# CS 255 System Design Document Template

## UML Diagrams

### UML Use Case Diagram

*[A diagram of a drive pass system

AI-generated content may be incorrect.*

### UML Activity Diagrams

*[Diagram1 – schedule driving lesson*

*A diagram of a process

AI-generated content may be incorrect.*

*Diagram 2 -take online practice test*

*A diagram of a test

AI-generated content may be incorrect.]*

### UML Sequence Diagram

*A diagram of a web application

AI-generated content may be incorrect.*

### UML Class Diagram

*[A diagram of a student id

AI-generated content may be incorrect..]*

## Technical Requirements

*[The DrivePass system will serve as a web application to schedule and manage driving lessons for students, made available in the cloud. It will operate on a web-based platform that is secure and hosted on a cloud platform like AWS or Azure. A web application layer, API backend, and database layer will be utilised for the system. It will make use of a load balancer to handle traffic and keep high availability. Databases will be managed on the basis of relationalism, such as MySQL or PostgreSQL. With daily backup automation and redundancy, data will always be safe and available. The application will be implemented with a modern stack. We will use Node.js with Express or .NET Core to do business logic and offer RESTful APIs. The frontend will be responsive HTML, CSS, and JavaScript, possibly with the help of a framework such as React. It will be a multi-user system including students, instructors, secretaries, as well as admin users. Authentication, scheduling, practice test management, and DMV updates will all be managed separately by individual modules to keep the system up to date and simple to maintain. The data will be held in relational tables for students, instructors, lessons, schedules, and payments. The software will have strong interlinks between these entities; for example, they will allow students to connect to instructors over scheduled lessons. Files and reports will be maintained using object storage such as AWS S3. The system can be integrated with DMV systems, email or SMS notifications, and a payment gateway in the future. Security is a huge concern in this system. All data transmission is on HTTPS and passwords have been securely hashed with bcrypt. It features login rate limiting, input validation, authentication, and role-based access control to minimize unauthorized access to the system. There will be a secure secrets manager dedicated to storing sensitive information and audit logs that monitor significant user behavior such as scheduling or canceling lessons. The system would be built for performance and stability enabling hundreds of concurrent users with page loads under three seconds. Caching features will be applied for frequently used information, and a monitoring service will automatically monitor for performance and errors. Continuous integration and deployment pipelines will be built to automate builds, testing, and deployment to achieve a smooth deliverability. The system will be able to be accessed by users through any modern browser (Chrome, Edge, Safari) and in addition be optimized for desktop and mobile devices. Keyboard and screen reader accessibility will come with features. In the event of any disaster, the system will have daily backups and a recovery plan that aims to restore operations within a few hours..]*