LEC 00

CSE 122

Welcome!

Questions during Class?

Raise hand or send here

sli.do #cse122

BEFORE WE START

Talk to your neighbors:

Introduce yourself to your neighbor!

What is your name? Year? What did you do over summer break?

Instructors: Ivory Wang & Colin Lim

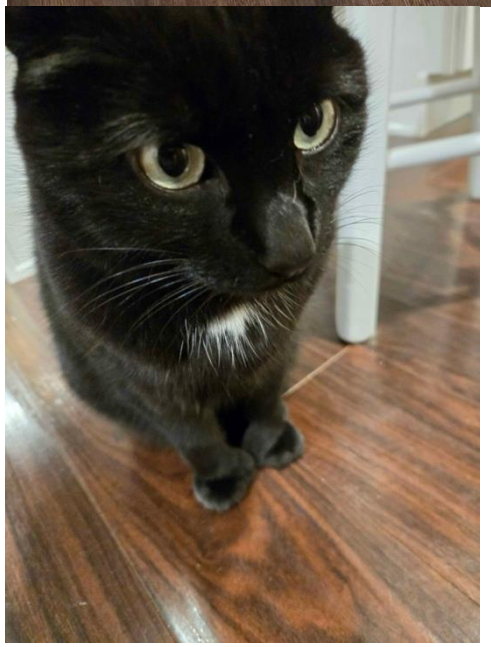
TAs: Dani
Rohan
Wesley
Connor
Yang

Lecture Outline (1/6)

- Introductions
- About this Course
  - Course Components & Tools
  - Grading
  - Policies
- Intro/Review Java
- In-Class Activities
- Functional Decomposition
- Code Quality

Course Staff

- Instructors: Ivory Wang, Colin Lim
- Call us: Ivy/Ivory & Colin
- Teaching Assistants: 5 Fantastic TAs!
  - Available in section, office hours, and discussion board
  - Invaluable source of information & help in this course
- We're excited to get to know you!
  - Our goal is to help you succeed ☺



Students

- Currently 35 students registered for the course!

- Strength in numbers
  - With 35 students, if you're confused about something, we guarantee someone else is too! Ask questions in Slido or in class 
  - Students come from all different backgrounds, majors, & interests in future career goals.

- Focus on us trying to help you build community
  - Meet others in the class to form study groups or have people you can work with.

CSE 12x Behavioral Expectations

- Be professional towards:
  - Fellow Students
  - TAs
  - Instructor
- Ask questions, help others, be a good 12X citizen!
- Treat everyone as you wish to be treated.
- You are in college—you have college-level responsibilities.

What is this Class?

CSE 121 – Computer Programming I or Other Programming Experience

- Print statements
- Data types (int, String, boolean)
- Methods / Functions
  - Parameters
  - Returns
- Control structures
  - Loops
  - Conditionals
- Arrays & 2D arrays
- **Computational Thinking** (language agnostic)

CSE 122 – Computer Programming II

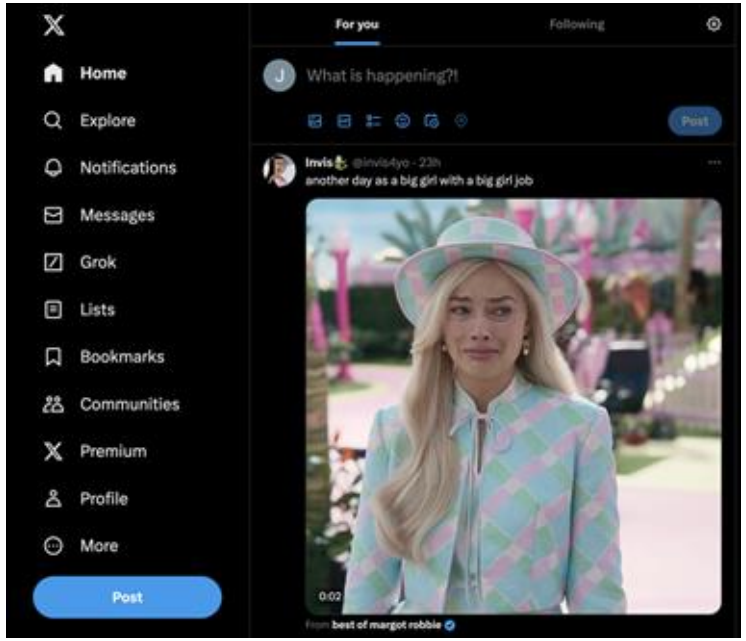
- Decomposing large problems into smaller, manageable subproblems
- File I/O
- Using data structures
  - List
  - Stacks / Queues
  - Sets
  - Maps
- Object Oriented Programming
  - Interfaces

