CSE 390B, Winter 2022

Building Academic Success Through Bottom-Up Computing

Course Introduction

Welcome to CSE 390B!

Course Organization, Learning Topics, Policies & Expectations, Homework Setup

If you can, please have your camera turned on!

Introductions

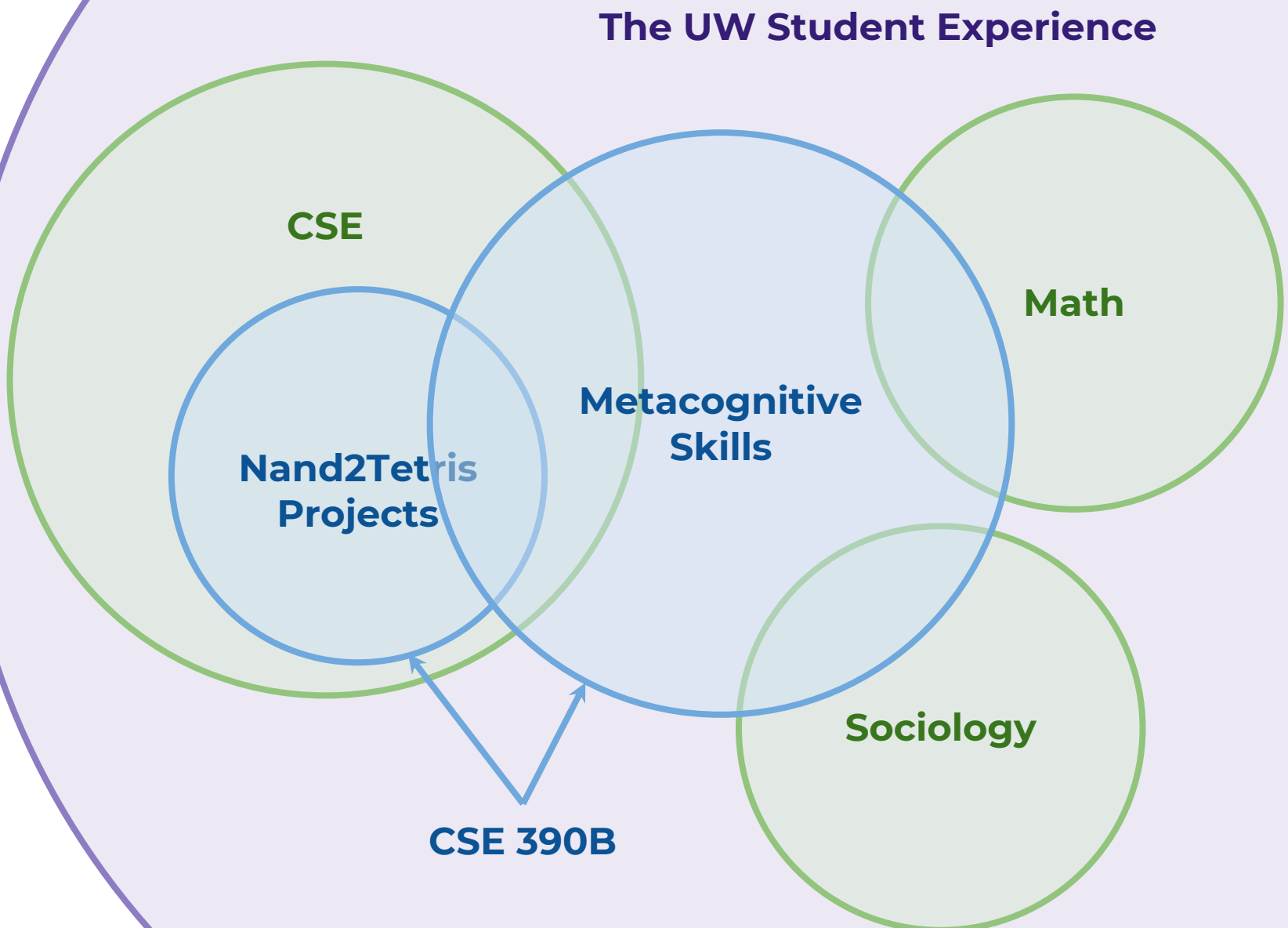
- Who's all here?

- Please share…
  - Your Name
  - Preferred Pronouns
  - Class year
  - Where are you currently Zooming in from?

