# CS 255 System Design Document

## UML Diagrams

### UML Use Case Diagram

A diagram of a diagram

Description automatically generated

### UML Activity Diagrams

A diagram of a process

Description automatically generated

A diagram of a work flow

Description automatically generated

### UML Sequence Diagram

A diagram of a user interface

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### UML Class Diagram

A diagram of a software system

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## Technical Requirements

The system will need hardware infrastructure to host components, including web servers, application servers, and database servers*.* Sufficient storage capacity to store user data, training materials, practice tests, and system logs. Networking hardware such as routers, switches, and firewalls to facilitate communication between system components and ensure network security. Compatibility with various end-user devices, including desktop computers, laptops, tablets, and smartphones.

Compatibility with various operating systems such as Windows, Linux, and macOS for both server-side and client-side components. We need software to host and serve web applications, such as Apache Tomcat, Nginx, or Microsoft Internet Information Services (IIS). Utilization of a robust application framework for developing and deploying web applications, such as Spring Boot for Java-based applications. Implementation of a reliable DBMS to store and manage system data, such as MySQL, PostgreSQL, or MongoDB. Integrated development environment (IDE) such as Eclipse or IntelliJ IDEA for software development, along with version control systems like Git for collaborative development. We would also need to integrate security tools and libraries for encryption, authentication, authorization, and vulnerability scanning to ensure data protection and system security.

Implementation of testing frameworks such as JUnit for unit testing, Selenium for automated testing, and OWASP ZAP for security testing. Utilization of cloud services from providers such as Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP) for scalability, reliability, and ease of deployment.