Prerequisite Knowledge

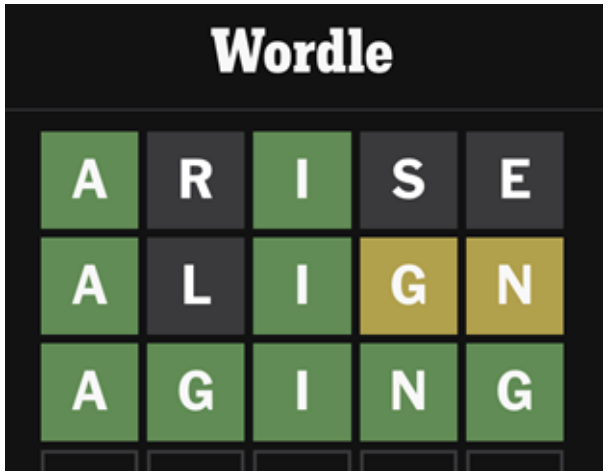
- Students entering CSE 122 are coming from many of different backgrounds
  - UW: CSE 121 or other intro programming course
  - Community College: Intro Programming Course
  - High School Programming Course (e.g., UWHS, AP CS, IB CS, etc.)
  - Self-taught or other previous experience
- Importantly: CSE 122 is in Java, but we **do not expect prior experience in Java!** Do expect knowing the list of CSE 121 topics in some language.
  - Students who do not have experience in Java will be focusing on practicing the programming skills you know in a new language!
  - You will find the Java Tutorial and Creative Project 0 very helpful!
- If you want to know if this class is the right fit for you, take the Allen School Self-Placement Test

Why 122? (1/2)

1. Build a strong foundation of data structures that will let you tackle the biggest problems in computing



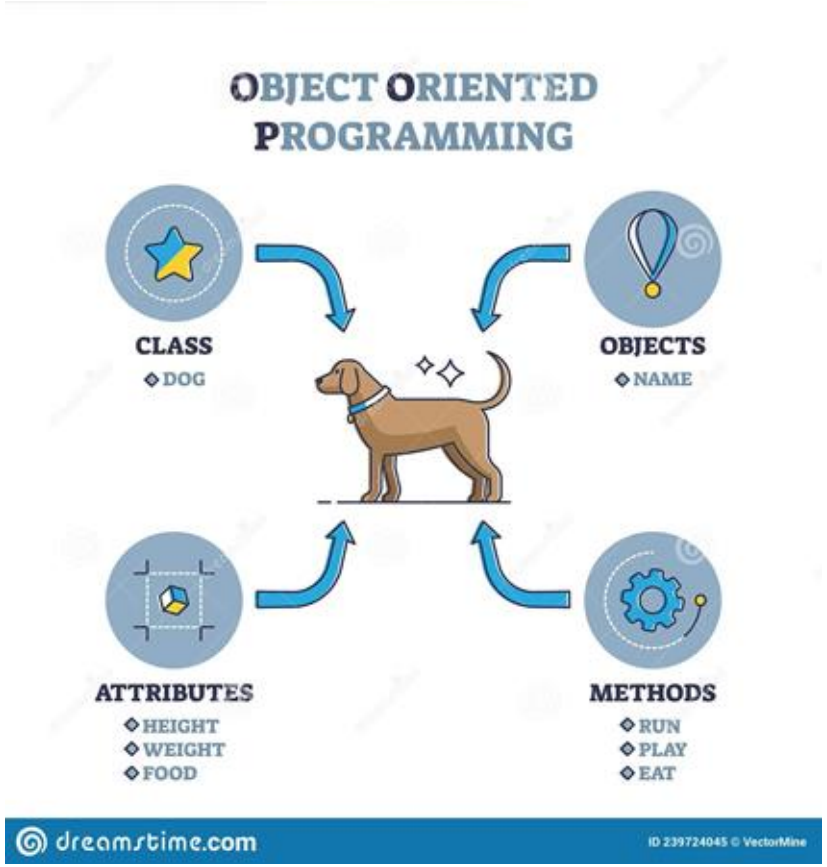
122 Data Structures



Why 122? (2/2)

2. Learn an important structural pattern for representing **objects** in code to make our code more **reusable** and **maintainable** and **easier to understand.**

- Java is designed around this idea of ***objects***. We haven't been leveraging that yet!
- Used in almost every real-world software project.