Lecture Outline

- **What is this course?**
  - **What you will learn**
  - **Why it matters**
- Course Logistics
  - Lectures and Assignments
  - Policies
  - Expectations
- Programming Project Series
  - Nand2Tetris overview
  - Tools demo

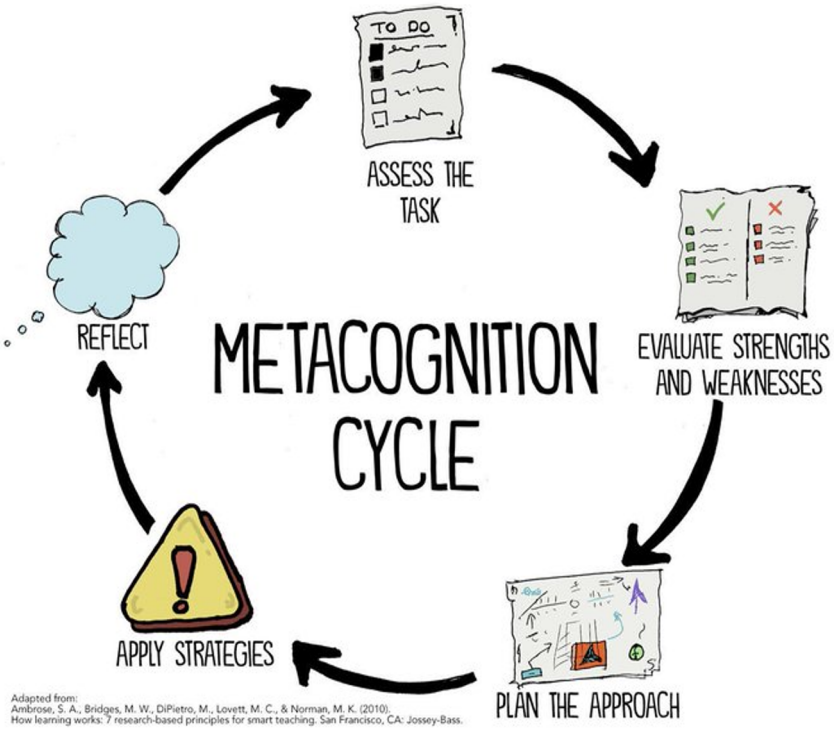
What is this course?



Metacognitive Skills

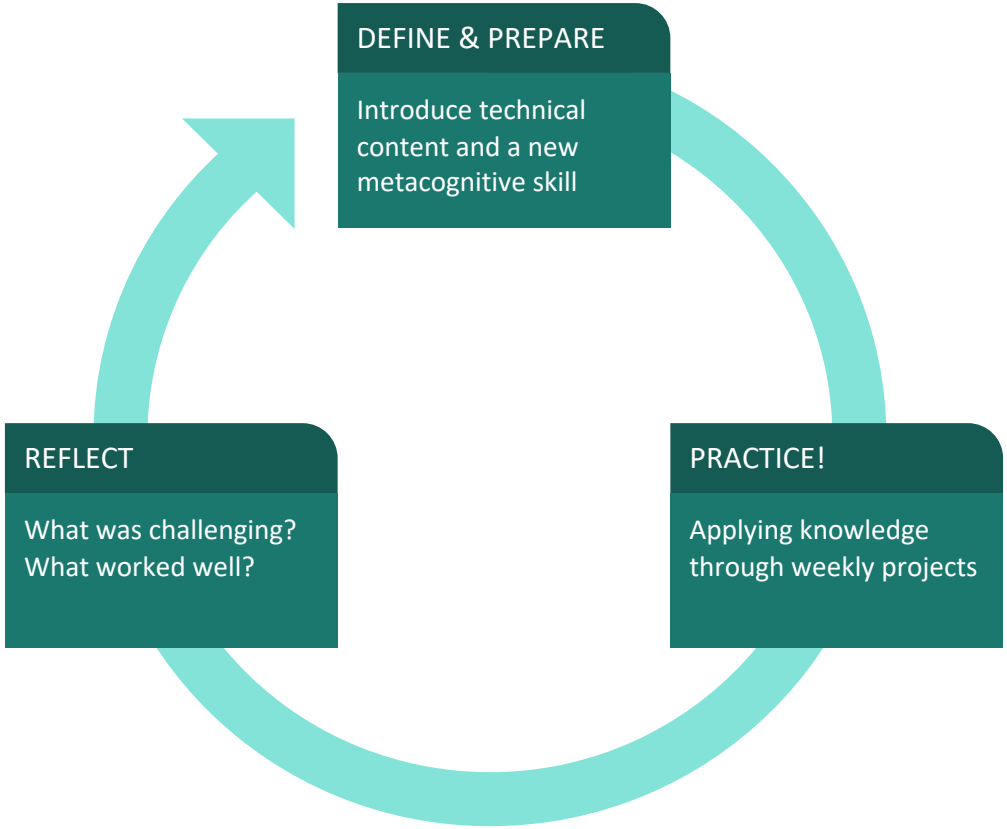
- What does **metacognition** mean?
  - Awareness of your thought process

