# 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 system

AI-generated content may be incorrect.*

*\* I wanted to add more shapes to this diagram so that I could include the driver role however I ran out of free shapes to use for this diagram.*

### UML Activity Diagrams

*Customer->Register Account*

*A diagram of a flowchart

AI-generated content may be incorrect.*

*Admin->Enable and Disable PackagesA diagram of a package

AI-generated content may be incorrect.*

### UML Sequence Diagram

*Customer->Register Account*

*A diagram of a system

AI-generated content may be incorrect.*

### UML Class Diagram

*A computer screen shot of a diagram

AI-generated content may be incorrect.*

## Technical Requirements

### Hardware Requirements

Server-Side Hardware

* Application Server
  + Quad-core CPU (Intel i5/i7, 2.5 GHz+)
  + 16 GB RAM (minimum; scalable to 32 GB)
  + 500 GB SSD storage for application + log files
  + Network interface: 1 Gbps Ethernet
* Database Server (if hosted separately)
  + Quad-core CPU
  + 32 GB RAM (optimized for database queries)
  + 1 TB SSD storage (transactional data, reports, customer accounts)
  + Redundant disk array (RAID 10) for reliability
* Backup & Redundancy
  + Cloud backup service (AWS S3 or Google Cloud Storage)
  + Offsite backup once daily

Client-Side Hardware

* Customer Devices
  + Smartphone, Tablet, or PC
  + Minimum Requirements: 4 GB RAM, dual-core processor, stable internet (5 Mbps +)
* Admin/Staff workstations
  + Desktop/laptop with at least 8 GB RAM, dual-core CPU, 500 GB HDD/SSD
  + Networked printers (for reports and documentation)

### Software Requirements

Server Software

* Operating System: Linux or Windows Server 2022
* Web Server: Apache Tomcat
* Application Framework:
  + Java or .NET Core
  + REST API for DMV integration
* Database: MySQL
* Authentication & Security:
  + OAuth 2.0 or JWT
  + SSL/TLS certificates

Client Software

* Browsers: Chrome, Firefox, Safari, Edge (latest versions)
* Mobile Support: Responsive web app or native Android/iOS apps

Third-Party Integrations

* DMV API / External Database
* Email/SMS Gateway

### Tools

Hosting & Deployment

* Cloud Deployment: AWS or Google Cloud Platform
  + EC2
  + RDS
  + Cloud Storage for backups
  + Load balancer
* On-Premises Alternative
  + Dedicated server rack

Networking

* Firewall protection
* VPN access for admins/staff when working remotely
* Role-based access controls

Scalability & Performance

* Auto-scaling groups for app servers
* Caching layer
* Content Delivery Network

Security & Compliance

* Encrypted data at rest and in transit
* Regular penetration testing and vulnerability scans
* Compliance with FERPA (Family Educational Rights and Privacy Act) and GDPR (General Data Protection Regulation)