# CS 255 Business Requirements Document

## System Components and Design

### Purpose

*What is the purpose of this project? Who is the client and what do they want their system to be able to do?*

* The purpose of this project is to develop a simple system for Driver Pass, a company aimed at improving driver training and preparation for driving tests at the Department of Motor Vehicles (DMV).
* The client, Driver Pass, led by Liam and Ian, wants their system to be able to provide online driver training classes, practice tests, on-the-road training, and appointment scheduling for driving lessons.
* They need to offer various packages for driving lessons, each lesson will have different durations and features, and the system will handle reservations, user management, tracking of user activities, and compliance with DMV regulations.
* The system needs to be accessible from anywhere, online, or offline, with different levels of access for different employees, robust security features, and the ability to track changes made to records.

### System Background

*What does Driver Pass want the system to do? What is the problem they want to fix? What are the different components needed for this system?*

* Driver Pass wants the system to solve issues related to improving driver training and preparation for driving tests at the Department of Motor Vehicles (DMV).
* The main problem they want to fix is the high rate of failure among those people taking driving tests at the DMV, indicating a need for better training and preparation resources.
* The system will need to provide comprehensive online driver training classes covering DMV rules, policies, and driving techniques.
* Practice tests should be available to help users assess their knowledge and readiness for the driving test and they should be able to take them at any time.
* DriverPass should offer on-the-road training sessions for customers who prefer practical, hands-on learning experiences to be taught to them by driving instructors.
* Users should be able to schedule driving lessons conveniently through the system, either online or via phone calls to DriverPass's office.
* The system needs to support user accounts for different types of users, including customers, employees, and administrators, with varying levels of access and permissions and have a user management system.
* DriverPass wants the ability to track user activities within the system, such as making reservations, canceling appointments, and modifying records. They also need reporting features to generate activity reports for accountability and analysis purposes.
* The system should be flexible enough to offer different packages for driving lessons, with options to customize packages in the future.
* Robust security features are also going to be important to protect user data, prevent unauthorized access, and ensure compliance with privacy regulations.
* The system must stay up to date with DMV requirements by allowing Driver Pass to receive updates on rules, policies, and sample questions, ensuring that training materials remain current and relevant.
* The system should be accessible over the web and they would like it to be hosted in the cloud to ensure scalability, reliability, and ease of access for users.
* Another component needed is a user-friendly interface with intuitive navigation and clear presentation of information.

### Objectives and Goals

*What should this system be able to do when it is completed? What measurable tasks need to be included in the system design to achieve this?*

* With the system complete it should provide comprehensive training materials for students to be able to train on the go.
* The system should also facilitate practice tests for all users so they can be able to take a test whenever they need to go over certain topics.
* DriverPass will also enable on-the-road training to its users allowing them to get real-world experience training by driving instructors that they can choose from.
* The DriverPass system will be able to streamline appointment scheduling when the system is complete. It will allow users to choose a schedule that fits their needs to get the driving lessons they need.
* The completed system should also allow users to manage their accounts by adding driving classes changing passwords and accessing practice material.
* DriverPass will also be able to track user activities such as making reservations, canceling appointments, and modifying records.
* A completed system will provide reporting features to generate activity reports for accountability and analysis purposes.
* DriverPass should offer various packages for driving lessons, with options to customize packages based on customer needs.
* The completed system will also provide robust security to protect users’ data and also adhere to privacy regulations.
* The system should enable DriverPass to receive updates on DMV rules, policies, and sample questions, ensuring that training materials remain current and relevant.
* One measurable task would be to develop and deploy an online platform for delivering training materials and practice tests.
* Another task would be to implement appointment scheduling functionality with user-friendly interfaces for both customers and employees.
* Design and implement user account management features, including registration, authentication, and role-based access control.
* Integrate tracking mechanisms to monitor user activities and generate activity reports.
* A measurable task would also be to design and implement flexible lesson package management functionality to accommodate different customer needs.
* Implement security measures such as encryption, access controls, and audit trails to make sure it complies with data security and compliance.
* Develop mechanisms for receiving and processing updates from the DMV to keep training materials up to date.
* Conduct thorough testing to validate system functionality, usability, and security.
* Provide training and support for users and administrators to ensure effective system utilization.
* Establish procedures for ongoing maintenance, updates, and enhancements to the system to meet evolving needs and regulations.

## Requirements

### Nonfunctional Requirements

#### Performance Requirements

*What environments (web-based, application, etc.) does this system need to run in? How fast should the system run? How often should the system be updated?*

* The system should respond to user interactions within a reasonable timeframe, such as loading pages, processing requests, and generating reports.
* The system should be able to handle an increasing number of users and transactions without significant degradation in performance.
* The system should support a high volume of concurrent users and transactions, especially during peak hours.
* The system should be compatible with different devices such as mobile phones and pcs, browsers, and operating systems like windows and mac to ensure broad accessibility.
* The system should be updated at least every month to ensure all functionality is up to the standards it needs to operate in.

#### Platform Constraints

*What platforms (Windows, Unix, etc.) should the system run on? Does the back end require any tools, such as a database, to support this application?*

* A cloud-based solution would be highly suitable for the DriverPass system. Cloud platforms such as Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform offer scalability, reliability, and a wide range of services to support modern web applications.
* The backend of the DriverPass system will likely require a database management system to store and manage data efficiently.
* The system will need a web server to host and serve web applications to users.
* The system should integrate security tools and services to protect against threats such as SQL injection, cross-site scripting (XSS), and unauthorized access.

