

Computer Science Training Scenarios

These Computer Science scenarios are designed to prepare graduate teaching assistants and instructional staff for realistic, high-pressure academic interactions. Each scenario simulates common situations encountered in CS courses (including algorithm analysis disputes, proof-based pushback, deadline-driven stress, and data structure confusion) while incorporating varying student personas and environmental pressures.

Scenarios span core undergraduate CS topics such as introductory programming (CS 180), discrete mathematics and logic (CS 182), data structures and algorithms (CS 251), algorithm analysis (CS 253), and recursion and proof techniques (CS 373). Participants practice both technical explanation and professional communication skills, including de-escalation, clarity under time pressure, and managing crowded help-room environments.

These simulations are used across foundation-level and advanced training tracks to build confidence, composure, and instructional effectiveness in real-world CS teaching settings.

Course	Scenario	Category	Persona tags	Brief
CS 180	180_proj_Help with Loops in a Busy Lab	Intro programming / loops	Passive	Student hesitates to ask about loops in a busy lab.
CS 182	CS182 Logic Proofs	Discrete math / proofs	Aggressive (Low)	Student challenges your proof guidance; others waiting; low time pressure.
CS 182	CS182 Logic Homework	Discrete math / logic	Passive	Stressed student needs help on logic homework due tomorrow.
CS 182	CS182 Homework 1 Help	Discrete math / logic	Aggressive (Low)	High stress; student pushes back; homework due in a few hours; others waiting.
CS 182	Sorting Out the Details Before the Deadline	Algorithms / sorting	Happy	Student eager to discuss sorting assignment due tomorrow.

Course	Scenario	Category	Persona tags	Brief
CS 251	Challenging the Approach to Graph Algorithms (Lawson)	Algorithms / graph shortest paths	Aggressive (Medium)	Student presses you to justify Dijkstra's algorithm in a busy public space.
CS 251	Challenging the Approach to Graph Algorithms (Lab)	Algorithms / graph traversal	Aggressive (Medium)	Student questions the logic of traversal and demands alternatives in a lab.
CS 253	Discussing Asymptotic Complexity in Lawson	Algorithm analysis / asymptotics	Happy	Cheerful student asks how to compare asymptotic complexities.
CS 253	CS 253 Problem Set 1 Questions	Algorithm analysis / Big-O	Confused	Tired/frustrated student challenges a PSO 1 problem; several waiting.
CS 253	CS253 Algorithm Analysis: A Confrontational Deadline Rush	Algorithm analysis / Big-O	Aggressive (Medium)	Agitated student challenges Big-O work; due in hours; ignores line.
CS 253	Challenging the Recurrence: A Heated Exchange in the Lab	Algorithm analysis / recurrences	Aggressive (Medium)	Student disputes closed-form recurrence reasoning step-by-step.
CS 253	Hash Table Confusion Amid the Rush	Data structures / hashing	Confused	Double hashing + expected probes under imminent deadline pressure.
CS 253	Hash Table Confusion Amid the Crowd	Data structures / hashing	Confused	Double hashing + expected probes; crowded, noisy environment; deadline soon.

Course	Scenario	Category	Persona tags	Brief
CS 373	Challenging the Approach to Recursion Proofs	Proofs / recursion	Aggressive (Medium)	Student questions every step of a recursion-proof assignment due soon.
(General)	General Scenario	Open-ended practice	(none)	Flexible scenario for broad CS/help-desk style practice.