Lecture Outline (2/6)

- Introductions
- About this Course
  - Course Components & Tools
  - Grading
  - Policies
- Intro/Review Java
- In-Class Activities
- Functional Decomposition
- Code Quality

Course Components

Meetings

LECTURES (x14)

- Introduce concepts, practice ideas, discuss applications.
- Pre-class materials to prepare for class each day. Due **before** class.
- Recorded 

SECTIONS (x13)

- More practice, reviews, applications
- TA advice, how to be an effective student
- Preparation for quizzes / exams
- Incentives to attend this quarter!
-  Not Recorded! 

Assessments

PROGRAMMING ASSIGNMENTS (x4)

- Structured assignments
- Programming in Java
- Applying & implementing course concepts

CREATIVE PROJECTS (x3)

- More open-ended assignments
- Explore new ideas and applications

QUIZZES (x3)

- Taken in quiz section
- 55 minutes on paper

EXAM (x1)

- Culminating exam
- **August 19 & 21, 2026 (both days required!)**

Resubmissions

Learning is a challenging process that takes time, it doesn't always happen on your first try.

- Each week, one previous Programming Assignment or Creative Project can be resubmitted
  - Must be accompanied by write-up explaining changes
  - Grade on resubmission replaces original grade.
  - An assignment can be resubmitted in the 3 cycles after feedback has been published
  - *Tip: Resubmit as early as possible*

See syllabus for more details

Section Credit

- Students receive "section credit" for a quiz section by attending and engaging in the quiz section's class and activities.
- Section credit is logged and tracked by TAs on behalf of students.
- Students will be able track and verify their participation credits on Gradescope.
- Section 0 will be a freebie!

Section Credit

- Students can earn **one extra resubmission** at the end of the quarter by participating in 8+ sections throughout 26su!
- Missing a quiz section will not count against you, but attending section can help you earn that extra resubmission to use at the end of the quarter.

Graded Course Components

- Each mark is graded on the scale:
  - **E**(xcellent)
  - **S**(atisfafactory)
  - **N**(ot yet)
- Your grade will consist of the following categories:

Category	#	Marks per	Total Marks
Programming Assignments	4	4 (Behavior, Concepts, Quality, Testing/Reflection)	16
Creative Projects	3	4 (Behavior, Concepts, Quality, Testing/Reflection)	12
Quizzes	3	6 (3 questions)	18
Exam	1	12 (6 questions)	12

Course Grades

In assigning course grades, we'll use a bucket system:

- Marks earned place in an initial bucket, additional S+ marks improve grade.
- Must meet all requirements of a bucket for initial placement.
- These are minimum GPA guarantees – grade can always be higher than minimum promise.

Minimum Grade	Assignments	Quiz/Exam Problems
3.5	22 E **AND** 2 additional S+ **AND** no Us	20 E **AND** 2 additional S+ **AND** no Us
3.0	18 E **AND** 4 additional S+ **AND** no Us	16 E **AND** 4 additional S+ **AND** no Us
2.5	14 E **AND** 6 additional S+ **AND** no Us	12 E **AND** 6 additional S+ **AND** no Us
2.0	18 S+	16 S+
1.5	11 S+	9 S+

S+ indicates S or E

Getting Help

- Discussion Board
  - Feel free to make a public or private post on Ed
  - We encourage you to answer other peoples' questions! A great way to learn
- Introductory Programming Lab (Office Hours)
  - TAs can help you face to face in office hours, and look at your code
  - You can go to the IPL with **any** course questions, not just assignments
- Section
  - Work through related problems, get to know your TA who is here to support you
- Your Peers
  - We encourage you to form study groups! Discord or Ed are great places to do that
- Email
  - We prefer that all content and logistic questions go on the Ed discussion board (even if you make them private). 35 of you >>> 7 of us!
  - For serious personal circumstances, you can email us directly. It never hurts to email us, but if it's a common logistic question, we may politely ask you to post on the discussion board instead.