- Skills we will cover:
  - Time Management
  - Annotation Strategies
  - Test-Taking
  - Note-Taking
  - Written & Oral Communication
  - Testing & Debugging



How it Connects?

- How do the different elements of practicing metacognitive skills and working on technical projects connect?



Technical Skills

- Fascinating questions:
  - What happens when code runs?
  - What role do computers play in our society?
- Fascinating answers:
  - Many layers of abstraction, each with its own answer
  - Many possible societal roles with different tradeoffs
- Nand2Tetris: Project for exploring bottom-up layers
  - Can do everything with NAND gates and input/output
- **Empowering:** A coordinated, broad look at "how computers really work"
  - Closest to 351 but lower level, with elements from 369, 451

Why Does It Matter?

- Technology is based on bottom-up computing
  - Learning how computers work is foundational to computer science
- Computer science is a social discipline
  - As computer scientists, we should constantly be cognizant of how the technology we are building interacts with society
- This course equips you with a toolbox
  - A CSE degree isn't just about learning technical concepts; it's also about preparation for a career (collaboration, organization, etc.)
- This course empowers you to explore
  - You will become independent learners and be autonomous in your learning for future UW courses and beyond

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Virtual again, but not forever

- We recognize that we are still in a pandemic and continue to navigate various challenges.
  - Health, family, masking, social isolation, finances, and more
- Week 1: All things virtual
- Week 2 & Beyond: In-person CSE2 G04
- Rely on you to tell us how virtual and in-person learning is falling short

What you should know about this class

- This course will have frequent assignments and move through many topics
  - Stay organized, falling behind makes it difficult to catch up
  - You will not be successful in this course if you wait till the day before to do your assignments
- This course rewards participation
  - Lecture participation is expected
  - In-class activities are meant to help you with your weekly projects
- This course is not a way to earn an "easy" 4.0
  - What you get out of the course is what you put in
  - Not the course to "boost" your GPA
  - We expect students to work hard, take risks, and give best effort

