# CS 255 System Design Document Template Megan Miles

This template lays out all the different sections that you need to complete for Project Two. Each section has guidance to prompt your thinking. You will need to continually reference the interview transcript as you work to make sure that you are addressing your client’s needs. There is no required length for the final document. Instead the goal is to complete each section based on what your client’s needs are. Remove this note when you are finished, and replace all bracketed text with the relevant information.

## UML Diagrams

### UML Use Case Diagram

A diagram of a diagram

Description automatically generated

### UML Activity Diagrams

*Customer Self-Registration*

A diagram of a flowchart

Description automatically generated

*Customer Self-Registration*

A flowchart of a program

Description automatically generated

### UML Sequence Diagram

A diagram of a password

Description automatically generated

### UML Class Diagram

A diagram of a computer program

Description automatically generated with medium confidence

*note: It was unclear if one lesson is shared by multiple students or multiple drivers. I assumed not and therefore marked the relationship between students and lessons and drivers and lessons as composition. If it there are multiple drivers or multiple students, then it would be association.*

## Technical Requirements

Hardware

The system will require server infrastructure capable of handling the web application and database operations. This includes servers with multi-core processors, sufficient RAM, and solid-state drives (SSDs) for efficient data storage and retrieval. Load balancing and redundancy will be necessary to manage high traffic and ensure system availability.

Software

The software stack will include a web application framework like Django or Spring for building the web interface, along with a relational database management system (RDBMS) such as PostgreSQL or MySQL for storing data. The front-end will be developed using standard web technologies like HTML, CSS, and JavaScript. Additional software will include authentication services for user management and automated email services for notifications.

Tools

Development tools will include an integrated development environment (IDE) like Visual Studio Code or Eclipse for coding, version control systems like Git for managing code, and continuous integration/continuous deployment (CI/CD) tools for automated testing and deployment. Project management tools like Jira or Trello will be used to organize tasks, and communication tools like Slack for team collaboration.

Infrastructure

The system will be deployed on a cloud platform such as Amazon Web Services (AWS) or Microsoft Azure, which provides scalability, security, and various managed services. This includes virtual machines for hosting the application, managed databases for data storage, and cloud storage solutions for backups. The cloud platform’s monitoring, logging, and security services will be used to maintain system health and security. Networking components will include firewalls and virtual private networks (VPNs) to ensure secure access to the system.

These requirements ensure the system is scalable, secure, and capable of handling the expected workload efficiently while providing flexibility for future enhancements.