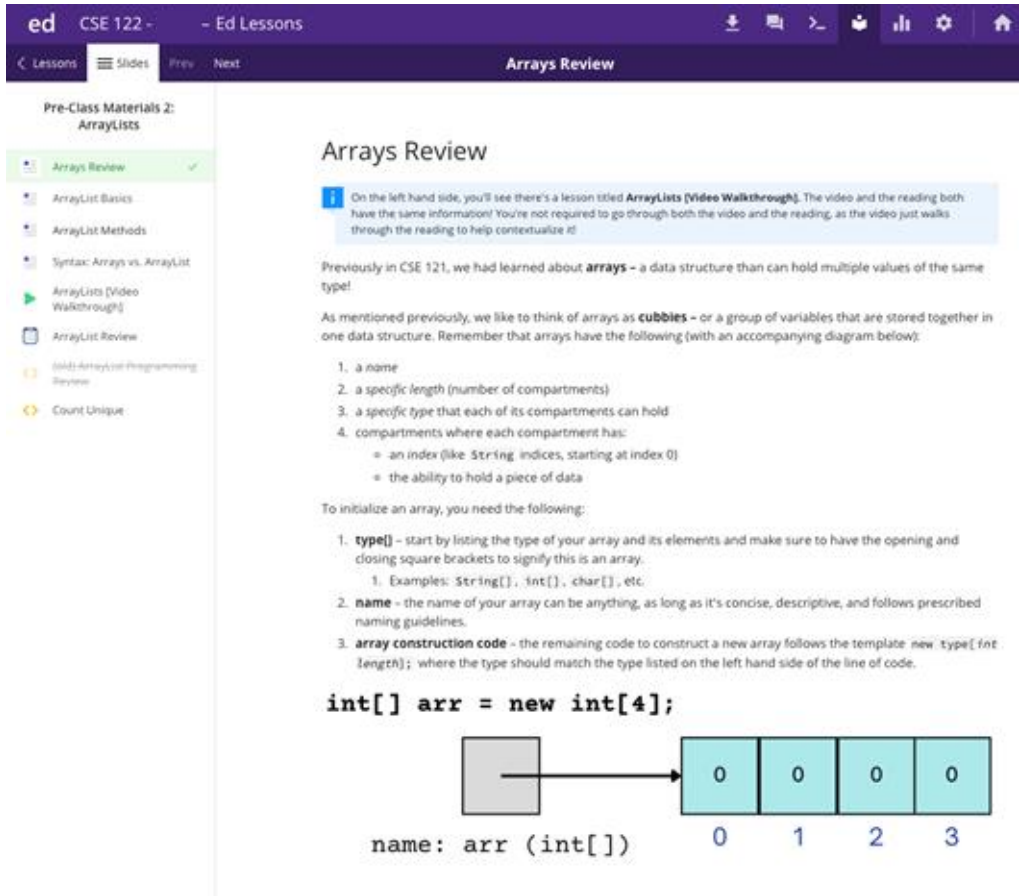
Collaboration & Resources

- These concepts are challenging—we strongly encourage discussion + collaboration!
  - Don't attempt to gain credit for something you didn't do
  - In general, share ideas and work together, but don't copy work. Never show someone else your code or solution write up.
  - For any ungraded work (e.g., pre-class materials) there is no concern about academic misconduct! You should be collaborating on those without reservation.
  - On graded assignments you should still collaborate, but the code you write should be of your own creation.
  - **Submitted work must be done completely without LLM/AI tool help.**
  - Be aware of and avoid use of **Forbidden Features** in submitted work
  - Always cite the help you receive on graded work
- **Read full policy in Syllabus**

Textbook

Pre-class Materials

- All required readings are available free on Ed!
- Should be finished before class (not graded)