Course Staff Roles

Eric

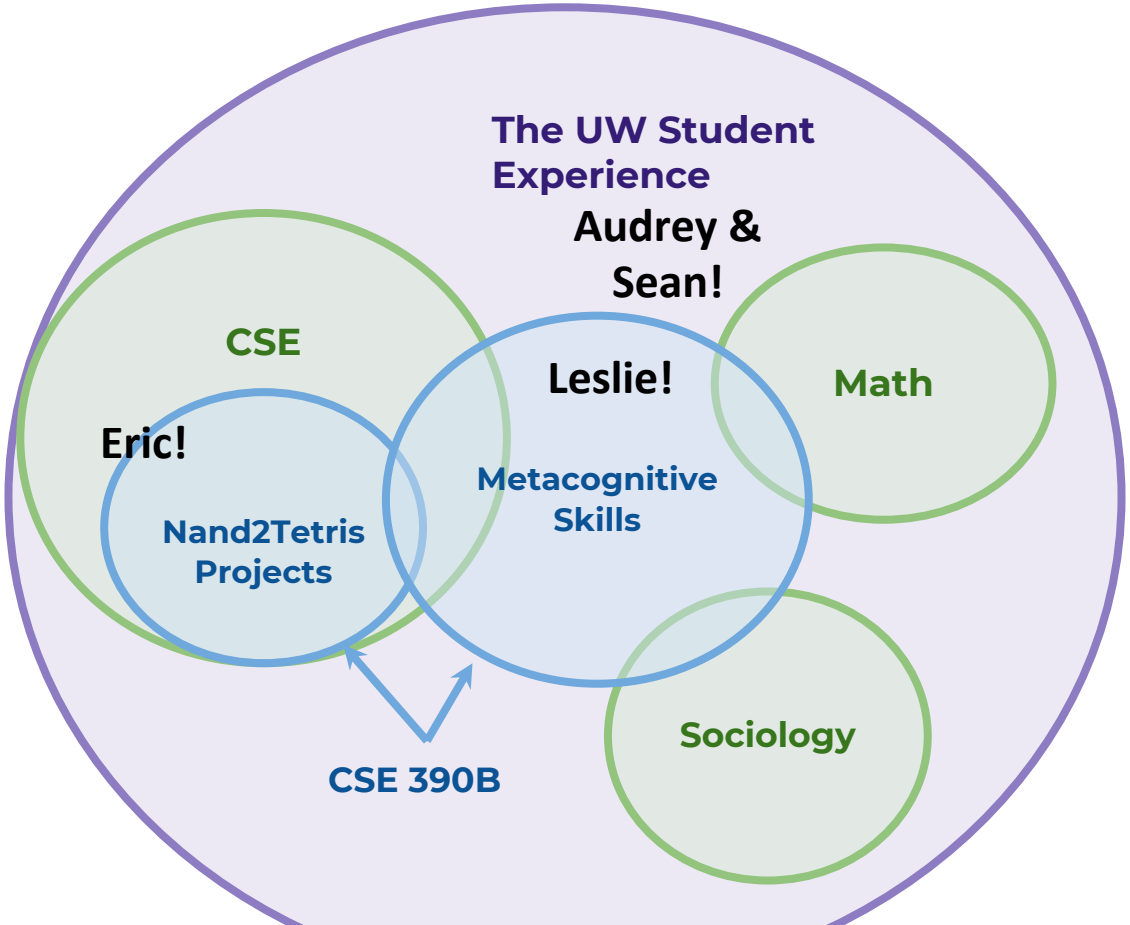
Lecturing on technical components of course with a focus on the Nand2Tetris projects

Leslie

Lecturing on metacognitive components of course and academic skill building

Audrey & Sean

Weekly TA meetings as a touch point in practicing the application on course concepts and study skills



Logistics: Grading Breakdown

- 50% - Projects
  - Seven projects, each will have a programming, metacognitive, and social computing component
  - Projects will be assigned on Thursdays and due the following Thursday
- 15% - Midterm
- 15% - Final Project & Presentation
- 20% - Participation

Logistics: Academic Integrity

- Projects and midterm in this class are to be done **individually**
- You should **NOT** receive help beyond high-level review of course concepts from others not in the class (tutors, friends, parents)
- You should **NOT** search for or use any online solutions
- If you have any questions about what is allowed, **ask us in advance**

Logistics: TA-Student Meetings

- Weekly 1:1 TA Meetings
  - A required element of the course
  - 45-minutes each week; first meeting will be 1-hour
  - 1:1 TA Meetings will begin Week 2 and based on the availability of you and the TA
- Student Expectations
  - Come prepared, on-time and ready to work
  - Absences or frequent reschedules will negatively impact your grade
- TA Expectations
  - Checking in on progress of course assignments and projects
  - Working with you in completing technical or metacognitive related tasks during lecture or 1:1s

Logistics: Typical Lecture Schedule

- Tuesdays
  - Small group discussions and reflections
  - Technical concepts lecture
  - Group work to prepare for the projects
- Thursdays
  - Metacognitive skills connection
  - Introduction to programming project, project demo
  - Group work to get started on the projects

Logistics: Lecture Pre-readings

- Short readings to be completed before each lecture
  - Posted under the course calendar under each lecture
- More student interaction, engagement with course material during lecture
  - Individual or group work during lecture for project preparation
- Research shows that active learning leads to improved learning and better grades
  - Added benefit of interacting with your peers and the course staff

Logistics: Typical Lecture

- Before lecture: Complete the lecture pre-reading
  - No need to come into class as an expert on the material
  - Intention is initial exposure, as in a traditional lecture
  - Jot down questions you have as you do the reading

- During lecture:
  - Explore new metacognitive skills
  - Discussions and reflections related to the projects
  - Overview of the technical reading
  - Q&A related to the reading material
  - Short lecture that builds on reading
  - Time for individual and group work that will help you get started on the projects

