# CS 255 System Design Document Template

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 driver pass

Description automatically generated

### UML Activity Diagrams

A screenshot of a computer

Description automatically generated

(Above: Activity Diagram for creating or updating a reservation)

A screenshot of a computer

Description automatically generated

(Above: Activity Diagram for users taking offered courses)

### UML Sequence Diagram

A diagram of a software application

Description automatically generated

### UML Class Diagram

A computer screen shot of a computer

Description automatically generated

## Technical Requirements

**Technical Requirements**

* **Server Hardware**

Based on the above diagrams I would recommend the system to be hosted as a web application on a cloud infrastructure such as AWS or Google Cloud. This would not only allow for a larger userbase due to the application being able to be accessed by any device which can connect with the internet, it will allow for driving instructors to access resources while they are on the road as was requested. Cloud hosting also allows for easier scaling up, or down, to user traffic based on the volume of registered DriverPass users at any time. AWS and Google Cloud also have an in-house SQL Server to utilize for the database, and both of these providers have their own security methods to keep data secure, which shortens the workload on any DriverPass IT admin. Cloud providers also provide easy patching and do their own maintenance.

* **Software requirements**

Being that the system will be cloud-based and running in a web application there is no hard software requirement. However, it should be tested on Windows, Mac, Linux, as well as mobile devices such as Android and iOS to ensure a good experience for both employees and customers.

* **Tools and IDE**

The IDE that I would recommend to be used for this program would be Visual Studio Code for its Object Oriented Programing and handling of private and public methods for the requested role-based users in the DriverPass system. Visual Studio also has numerous plugins which could be used to make a web based application at minimal cost as for small teams there is little, or no, upfront licensing costs. Version control can be handled on GitHub for managing source code collaboration amongst the developers.

As for planning the development Trello can be used for the project management, it has several tools for tracking progress and managing workflow.

* **Infrastructure**

The infrastructure of this program would need to be robust enough to allow for multiple users to connect to the server at once, customers and employees. All of the top cloud providers, such as AWS, Azure, and Google Cloud have load balancing implemented to distribute traffic and maintain reduced loading times and latency which will be important for customer experience and real-time notifications to admins. All of the above mentioned cloud providers also have automated backup and recovery systems to ensure minimal to no data loss in the event of an attack or server corruption.

The infrastructure should also be set up for role-based access, this will ensure that only authorized users have access to sensitive data.