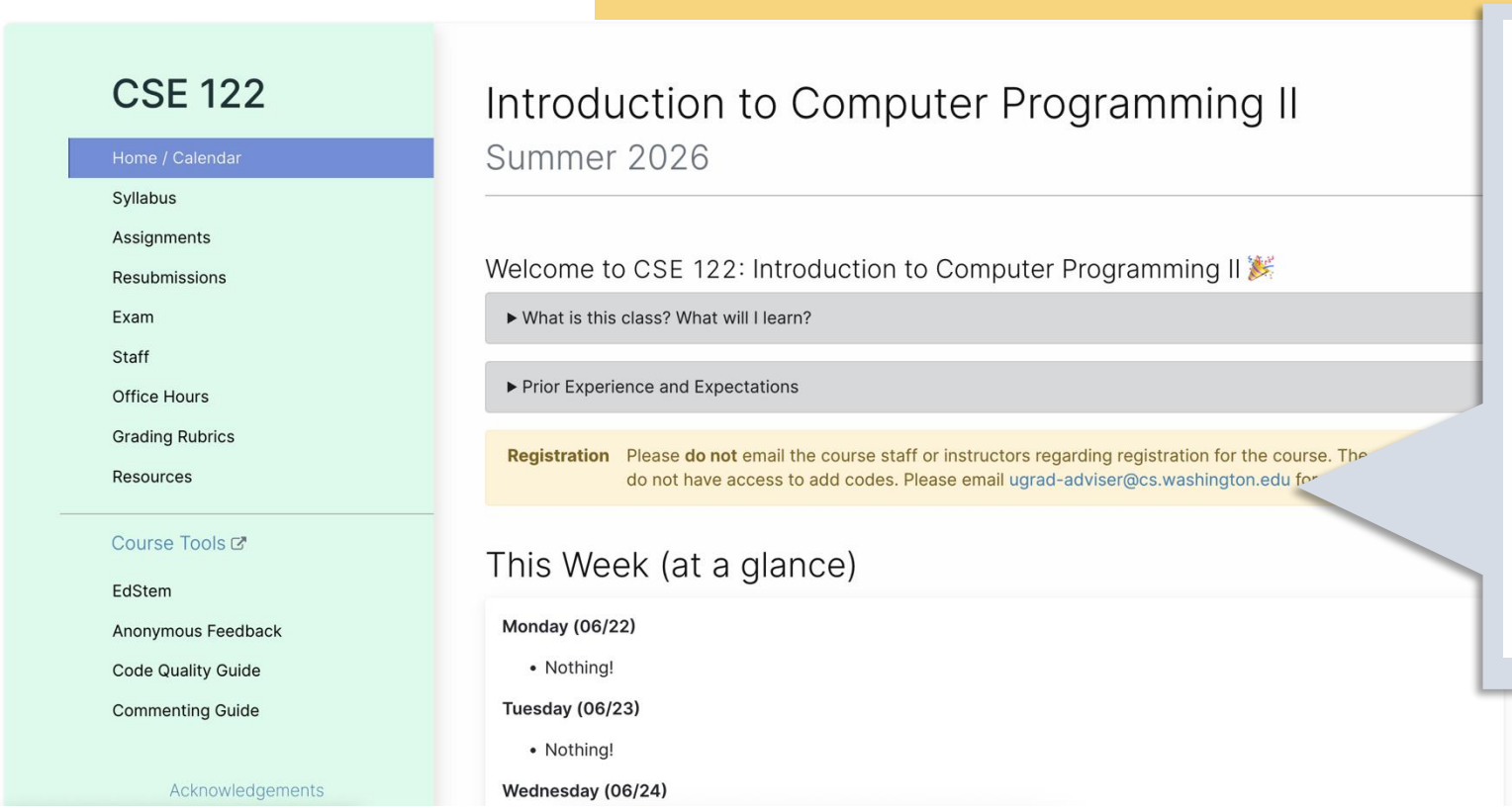


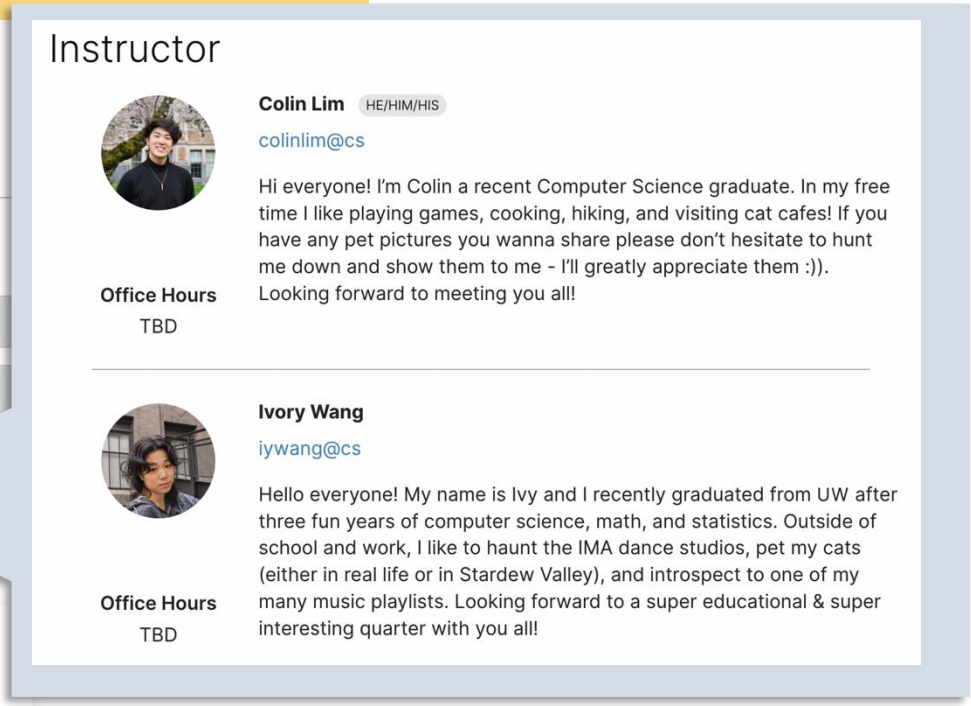
Optional Textbook

- Building Java Programs by Reges and Stepp (5th Edition)
- Not required but does add another perspective. Will reference relevant chapters.
- Advice: only purchase if you learn best with a textbook, otherwise not recommended.

