# Tyeika Willis CS 255 System Design Document

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 screenshot of a computer

Description automatically generated

### UML Activity Diagrams

*A diagram of a system

Description automatically generated*

*A diagram of a schedule

Description automatically generated*

### UML Sequence Diagram

A diagram of a diagram

Description automatically generated

### UML Class Diagram

*[You were asked to create a class diagram based on the different classes and attributes needed for your system design. You are* ***not*** *required to include methods, but you may if you wish. Please insert your class diagram here. Check to make sure that you included appropriate components and symbols and that your design meets the client’s requirements.]*

*A diagram of a user

Description automatically generated*

## Technical Requirements

*[Based on the diagrams you have created, describe the technical requirements of your system. These requirements should address the required hardware, software, tools, and infrastructure necessary for your system design.]*

Based on the diagrams I created, the DriverPass system has the following technical requirements. These requirements include hardware, software, tools, and infrastructure to support the system's design and functionality:

1. **Hardware Requirements**:
   * **Servers**: Reliable cloud-based or on-premises servers to host the system, manage the database, and handle user authentication and permissions.
   * **Client Devices**: The system should be accessible via devices such as smartphones, tablets, and computers with minimum hardware specifications for smooth operation.
   * **Storage**: Sufficient storage capacity to handle user data, payment information, and content like practice tests and instructional videos.
2. **Software Requirements**:
   * **Operating System**: Compatibility with major operating systems (Windows, macOS, Linux) for the admin interface and mobile platforms (Android, iOS) for users.
   * **Web Server Software**: Software such as Apache or Nginx to manage web hosting.
   * **Database Management System (DBMS)**: A robust DBMS like MySQL or PostgreSQL to store and manage user data, permissions, and test results.
   * **Programming Languages**: Use of modern languages such as Python or Java for back-end development and JavaScript with frameworks like React for the front end.
3. **Tools and Development Environment**:
   * **Integrated Development Environment (IDE)**: Tools like Visual Studio Code or IntelliJ IDEA for coding and debugging.
   * **Version Control**: Git for source code management and collaborative development.
   * **API Testing Tools**: Tools like Postman for testing user login, payment validation, and other API endpoints.
   * **Graphics Design Tools**: Applications like Adobe XD or Figma for designing and prototyping the user interface.
4. **Infrastructure Requirements**:
   * **Cloud Hosting**: Hosting the system on platforms like AWS, Azure, or Google Cloud to ensure scalability and reliability.
   * **Network Infrastructure**: High-speed internet with secured connections (e.g., HTTPS) to protect user data during transmission.
   * **Authentication Services**: Integration with OAuth or other secure authentication protocols for login and password resets.
5. **Security Features**:
   * **Data Encryption**: Implementation of SSL/TLS protocols for encrypting sensitive data such as login credentials and payment details.
   * **Role-Based Access Control (RBAC)**: Ensuring that permissions are granted based on the user role (e.g., admin, instructor, student).
   * **Backup and Recovery**: Regular backups of all critical data to avoid data loss and ensure recovery in case of system failure.