<td>C++</td>
<td>37K</td>
</tr>
</tbody>
</table>

indeed.com, January 2019

https://www.codingdojo.com/blog/the-7-most-in-demand-programming-languages-of-2019
Plan for Today

- Introductions
- Course Logistics
- Meet Karel the Robot
Course Logistics

Course Website:

http://cs106a.stanford.edu

Lectures:

M-Th, 10:30am - 11:20am in Bishop Auditorium

Exams:

Midterm: Monday, July 22nd, 7pm - 9pm
Final: Saturday, August 17th, 8:30am - 11:30am
Units

Stanford Grad Student?

- no
  - 5 units
- yes
  - 3-5 units
Course Materials

Art and Science of Java

Karel the Robot Learns Java

Link to Interactive Course Reader
Grading

Grade Breakdown

- Final: 30.0%
- Midterm: 15.0%
- Assignments: 45.0%
- Section & Feedback: 10.0%
6 assignments (some individual, some in pairs) completed using Eclipse

- Free software, on course website
- **Homework:** set up Eclipse!
- Come or LaIR or Office Hours for help

Graded on:

- **Functionality** (behavior)
- **Style** (elegance)
The Bucket System

✓ + satisfies all requirements
✓ satisfies all requirements with minor issues
The Bucket System

++  submission so good, it “makes you weep”
+
✓+  satisfies all requirements
✓   satisfies all requirements with minor issues
✓-  falls short of requirements with moderate issues
-   falls short of requirements with severe issues
--  not completed or not functional
Assignments are due at **10:00am** (30 min before lecture)

You have 3 “Late Days” for the quarter.

- Each “Late Day” gives you a 24 hour extension with no penalty.
- You may combine up to two late days for a 48 hour extension.
- After all late days are used, you will lose one bucket in functionality and style per day your assignment is late.
Section

- Weekly 50-minute sections led by your section leader.
- Go over lecture materials, do practice problems, answer questions.
- Graded on section attendance and participation.

*Homework:* sign up for a section on the course website!
Exams:

- **Midterm**: Monday, July 22nd, 7pm - 9pm
  - Email the instructors by **July 8th** if you have an academic or University conflict or OAE accommodations.

- **Final**: Saturday, August 17th, 8:30am - 11:30am
  - **No alternate final!** You MUST be able to take the final exam at the scheduled time (except for OAE accommodations).
Lecture Feedback

- You’ll be assigned to give anonymous feedback on two lectures throughout the quarter.
- Submit your comments by 10AM on the Monday following each lecture.
- See the “Lecture Assignments” document under the “Lecture” dropdown on the website for more details.
Office Hours and Help

LaIR Hours (aka Section Leader Office Hours):
Sun - Wed, 7-11pm in Tressider Union (first floor, in the food court area)

Sarai’s and Laura’s Office Hours:
Mon and Wed, 1:30 to 3:30 in Gates B02

Piazza:
Forum for asking & answering questions; check website
2 Minds are (sometimes) Better than 1

● Some assignments may optionally be done in pairs
● Both partners receive the same grade
● A chance to brainstorm ideas and work with another programmer
● **MUST be in the same section!**
  ○ put the same section preferences to make this happen!
● More info in handout #1 and on the course website
Plan for Today

- Introductions
- Course Logistics
- Meet Karel the Robot
Meet Karel the Robot!
Karel’s World
Streets (rows)
Avenues (columns)
Corners (locations)
Walls
Beepers
What Can Karel Do?

Karel Can:

move();

turnLeft();

putBeeper();

pickBeeper();
Clean Your Room!

Karel needs to pick up the Beeper and put it back on the shelf!
Clean Your Room!

Karel needs to pick up the Beeper and put it back on the shelf!

move();
Karel needs to pick up the Beeper and put it back on the shelf!

```java
move();
pickBeeper();
```
Karel needs to pick up the Beeper and put it back on the shelf!

move();
pickBeeper();
move();
Clean Your Room!

Karel needs to pick up the Beeper and put it back on the shelf!

move();
pickBeeper();
move();

What next? Karel needs to putBeeper(); on the shelf!
Let’s Code It!
Methods

A **method** is a new set instructions we’ve created!

```java
/* Comment describing method */
private void nameOfMethod()
{
    // command 1
    // command 2
}
```
Wrap-up

- Introductions
- Course Logistics
- Meet Karel the Robot

Homework:
- Set up Eclipse (instructions on course website)
- Sign up for section on course website
- Assignment 0: Tell us about yourself - https://bit.ly/2X0Pmzz

Next time: More adventures with Karel!