# CS 255 System Design Document Template

## UML Diagrams

### UML Use Case Diagram

*A diagram of a diagram

AI-generated content may be incorrect.*

### 7--8UML Activity Diagrams

*A diagram of a diagram

AI-generated content may be incorrect.*

### *A diagram of a flowchart AI-generated content may be incorrect.*

### UML Sequence Diagram

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AI-generated content may be incorrect.*

### UML Class Diagram

*A diagram of a computer program

AI-generated content may be incorrect.*

## Technical Requirements

The DriverPass system needs a robust infrastructure to ensure reliability, security, and scalability. The technical requirements below specify the hardware, software, tools, and infrastructure essential for supporting the design.

**Hardware**

* Cloud-hosted servers such as AWS EC2, Azure, or Google Cloud to ensure scalability and high availability.
* At least 1 TB of secure storage for user accounts, practice exams, driving lesson schedules, and financial records.
* End-user devices will include desktops, laptops, tablets, and smartphones with internet connectivity.

**Software**

* A web-based application accessible through major browsers Chrome, Firefox, Edge, Safari.
* A relational database such as MySQL or PostgreSQL to store and manage user, test, and scheduling data.
* Cross-platform support for Windows, macOS, iOS, and Android devices.
* Third-party integrations for:
  + Secure payment processing such as Stripe, Square.
  + DMV systems for real-time regulatory updates and new test content.

**Tools**

* Development tools such as Java, Python, or C++ for backend logic.
* CASE tools; Lucidchart or equivalent for creating and maintaining UML diagrams.
* GitHub for version control and project collaboration.
* Testing frameworks such as JUnit, Selenium to name a couple used to support automated and manual testing.

**Infrastructure**

* Cloud hosting with automated scaling and backup features.
* HTTPS encryption for all traffic to ensure secure communication between client and server.
* Role-based access control for different users; students, instructors, administrators, and staff.
* Encrypted storage for sensitive data, including hashed and salted passwords.
* Automatic account lockout after repeated failed login attempts to prevent brute-force attacks.
* Daily database backups with point-in-time recovery options.
* Performance expectations: system should support at least 500 concurrent users with an average response time under 2 seconds.

Adaptability to update training packages, DMV content, and user roles without requiring major code rewrites.