# CS 255 System Design Document

Eleen Limon

Professor Stefanelli

CS-255 System Analysis and Design

Aug 15, 2024

## UML Diagrams

### UML Use Case Diagram

*A screenshot of a diagram

Description automatically generated*

### UML Activity Diagrams

*A screenshot of a diagram

Description automatically generated*

*A diagram of a company

Description automatically generated*

### UML Sequence Diagram

*A diagram of a class sequence diagram

Description automatically generated*

### UML Class Diagram

*A screenshot of a computer

Description automatically generated*

## Technical Requirements:

## Based on the diagrams I’ve created; the system will rely on both server and client hardware to function efficiently. For server hardware, high-performance machines are essential. The web server should be equipped with a multi-core processor (e.g., Intel Xeon or AMD EPYC). Additionally, a dedicated backup server or cloud-based solution is necessary to store regular backups and ensure data integrity.

## Software Requirements:

## The system will be built on a robust software foundation. The web server software will include Apache HTTP Server or Nginx to handle web requests efficiently. For database management, options such as PostgreSQL, MySQL, or Microsoft SQL Server will be utilized to manage and process data transactions.

## Development tools will be diverse, with programming languages including Java, Python, PHP, or JavaScript (Node.js) used for backend development. The choice of frameworks will depend on the language, with Django or Flask for Python, etc. For front-end development, technologies like React, Angular, or Vue.js will be employed to create a responsive and user-friendly interface. Cloud services will play a critical role, with AWS EC2, Google Cloud Compute Engine, etc being used for hosting. Storage and backup needs will be managed using cloud solutions such as Google Cloud Storage, ensuring scalability and reliability.

## Security Tools:

## To safeguard the system, SSL/TLS certificates from trusted Certificate Authorities (CAs) like Let’s Encrypt will be implemented to encrypt data transmission. Firewalls will be configured. Anti-malware tools will be employed to detect and prevent malicious threats.

## Tools and Infrastructure:

## The development process will benefit from version control systems like Git, with repository hosting on platforms such as GitHub. Project management will be facilitated using tools like JIRA. Development and collaboration will be supported by Integrated Development Environments (IDEs) like Visual Studio Code, or Eclipse, and communication will occur through platforms like Slack or Microsoft Teams. Database design and management will be handled using ERD tools such as Lucidchart.

## Network and Infrastructure:

## Infrastructure management will be streamlined using automation tools.

## These requirements are designed to ensure that the DriverPass system operates efficiently, securely, and is capable of scaling to meet future demands.