# CS 255 System Design Document Template

## UML Diagrams

### UML Use Case Diagram

Diagram, schematic

Description automatically generated

### UML Activity Diagrams

Diagram

Description automatically generated

Diagram

Description automatically generated

### Diagram Description automatically generatedUML Sequence Diagram

### Diagram Description automatically generatedUML Class Diagram

## Technical Requirements

The diagrams show that it’s a web development project. This requires front end development; this is what the client will use in the system. Then there is the backend development. Backend development requires a server; the front end will depend on the browser. The project will require Chrome as the browser that will be first developed on and tested with. This is because of it’s popularity. All other browser’s can be tested after. The server should be on 24/7, so a cloud provider is required. The cloud provider will rent a server, memory, and processing power. Scalability is easy because the cloud provider will provide more if needed. Popular cloud providers are AWS, Azure, and Linode.

Given the wide use of smart phones, a mobile friendly user interface is necessary for any business. The website will be able to change it’s layout according to the size of the screen.

The server-side programming language choice is important because the design is based on an object-oriented programming. Some languages are procedural, and some early versions of other languages too. For instance, PHP version 3 is procedural and php 4 has a small feature of OOP. PHP 8 fully supports OOP.

The server-side programming language needs to have a framework to help facilitate the development process. For instance, python’s Django framework has an admin panel already developed. The admin panel can look at the system users and database. PHP’s Laravel framework has the same built-in admin feature. Another plus side to the framework is that it implements a design pattern for developers to follow. Laravel follows a model-view-controller MVC design pattern and Django follows a model-view-template MVT design pattern. Thus, experienced developers can quickly learn the system and start being productive since the developer is familiar with the design pattern already. This is helpful in the future, when there is a new feature the company wishes to implement.

In addition to hosting the website via a cloud provider, the website will need a domain name. This helps the website traffic because driverpass.com is easier to write than 454.52.25.963; this is the website internet address.

Tests need to be done on every browser and mobile: Android and iOS. In addition to user interfaces, the server-side program needs tests to make sure it behaves as it is supposed to.

A database is required that stores information such as username, password, and progress made. The database saves the data, and it’s accessed when a user logs in and uses the system. The database is hosted along with the website in the cloud. There are different databases available: MySQL, T-SQL, and SQL-Lite.

A computer, electricity, and internet connection is necessary to interact with the system. The server is hosted by the cloud, so it’s not stored locally and can’t be accessed without first accessing the cloud provider with a account. The clients will need a computer or smart phone, internet connection, and a username and password to access the system.