CS9 Capstone Project Packet

Programming by Design: Computing, Representation, and Reasoning

Instructor: Eric Allatta — Grade Level: 9th Grade

Overview

The Capstone Project is the culminating experience of the course. It is an opportunity for you to demonstrate fluency in reasoning, communication, and computation by designing a final project that reflects your growth.

This is not a project for flash or gimmicks. It is a project that shows you can structure a problem, design a system, build it thoughtfully, and explain your choices clearly.

Capstone Pathways

Students may choose one of the following tracks or propose a hybrid project with approval.

1. Data Narrative

- Pose a meaningful question using a real dataset
- Clean, filter, and transform data to investigate the question
- Visualize findings using graphs, charts, or computed columns
- Document your logic and data decisions in narrative form

2. System Simulation

- Model a rule-based process using loops and conditionals
- Simulate dynamic behavior (e.g., population, traffic, interaction)
- Design input/output relationships and explain control flow
- Emphasize logic correctness and clarity

3. Interface and Interpretation

- Build a static or interactive site to explain a CS topic or showcase prior work
- Focus on communication, access, and presentation
- Integrate HTML/CSS and optional JavaScript or embedded visuals
- Make your audience central to design choices

Required Deliverables

- **Final Artifact:** code, simulation, notebook, or site
- **Technical Documentation:** purpose, logic design, key decisions

- **Reflection:** What you built, how you built it, and what you learned
- **Peer Review Checkpoint:** give and receive meaningful critique

Milestones + Timeline

- **Week 1:** Project pitch + approval
- **Week 2:** Build draft + checkpoint feedback
- **Week 3:** Finalize and document project
- **Week 4:** Presentations and peer reflections

Presentation + Evaluation

Projects will be evaluated using the following criteria:

- **Clarity:** Can someone understand what it does and why?
- **Structure:** Does it reflect strong logic and clean design?
- **Explanation:** Can you defend your choices and method?
- **Coherence:** Does everything fit together meaningfully?
- **Polish:** Is it complete, accurate, and visually considered?

Student Checklist

I can explain my project's purpose clearly

I have documented my logic and structure

I sought and used feedback to revise

My project is complete and communicates effectively

I am prepared to present and respond to questions