Course Website (1/2)

cs.uw.edu/122



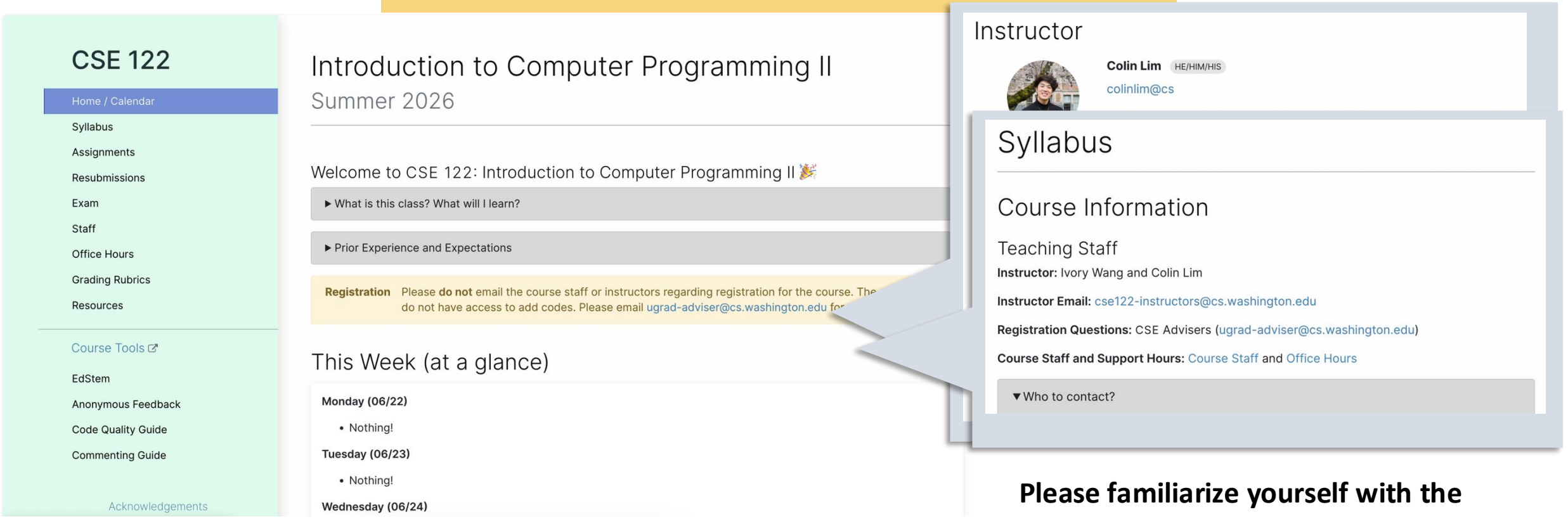


Get to know the course staff

Contains most course info – check frequently!
Calendar, Lecture Slides, Office Hours schedule, Staff Bios, Important Links

Course Website (2/2)

cs.uw.edu/122



Please familiarize yourself with the course syllabus this week!

