

CSE 121 Lesson 16: Victory Lap

Simon Wu

Summer 2024

TAs:	Trey	Hannah	Mia	Vivian	Jolie	Colton	Ziao
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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

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

More 12X!

Course	Overview
CSE 122	Introduction to Computer Programming II
CSE 123	Introduction to Computer Programming III

Majors

Course	Overview
CSE 311	Mathematical foundations
CSE 331	Software design/implementation
CSE 340	Interaction programming (mobile apps)
CSE 341	Programming languages (!!)
CSE 351	Low-level computer organization/abstraction

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

See: <https://www.cs.washington.edu/academics/ugrad/current-students> and <https://www.cs.washington.edu/academics/ugrad/nonmajor-options/nonmajor-courses>

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)



IN CS, IT CAN BE HARD TO EXPLAIN THE DIFFERENCE BETWEEN THE EASY AND THE VIRTUALLY IMPOSSIBLE.

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!

Summer Project: Tic Tac Toe (2/2)

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!