Logistics: Lecture Polling

- A way for you to instantly practice and solidify the concepts covered in lecture

- This is NOT intended to take attendance or grade you on the correctness of your answers
  - Research repeatedly shows the act of thinking about an application question is a highly effective way to learn

- We will be using Poll Everywhere
  - Sign up now for an account at https://pollev.com/

Vote at https://pollev.com/ericfan524

- **Why are we using Poll Everywhere in lectures?**

A. To grade you on whether you get the questions we ask correct
B. To aid your learning by giving you a chance to practice applying the material we are covering
C. To take attendance
D. To see who is paying attention during lecture
E. We're lost…

Logistics: Late Policy

- 4 late days for the quarter
  - Importance of not falling behind
- You are guaranteed to pass the course if you submit all assignments, even if all late days have been used
  - Importance of staying persistent and resilient
- Extension Requests will only be considered if the request is made before the assignment deadline
  - See syllabus for extension request instructions
- Communicate with us early

Logistics: Course Resources

- Website
  - https://courses.cs.washington.edu/courses/cse390b/22wi/
  - Main source for every course-related thing
- Canvas
  - Access to class recordings, Zoom links, and rubric info
- Mailing List
  - cse390b_wi22@uw.edu
  - Occasional course announcements

Logistics: Course Resources (cont'd)

- Ed Discussion Board
  - The place to ask and answer questions related to the class (logistics, projects, general questions, etc.)
  - Most course announcements
- GitLab
  - Project distribution and submission
- Gradescope
  - Where you will receive your project grades and feedback
  - No need to submit anything here

Zoom & Virtual Expectations

- Zoom Video On & Unmuted
  - We aim to cultivate relationships with you and among each other regardless if we are meeting virtually or in-person
  - We ask that you commit to having webcams on while we are virtual (if you are able to)
  - We ask that you commit to unmuting for class discussions while we are virtual
- Zoom Chat
  - While we are virtual, utilize the zoom chat to ask questions and engage with each other
- Breakout Rooms
  - While we are virtual, we will occasionally do breakout rooms for small group discussions

Breakout Rooms!

1. Introduce yourself!

2. Please share an artifact/item that you have near you that tells us something about you

3. Based on what you've learned about the course so far, what are you most excited about in taking CSE 390B?

Groups will be 8 minutes.
Please identify one person in your group to share out what was discussed to Question #3.

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  - **Nand2Tetris overview**
  - **Tools demo**

Programming Project Series

- Nand2Tetris
  - You will build an entire (simulated) computer
  - Start with a single hardware logic gate → program a game
  - Topics: Hardware concepts, low-level software, fundamentals of operating systems, virtual machines, compilers

- Acknowledgements
  - Projects adapted from the open-source Nand2Tetris program
  - https://www.nand2tetris.org/
  - Adjusted to fit into our course
  - Everything you need will be distributed

