# 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

*[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.]*

### UML Activity Diagrams

*[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.]*

### 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.]*

### 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.]*

## Technical Requirements

The technical requirements for the DriverPass system are derived from the use case, activity, sequence, and class diagrams created above. These requirements ensure the system operates efficiently while meeting client needs.

**Hardware Requirements:**

* **Client Devices:** The system should be accessible on modern web browsers, requiring standard desktop and mobile devices (e.g., PCs, tablets, smartphones) with internet access.
* **Server Infrastructure:** The system will require a secure web server with sufficient storage and processing power to manage user accounts, test bookings, payment processing, and result management. A scalable server setup (e.g., cloud-based) is recommended to accommodate varying traffic loads.

**Software Requirements:**

* **Operating System:** The web server should operate on a secure and stable OS such as Linux or Windows Server.
* **Database:** A relational database management system (RDBMS), such as MySQL or PostgreSQL, will be needed to store user information, test schedules, and payment data.
* **Web Technologies:** The system should be developed using modern web technologies, including HTML5, CSS3, JavaScript, and a backend framework such as Node.js or Python's Django. Additionally, secure HTTPS protocols must be implemented.
* **Payment Gateway:** Integration with a payment gateway (e.g., Stripe or PayPal) will be required for processing test booking fees.

**Tools:**

* **Development Tools:** The system will be developed using an IDE such as Visual Studio Code or JetBrains PyCharm for backend development. For version control, Git and GitHub will be utilized to manage codebase changes.
* **Testing Tools:** Automated testing frameworks (e.g., Selenium for UI testing, JUnit for unit testing) will be used to ensure system reliability and functionality.

**Infrastructure:**

* **Network Infrastructure:** The system will require reliable network connectivity to ensure smooth interactions between clients and the server. Adequate load balancing and redundancy should be implemented to prevent downtime during peak usage.
* **Security:** Security measures, including data encryption, secure authentication mechanisms (OAuth or multi-factor authentication), and protection against SQL injection and other web vulnerabilities, must be implemented to safeguard user data.
* **Backup and Recovery:** Regular database backups and a disaster recovery plan should be in place to protect against data loss.

These technical requirements, when combined with the UML diagrams, outline the foundation for designing a robust and user-friendly DriverPass system that meets the client's needs.