# CS 255 Business Requirements Document

## System Components and Design

### Purpose

* The purpose of this project is to develop a system for DriverPass (The Client) to enhance driver training. DriverPass aims to provide online classes, practical tests, and on the road training to address the need for improved driver training.

### System Background

* DriverPass wants the system to facilitate online access to training materials and appointment data from any device, PC or mobile. They want reservation tracking for drivers’ lessons, including identification of assigned drivers, times and cars. They want flexible driving packages with future customization options, and different roles and rights for management, IT, secretary and customers. There should be secure customer registration accessible via phone or online, Realtime updates from DMV for compliance and a cloud-based infrastructure for easy accessibility and minimal tech issues.

### Objectives and Goals

* The objectives and goals are to create a robust and user friendly system that addresses the unique needs of Driver Pass and its customers, while adhering to standards. Driver pass aims to Improve driver training while providing users an easily accessible system, but also maintaining security and integrity.
  + **Objectives:**
    - Improve Driver Training
    - Flexible reservations
    - User Friendly registration
    - Security and Access Control
    - Compliance with DMV requirements
    - Offline Data Access
    - Transparent Activity Tracking
    - Customizable Packages (For future update)
    - Cloud based system
  + **Goals:**
    - System Functionality
    - User Interface Design
    - Data Integrity and Security
    - Notification System
    - Task Completion Timeline
    - Customer Satisfaction

## Requirements

### Nonfunctional Requirements

#### Performance Requirements

* The system is intended to run off the web, preferably over the cloud. This implies that the system should be accessible through web browsers allowing users to interact with it from various devices such as computers and mobile devices. Using a cloud-based system indicates that the infrastructure for the system would be reliant on hosting and delivery services. This choice implies scalability, reliability and accessibility advantages.
* Performance
  + The system should aim for a low response time. Although there is no specified request from DriverPass for this, it will help with providing a good user experience.
  + The system should be designed with the intention that it will be scaled eventually in the scenario that the company starts to grow. This makes future updates and features easy to navigate and ensures performance standards are met as demand increases.
  + The system should be highly reliable to minimize downtime. This is important for users who rely on the system to make reservations and access training material.
  + The system should be capable of handling concurrent users. This cloud-based system will be meant for multiple users, so during peak use periods this is highly important, as to not compromise performance.
  + Security that should be implemented is authentication and authorization processes. This helps protect user information. The rest of security past this should be provided by the cloud system they are using.
  + As far as update frequency goes, Driver pass wants to maintain compliance with the DMV. The system should be capable of receiving timely updates anytime there are changes to rules, policies, or questions on the material provided. The frequency of these updates can be determined by the DMV’s release schedule for policy and rules if they have one.
  + The frequency of updates to the system would highly depend on any new features, or bug fixes. Regular updates can be situationally based on user feedback, or business needs to help enhance the system.

#### Platform Constraints

* The platform should have the capability to run on any browser such as chrome, safari, windows, Firefox, ect.. Having system agnosticm can ensure compatibility between different browsers and devices is possible. The system will likely require a database to manage data related to the reservations, user information, and system configurations. Using the cloud also eliminates the need for a web server.
  + The following are some possible **constraints.**
    - Browser compatibility
    - Cloud service provider
    - Database System
    - Programming Language
    - Security protocol and standards
    - Mobile devices
    - Data Storage and retrieval
    - Scalability

#### Accuracy and Precision

* Per the interview, multiple user roles are required for each type of user such as the boss, IT, the secretary, and the customer. Giving individuals separate rights and roles for accounts ensures precise control over who can access, modify, or administer different aspects of the system. The interview does not specifically mention any case sensitive inputs, but when dealing with usernames and passwords, case sensitive should most likely be a factor, but when already logged in getting rid of case sensitivity can make the experience easier to search for what you are looking for. The system should inform the admin of issues related to security, data integrity, and functionality. The system should be able to track any changes made by users and have a mechanism to inform administrators of significant events, such as reservations, or record modifications. The system should have an activity log of canceled and reserved appointments along with who the appointment was for. Accuracy and handling of data is important especially when dealing with user information and reservations. The system should be able to prevent any redundancy and provide accurate reports.

#### Adaptability

* A well-built system would not require change to code when changing rights. Having a system that has separate rights already built in with the ability to add and remove them at any time would mitigate needing to change the code. As far as the system adapting to updates depends on the cloud-based system being used. Most cloud-based systems are build to handle updates without any issues, but regular testing should still be implemented to ensure compatibility between platforms is maintained. The IT admin would need full access to user accounts, System configuration, Troubleshooting and debugging tools, and permissions to push updates.