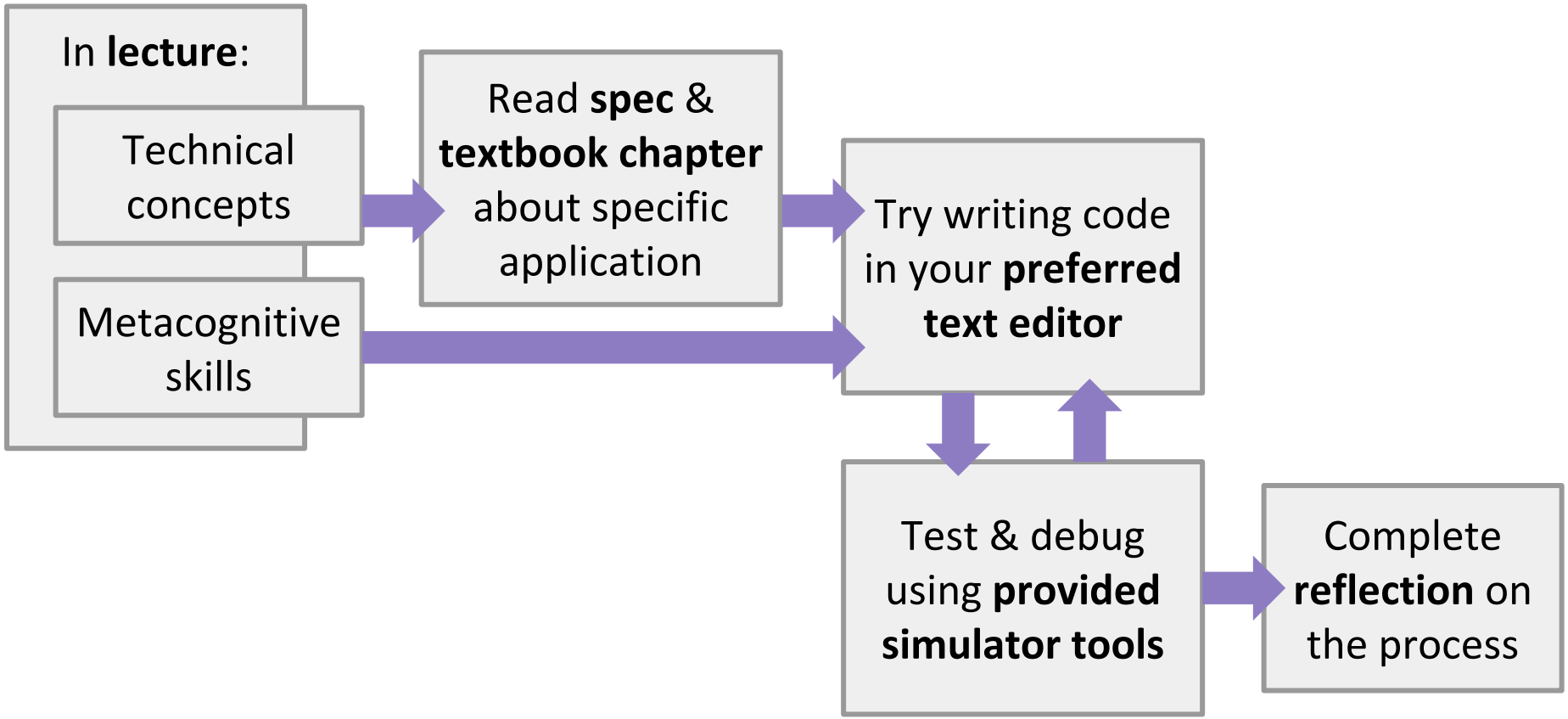
Programming Project Series (cont'd)

- Getting your assignments
  - You will have your own GitLab repository for the quarter
    - For distributing starter code
    - Used for organizing and submitting your projects

- Specifications, textbook chapters, and references will be on the course website
  - We'll provide the instructions you need for Git

Programming Project Series (cont'd)

- How to complete the programming projects:



Social Computing Reflections

- Computing is a social, not neutral discipline
  - All the technologies we develop affect humans
  - It's critical to consider the social implications of our work
- Projects will include social computing reflections
  - Open-ended, empowering you with control over the direction of your reflection
  - Specifics will be released with reflection specifications
- We will also have in-class discussions on these reflections
  - Opportunity to share ideas with your peers

Course Infrastructure Demo

1. Understanding and using Git
2. Find your CSE 390B GitLab Repository
3. Add your SSH Key
4. Explore the starter code using your favorite editor
5. Make a commit
6. Submitting the project

Steps outlined in detail in Project 0 webpage

Project 0

- Programming Component: **GitLab Setup**
  - Connecting your CSE Linux environment (attu or VM) to your GitLab repo in preparation for the labs
- Metacognitive Component: **Course Resources Worksheet**
  - Organizing your Winter quarter courses and identifying the key learning spaces that you will be accessing online throughout the quarter
- **Due this Thursday (1/6) at 11:59pm**

Lecture Reading: Boolean Logic

- First lecture reading is posted on the course calendar
  - Please complete it before lecture this Thursday
  - Jot down your questions and ask them this Thursday
- The reading should take around 10 minutes
  - Intention of pre-readings is initial exposure, not mastery
- Readings will be posted at least a week ahead of time
  - Hopefully provides you some flexibility as to when you complete the reading

Reaching Out

- Office Hours: Zoom links available via Canvas
  - Eric: Tuesdays and Thursdays, 3-4:00pm at CSE2 152
  - Leslie: Wednesdays, 4:30-5pm at CSE2 174
  - Audrey and Sean: Wednesdays, 1:30-2:30pm at CSE2 152

- Course Staff Email: cse390b-staff@cs.washington.edu

- Please use the Ed Discussion Board to ask and answer general course questions