CSE 121 Lesson 16: Victory Lap

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Announcements, Reminders

• All programming / creative assignments due 8/16 at 11:59 pm
  • P3 deadline extended
  • All assignments eligible for both R6 and $7
• Tomorrow is the last day for IPL + instructor office hours
• Final Exam: Friday, 8/16 from 12:00-1:00 pm in PCAR 290
• TA-led Review Session: Today, 8/14 from 4:30-6:00 on Zoom
  • Will go over practice final 1, give it an attempt before you attend!
  • Will be recorded, TAs will post link on the Ed board
• Review our extensive Exam Resource Bank!
Evaluations and Awards

• Course Evals are due **Sunday, June 2nd at 11:59 PM**
  • currently just 16% (36/219) – we can do better than that :’)

• CERSE survey – please see Dan Grossman’s email!
  • This is a **different** kind of feedback from course evals

• Bob Bandes TA Award nominations open!
You did it!!
Learning Objectives

or, “What will I learn in this class?”

• Computational Thinking
• Code Comprehension
• Code Writing
• Communication
• Testing
• Debugging
(Reflection) Learning Objectives

- Understand and analyze the *impacts* of technology on society
- Identify and challenge predominant norms and assumptions in computing
- Understand both the strengths AND limitations of computing (e.g. what kinds of problems can we *not* solve with computers?)
- Identify applications of computing to non-tech fields of study and industries
- Identify how we can use computing to serve our communities
- Understand disparities in access to computing, and the consequences of these disparities
(Optional) Using `String[] args`!

String[] args is just a parameter to our main method...but we never call `main`, so how do we pass anything to args?

When we run our program from the terminal, we can pass "command-line arguments" to the main method, and they become the contents of args.

```
javac MyProgram.java
java MyProgram these 7 words will go in args
```
Applications of CS
or “What can I do with what I learned?” – outside of just “write code”:

• Detect and prevent toxicity online & recognize disinformation
• Help deaf & hard-of-hearing people identify sounds
• Develop a programming language that celebrates the world’s languages
• Build battery-free robots & put them on insects (and... track murder hornets?)
• Computational knitting & carpentry
• Create an interactive atlas of millions of refugee experiences
• Fix Olympic badminton & identify cheating in chess
• and so much more!
... including your projects! (1/2)

- Computational Biology & Medicine (P2, P3)
  - fun fact: Matt did some DNA sequencing (P3+++ in grad school at UCLA!
  - at UW: Chris Thachuk, Linda Shapiro, Sara Mostafavi, Sui-In Lee; BIME & Med!

- Turtle (C0, C1)
  - fun fact: maps well to stitching & embroidery or laser cutting!
  - at UW: “Cultural-Centric Computational Embroidery”, CSE + iSchool, SIGCSE ’24
... including your projects! (2/2)

- Games & Graphics (C1, C3):
  - fun fact: Foldit (from UW) is a crowd-sourced game for protein folding!
  - at UW: many labs in CSE and iSchool’s GAMER group

- Social Computing (P1, C2):
  - at UW: Amy Zhang’s Social Futures Lab + so much of iSchool!
  - and many side quests (in lecture, section, PCM): accessibility (e.g. UW CREATE), weather forecasting, chatbots, software tools, and lots of math
## Future Courses

*or “What can I do next?”*

### Non-majors

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<th>Course</th>
<th>Overview</th>
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<tbody>
<tr>
<td>CSE 154</td>
<td>Intro. to web programming (several languages)</td>
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<tr>
<td>CSE 160</td>
<td>Intro programming, data analysis (Python)</td>
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<tr>
<td>CSE 163</td>
<td>Intermediate programming, data analysis (Python)</td>
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<tr>
<td>CSE 180</td>
<td>Introduction to data science (Python)</td>
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<tr>
<td>CSE 373</td>
<td>Data structures and algorithms (in Java)</td>
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<td>CSE 374</td>
<td>Low-level programming and tools (C/C++)</td>
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<tr>
<td>CSE 412</td>
<td>Intro to Data Visualization</td>
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<tr>
<td>CSE 416</td>
<td>Intro. to Machine Learning</td>
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### Majors

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<tbody>
<tr>
<td>CSE 122</td>
<td>Introduction to Computer Programming II</td>
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<td>CSE 123</td>
<td>Introduction to Computer Programming III</td>
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<tr>
<td>CSE 311</td>
<td>Mathematical foundations</td>
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<td>CSE 331</td>
<td>Software design/implementation</td>
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<tr>
<td>CSE 340</td>
<td>Interaction programming (mobile apps)</td>
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<tr>
<td>CSE 341</td>
<td>Programming languages (!!)</td>
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<tr>
<td>CSE 351</td>
<td>Low-level computer organization/abstraction</td>
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### More 12X!


Other tech-related majors:
Informatics, ACMS, HCDE, Electrical & Computer Engineering, ...
Frequently Asked Questions

• **How can I get better at programming?**
  • Practice!

• **How can I learn to X?**
  • Search online, read books, look at examples :)

• **What should I work on next?**
  • Anything you can think of! ([Here are some ideas](#))
  • **Beware:** it’s hard to tell what’s easy and what’s hard.

• **Should I learn another language? Which one?**
  • That depends—what do you want to do?

• **What’s the best programming language?**
  • 😞 (take CSE 341 or CSE 413)
Summer Project: Tic Tac Toe (1/2)

Build your own Tic Tac Toe game (and “AI”)!

1. How would you represent a Tic Tac Toe game in Java?
   (hint: arrays will be very, very helpful!)
2. Write a method that tells you if a Tic Tac Toe game is won (or playable).
3. Write a method that gets input from the user and “makes” a move.
4. Wrap it all up – into a nice two-player game!
Wait, there’s more!

Make some “AI” that...
• just makes a random valid move (you should be able to beat this!)
• tries to make a “good” move (~ some if statements)
• never loses
  • Tic Tac Toe is a “solved game”: a perfect player will never lose.

Or, extend this idea to other grid-based games!
• similar-ish: connect four, checkers, battleship
• much harder: sudoku, chess, go, othello
Thank your **AMAZING** TAs!!!!!!
Thank you!

Ask Me (Almost) Anything!

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Feel free to leave if you want, no hard feelings!