#### Security

* A typical user login would require at least a unique Username or email address and a password. This combined can create an authentication method requiring both to be correct to log in to the account. The finer details of the password requirements can be determined by the IT department at DriverPass. There are multiple ways to secure the connection or data exchange between the client and server, such as providing secure coding, and encryption algorithms to secure data. If a brute force hacking attempt happens, the following measures can be used to block the attempt.
  + Account Lockout
  + Challenges such as picking correct images or deciphering sounds can be3 used to block attempts.
  + IP blocking
  + Notification to user and admin to raise awareness of potential security threats.
* To handle forgotten password, a system should be put In place to allow the user to reset their password, such as a text message, or reset link sent to their email address. Optionally a two factor authentication system could be put in place to verify the user identity such as questions about the user.

### Functional Requirements

* The system shall provide a secure login mechanism, validating user credentials during the login process to ensure authenticated access.
* The system shall implement role-based access control (RBAC) to distinguish between different user roles (e.g., big boss, IT officer, secretary), granting appropriate permissions and restrictions based on user roles.
* The system shall enable users to schedule driving lessons by allowing them to make reservations online, specifying the preferred day, time, and driver, and providing confirmation of the reservation.
* The system shall track and manage driving lesson reservations, ensuring that each user is matched with the appropriate driver, time, and car for efficient scheduling.
* The system shall support online and offline access to data, allowing the big boss to access information from any device, online or offline, while ensuring data consistency and avoiding redundancy.
* The system shall enforce security measures, including different user roles with varying access rights, secure data transmission using encryption, and protection against brute force hacking attempts by implementing account lockout mechanisms.
* The system shall provide the big boss with the ability to download reports and essential information, allowing offline work with data using tools such as Excel for further analysis.
* The system shall track user activities, recording changes such as reservation creation, modification, or cancellation, and provide an activity report for accountability and auditing purposes.
* The system shall enable the big boss to customize driving lesson packages, adding or removing modules, providing flexibility for future updates without requiring immediate code changes.
* The system shall integrate with the DMV to receive timely updates on rules, policies, and sample questions, ensuring that the provided training materials align with current DMV requirements.
* The system shall feature a secure password recovery process, allowing users to reset their passwords through secure mechanisms, such as email verification or security questions, in the event of a forgotten password.
* The system shall enforce data privacy and compliance with regulatory standards, safeguarding user information and ensuring adherence to applicable laws.
* The system shall provide an intuitive and user-friendly interface for users to interact with, ensuring a positive user experience and easy navigation through different functionalities.
* The system generates notifications to the admin (big boss or IT officer) in real-time or near-real-time for critical events, such as security breaches or system issues, ensuring timely awareness and response.

### User Interface

* The interface needs to show the DriverPass logo at the top, show online test progress, with statuses such as not taken, in progress, failed, or passed. There should be a Drivers notes section on the interface that shows driver comments, the lesson time, lesson start, and end time. The interface should include the driver photo and student photo along with the student’s information. On another interface page, there should be an input form where the student or secretary can fill out the student information, and a page with the contact information of DriverPass. The users based off the cloud requirement should be able to access this anywhere, at any time. From the looks of it, mostly the secretary, driving instructors, and customers will be using the interface, but I am sure anyone at the company will at some point in time access it.

### 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 assumptions I am making are as follows.
  + Users have technical proficiency and are comfortable using websites and performing online task.
  + Device accessibility such as assuming users have access to a multiple devices such as smartphones, desktops, tablets, ect..
  + Security measures
    - Security measures were never specifically mentioned such as passwords and encryption of data, so it is assumed that DriverPass will want user information to be protected. The only security mentioned was user roles.
  + Scalability because it is assumed that the company will eventually grow.

### 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?*

* I see timing as a limitation. A timeline has already been created of when things should get done. This can limit the testing and refinement process to mitigate any bugs, which could affect the whole system.
* Budget could be another one depending on what features DriverPass wants to implement, and which tech or cloud-based system they would like to use.
* The choice of which cloud-based system to be used can be affected by the budget, potentially limiting the available tools for system development.
* Another limitation external to the company is the DMV. Having to rely on the DMV for updates on rules, laws, and policies can affect future updates, and pass rates.
* Security is another limitation, that could also coincide with the budget. If DrivePass wants to sink a lot of money into security, they can have highly protected data, or the minimum can be spent focusing on security, and you have a product that is easily hackable.

### Gantt Chart

A screenshot of a calendar

Description automatically generated