Contains most course info – check frequently!
Calendar, Lecture Slides, Office Hours schedule, Staff Bios, Important Links

Other Course Tools

Ed

- Community & Information
  - Discussion Board
    (please ask & answer!; anonymous option)
  - Chat
  - Announcements
- Pre-Class Materials / Section Handouts
- Assignments
  - Online IDE
  - Submit assignments
  - View Feedback

My Digital Hand

- Queueing in office hours

VSCode (Optional)

- Develop offline
- Visual debugger

Canvas

- Lecture recordings

Sli.do

- In-class activities
  (ungraded)
- No account needed

Lecture Outline (3/6)

- Introductions
- About this Course
  - Course Components & Tools
  - Grading
  - Policies
- **Intro/Review Java**
- In-Class Activities
- Functional Decomposition
- Code Quality

Review Java Syntax

Java Tutorial reviews all the relevant programming features you should be familiar with (even if you don't know them in Java).

- Printing and comments
- Variables, types, expressions
- Conditionals (if/else if/ else)
- Loops (for and while)
- Strings
- Methods
- Arrays & 2D Arrays

Lecture Outline (4/6)

- Introductions
- About this Course
  - Course Components & Tools
  - Grading
  - Policies
- Intro/Review Java
- **In-Class Activities**
- Functional Decomposition
- Code Quality

Practice: Think

sli.do #cse122

In-Class Activities

- **Goal**: Get you actively participating in your learning
- Typical Activity
  - Question is posed
  - **Think** (1 min): Think about the question on your own
  - **Pair** (2 min): Talk with your neighbor to discuss question
    - If you arrive at different conclusions, discuss your logic and figure out why you differ!
    - If you arrived at the same conclusion, discuss why the other answers might be wrong!
  - **Share** (1 min): We discuss the conclusions as a class
- During each of the **Think** and **Pair** stages, you will respond to the question via a sli.do poll
  - Not worth any points, just here to help you learn! 😉

Practice: Think

sli.do #cse122

What is the output of this Java program?

```
public class Demo {
   public static void main(String[] args) {
      int[] nums = {1, 4, 4, 8, 13};

      int totalDiff = 0;
      for (int i = 1; i <= nums.length; i++) {
         totalDiff += (nums[i] - nums[i - 1]);
      }
      System.out.println("Total Diff = " + totalDiff);
   }
}
```

A) Total Diff = 12

B) Total Diff = 10

C) Total Diff = 9

D) Exception!

Practice: Pair

sli.do #cse122

What is the output of this Java program?

```
public class Demo {
   public static void main(String[] args) {
      int[] nums = {1, 4, 4, 8, 13};

      int totalDiff = 0;
      for (int i = 1; i <= nums.length; i++) {
         totalDiff += (nums[i] - nums[i - 1]);
      }
      System.out.println("Total Diff = " + totalDiff);
   }
}
```

A) Total Diff = 12

B) Total Diff = 10

C) Total Diff = 9

D) Exception!

