# CS 255 System Design Document

## UML Diagrams

### UML Use Case Diagram

*[In Module Six, you were asked to complete a use case diagram based on your system design. If you would like to make any adjustments to your diagram, please do so. Please insert your use case diagram here. Check to make sure that you included appropriate components and symbols and that your design meets the client’s needs.]*

A diagram of a company

Description automatically generated

### UML Activity Diagrams

A diagram of a system

Description automatically generated*[You were asked to choose* ***two*** *use cases and create* ***two*** *activity diagrams, one for each use case. Please insert* ***both*** *of your activity diagrams here. Check to make sure that you included appropriate components and symbols and that your design meets the client’s needs.]* A diagram of a system

Description automatically generated

### UML Sequence Diagram

*[You were asked to create a sequence diagram based on* ***one*** *of the use cases you chose. Please insert your sequence diagram here. Check to make sure that you included appropriate components and symbols and that your design meets the client’s needs.]*A diagram of a user account

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### 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 computer

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.]*

**Hardware:**

* **Web Servers:** Scalable web servers are required to host the DriverPass application and handle user requests. These servers should be capable of handling high traffic volumes and ensuring fast response times. Redundancy should be implemented to ensure availability and prevent downtime.
* **Database Servers:** A dedicated database server is necessary to store and manage the system's data, including user information, course content, test results, schedules, and instructor details. The server should be capable of handling a large volume of data and supporting concurrent access by multiple users.
* **Storage:** Sufficient storage capacity is needed to store course materials, practice test data, and system logs. Cloud storage solutions can be leveraged for scalability and flexibility.

**Software:**

* **Operating System:** The web servers and database servers can run on Linux or Windows Server operating systems, depending on the organization's preferences and expertise.
* **Database Management System (DBMS):** A relational database management system like MySQL is suitable for storing structured data in the DriverPass system.
* **Programming Languages:**
  + **Frontend:** HTML, JavaScript, and a frontend framework like React for building the user interface.
  + **Backend:** Python, Java along with a backend framework like Django for handling server-side database interactions.
* **Security Tools:** Implement security measures such as firewalls, intrusion detection systems, and encryption to protect the system and user data.

**Tools:**

* **Version Control System:** Git or similar version control software for managing code changes.
* **Integrated Development Environment (IDE):** Visual Studio Code, IntelliJ IDEA, or Eclipse to facilitate code development and debugging.

**Infrastructure:**

* **Cloud Hosting:** Utilize a cloud service provider like Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP) for hosting the application and database. This provides scalability, reliability, and cost-effectiveness.
* **Content Delivery Network (CDN):** A CDN can be used to distribute course materials and other static content globally, improving website performance.