#### Accuracy and Precision

*How will you distinguish between different users?* *Is the input case-sensitive? When should the system inform the admin of a problem?*

* Distinguishing between different users in the DriverPass system can be achieved through user authentication and role-based access control mechanisms.
* Each user should have a unique identifier, such as a username or email address, along with a corresponding password for authentication.
* The user’s password will need to be case-sensitive to enhance security and prevent unauthorized access.
* The user’s username will be case insensitive to avoid confusion and mistakes during login.
* The system should inform the admin of a problem when critical errors or issues occur that require immediate attention.
* Security breaches or unauthorized access attempts detected by intrusion detection systems should alert the system administrator of this event.
* Also Server downtime or service disruptions affecting system availability should be alerting the system admin as well.

#### Adaptability

*Can you make changes to the user (add/remove/modify) without changing code? How will the system adapt to platform updates? What type of access does the IT admin need?*

* To enable changes to users without modifying the code, the DriverPass system can implement a user management interface or dashboard accessible to authorized administrators.
* Driver Pass will need to implement dynamic configuration settings that allow administrators to adjust system behaviors and parameters without code changes.
* The IT admin should have full access to user management functionalities, including adding, removing, and modifying user accounts.
* The IT admin will also have permission to view and analyze system logs and monitoring data to identify and troubleshoot technical issues.
* The system will need to use industry-standard frameworks, libraries, and APIs that are well-maintained and regularly updated to ensure compatibility with evolving platform requirements.
* We would need to regularly monitor platform updates and release notes to identify any changes that may affect system components or integrations, and proactively address compatibility issues as needed.

#### Security

*What is required for the user to log in? How can you secure the connection or the data exchange between the client and the server? What should happen to the account if there is a “brute force” hacking attempt? What happens if the user forgets their password?*

* Users of the system need to provide valid authentication credentials, a username and password combination, to log in to the system.
* We will need to secure the connection between the client and the server using encryption protocols such as HTTPS (HTTP over SSL/TLS).
* In case there is a brute force attack we will implement an account lockout policy to mitigate brute force hacking attempts.
* The system will need to provide users with a secure password recovery mechanism in case they forget their password so they can reset their passwords.

### Functional Requirements

*Using the information from the scenario, think about the different functions the system needs to provide. Each of your bullets should start with “The system shall . . .” For example, one functional requirement might be, “The system shall validate user credentials when logging in.”*

* The system shall provide online driver training courses and practice tests.
* The system shall allow users to schedule driving lessons online or through a phone call.
* The system shall support different training packages with varying durations and additional features.
* The system shall enable users to register for training by providing personal information, including name, address, and contact details.
* The system shall accept all online payments for training packages using credit card information.
* The system shall allow users to modify or cancel their scheduled driving lessons online.
* The system shall track and record user activity, including lesson reservations, modifications, and cancellations.
* The system shall generate activity reports detailing user interactions and system events.
* The system shall provide role-based access control, allowing administrators to manage user accounts and permissions.
* The system shall notify administrators of critical events, such as failed login attempts or system errors.
* The system shall synchronize with the DMV to ensure training materials and practice tests are up to date with current regulations.
* The system shall offer a user-friendly interface for accessing training materials, scheduling lessons, and tracking progress.
* The system shall support secure communication between the client and server to protect user data and transactions.
* The system shall implement password recovery mechanisms for users who forget their login credentials.
* The system shall enforce account lockout policies to prevent brute-force attacks on user accounts.
* The system shall maintain system logs for auditing purposes and troubleshooting.

### User Interface

*What are the needs of the interface? Who are the different users for this interface? What will each user need to be able to do through the interface? How will the user interact with the interface (mobile, browser, etc.)?*

* The interface needs to manage user accounts to add, remove, and modify user details (e.g., name, contact information, roles).
* The interface needs to allow instructors to add comments or notes related to student performance during driving sessions.
* Students should be able to monitor completed lessons, test scores, and overall training progress.
* The interface should record customer information, schedule driving lessons, and update appointment statuses that allow the secretary to do their duties with the system.
* The interface should be accessible through a user-friendly interface optimized for desktop browsers or tablets, facilitating efficient appointment management and customer assistance.

### Assumptions

*What things were not specifically addressed in your design above? What assumptions are you making in your design about the users or the technology they have?*

* The design assumes that users are familiar with basic web navigation and online interaction. However, specific training and support resources for users who may be less technologically proficient were not detailed.
* The assumption is that the integration with the DMV or other external systems can be achieved seamlessly without significant technical obstacles.
* The assumption here is that the system architecture and infrastructure are designed to accommodate growing user bases and maintain optimal performance under varying workloads.
* We are assuming also that the development process includes mechanisms for gathering user feedback and incorporating iterative improvements to enhance user experience and satisfaction.

### Limitations

*Any system you build will naturally have limitations. What limitations do you see in your system design? What limitations do you have as far as resources, time, budget, or technology?*

* With the complexity of the system requirements, certain features or enhancements may need to be prioritized or deferred to future iterations.
* Limited availability of human resources (developers, testers, designers) may impact the speed and quality of system development and testing.
* Compatibility issues with legacy systems or infrastructure constraints may hinder the seamless integration and deployment of the new system.
* Time constraints may also impact the thoroughness of testing and the ability to address all identified issues or bugs before system release.
* Adherence to regulatory requirements and industry standards (e.g., data protection regulations, and driver training regulations) may impose constraints on system design and functionality.

### Gantt Chart

*Please include a screenshot of the GANTT chart that you created with Lucid chart. Be sure to check that it meets the plan described by the characters in the interview.*

A screenshot of a project management

Description automatically generated