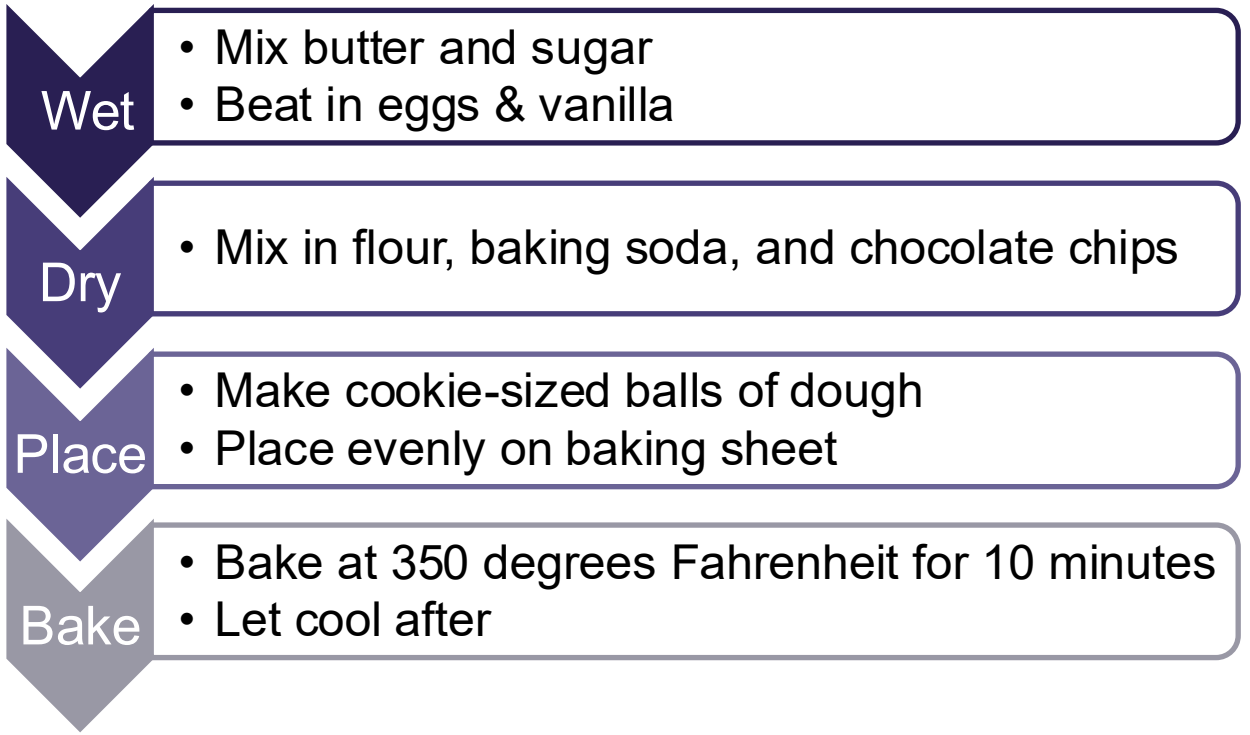
Lecture Outline (5/6)

- Introductions
- About this Course
  - Course Components & Tools
  - Grading
  - Policies
- Intro/Review Java
- In-Class Activities
- **Functional Decomposition**
- Code Quality

Functional Decomposition

Functional decomposition is the process of breaking down a complex problem or system into parts that are easier to *conceive, understand, program,* and *maintain.*

"Bake the cookies" ⟶



Functional Decomposition

In our code, functional decomposition often means breaking a task into smaller methods (also called functions).

Example: Bingo

- Set up populated game card
- Roll and call a new number
- Mark your card if the number called is present
- Check card for bingo

Avoid Trivial Methods

Introduce methods to decompose a complex problem, not just for the sake of adding a method.

Bad example:

```
public static void printMessage(String message) {
    System.out.println(message);
    System.out.println();
}
```

Good Example:

```
public static void sToQ(Stack<String> s, Queue<String> q) {
    while (!s.isEmpty()) {
        q.add(s.pop());;
    }
}
```

Rule of thumb: A method should do at least two steps

- Ask yourself: Does adding this method make my code easier to understand?

Lecture Outline (6/6)

- Introductions
- About this Course
  - Course Components & Tools
  - Grading
  - Policies
- Intro/Review Java
- In-Class Activities
- Functional Decomposition
- **Code Quality**

Code Quality

"Programs are meant to be read by humans and only incidentally for computers to execute." – Abelson & Sussman, SICP

Code is about communication. Writing code with good **code quality** is important to communicate effectively.

Different organizations have different *standards* for code quality.

- Doesn't mean any one standard is wrong! (e.g., APA, MLA, Chicago, IEEE, ...)
- Consistency is very helpful within a group project
- See our Code Quality Guide for the standards we will all use in CSE 122

CSE 122 Code Quality

Examples relevant for this week

- Naming conventions
- Descriptive variable names
- Indentation
- Long lines
- Spacing
- Good method decomposition
- Writing documentation

"Homework" for Next Time

- First assignment will be released Friday, but there are some things to do in the meantime.

- TODO this week
  - Fill out the introductory survey
  - Go meet your TA and classmates in Thursday's quiz section
  - Complete the pre-class material for Friday (see calendar)
  - Check over syllabus details