# CS 255 Business Requirements Document

## System Components and Design

### Purpose

* The purpose of this project is to design a system for DriverPass that can provide students with access to online practice exams and on-the-road training to better prepare them for driving tests.
* The system should allow students to take online classes and practice tests, make appointments for on-the-road training sessions, and access information about their driving appointments and progress.
* Additionally, the system should enable the company to manage data securely, track user activity, and generate reports. The ultimate goal of the project is to create a user-friendly and efficient system that can meet the needs of DriverPass and its customers.

### System Background

* DriverPass sees a problem in society related to the lack of quality driver training, resulting in many people failing their driving tests at the DMV. They want to provide a solution to this problem by offering better driver training through online classes and practice tests, as well as on-the-road training if desired. DriverPass's vision is to build a system that can handle all of these training services, including a secure database and an intuitive interface catering to the specific roles and access rights of business owners, employees, and customers.

### Objectives and Goals

* Business owner has access to the data from anywhere, both online and offline, and be able to download reports and information to work on using Excel.
* Different employees have different roles as well as different level of access.
* The system has tracking capabilities to monitor user activity and reservations.
* Customers can make, cancel or modify reservations online or offline.
* The driving appointments work in packages and DriverPass is able to disable or enable any of the packages.
* Customers can reset password by their own.
* Customers can track their progress and view trainers’ comments.
* The system connects with DMV to receive notifications for new updates (new rules, policies, or sample questions)
* The system should be cloud-hosted so DriverPass can focus on their core business tasks which is managing customers and the services.

## Requirements

### Nonfunctional Requirements

#### Performance Requirements

* Environment: Since DriverPass wants to provide online classes, practice tests, and appointment scheduling, the system needs to run in a web-based environment accessible to users via computers and mobile devices with internet connectivity.
* System Speed: The system needs to be designed to provide a fast and responsive user experience. Users should be able to access and interact with the system without significant delays or latency. Fast loading times for web pages, quick response times for user actions, and efficient data processing need to be put into considerations for ensuring a satisfactory user experience.
* System Updates: Regular updates might be required for DriverPass to add new features, fix bugs, improve performance, or address security concerns. The update process can be planned and executed in a way that minimizes downtime or disruptions to the system.

#### Platform Constraints

* Platform Compatibility: To reach a wider user base, the system needs to be compatible with multiple platforms. This includes popular operating systems such as Windows, macOS, and Linux. Additionally, in order to enhance the accessibility of the system for a broader range of users, we need to ensure compatibility with common web browsers (e.g., Chrome, Firefox, Safari) and mobile platforms (e.g., iOS, Android).
* Backend Tools and Database: As the system is expected to handle data storage, retrieval, and management, a backend database is required. The choice of database technology would depend on various factors such as scalability, performance, security, and the client's preferences. Some commonly used databases for web-based systems are MySQL, PostgreSQL, Oracle, and MongoDB. Conducting a thorough analysis and discussing the options with the client will be necessary to determine the most suitable database for DriverPass. The specific tools and technologies required for the backend would depend on the chosen database and the overall system architecture.

#### Accuracy and Precision

* To distinguish between different users in the DriverPass system, a unique identifier or username can be assigned to each user during the registration process. This unique identifier can be used to differentiate users and ensure accuracy in user identification. The input for usernames and identifiers can be designed to be case-sensitive or case-insensitive. It is common for user identifiers, such as usernames or email addresses, to be treated as case-insensitive. However, it can be determined based on the preferences of the clients.
* In case of a problem occurs, the system should be designed to provide appropriate notifications or alerts to the admin. The system can include error handling mechanisms and exception handling routines to detect and capture issues such as system failures, data inconsistencies, unauthorized access attempts, or other errors.

#### Adaptability

* The system needs to support user management functionalities that allow for adding, removing, and modifying users without requiring code changes. In order to do so, we need to create a user management functionality that provides an interface for administrators to perform these actions. The system should have the flexibility to handle user-related changes through configuration or administrative settings rather than requiring code modifications.
* In terms of adapting to platform updates, the system needs to be designed with loose coupling and separation of concerns, allowing for easier integration with updated platform components.
* Regarding, access for the IT admin, the IT admin would need privileges and access to perform various administrative tasks. This can include tasks such as managing user accounts, configuring system settings, monitoring system performance, applying updates, and troubleshooting issues. The system should provide the necessary interfaces to the IT admin with appropriate access levels and permissions to fulfill their responsibilities effectively and securely.

#### Security

* To ensure secure user authentication, the system should require a combination of a unique username or email and a strong password. This helps verify the identity of the user and protects against unauthorized access.
* To ensure a secure connection and protect the data exchanged between the client and server, the system can employ secure protocols like HTTPS, which encrypts the communication between the client and server using SSL/TLS. This guarantees that any information transmitted between the two parties remains confidential and safeguarded against unauthorized access or manipulation.
* To mitigate the risk of brute force attacks, the system should implement measures like account lockout policies. After a certain number of failed login attempts within a specific time period, the system can temporarily lock the account or introduce a delay before subsequent login attempts. This helps protect against automated attacks that attempt to guess passwords systematically.
* In the event of a user forgetting their password, the system can offer a secure mechanism for password recovery or reset. This may entail sending a password reset link to the user's verified email address or employing security questions and other methods to verify their identity. The user should be guided through a secure procedure to reset their password and restore their account access.

### Functional Requirements

* The system shall provide online driver training classes and practice tests.
* The system shall offer on-the-road training sessions for students.
* The system shall allow the business owner to access data from anywhere, both online and offline.
* The system shall enable the business owner to download reports and information for offline use.
* The system shall support user account management, including registration, login, and profile management.
* The system shall differentiate between different user roles, such as administrator, IT officer, secretary, and student.
* The system shall ensure secure access to user accounts with password-based authentication.
* The system shall provide a way to reset passwords for users who forget them.
* The system shall allow users to make appointments for driving lessons, either online or through the secretary.
* The system shall record and track reservations, including the customer, scheduled driver, time, and car.
* The system shall provide activity tracking and logging to monitor changes to records and reservations.
* The system shall generate activity reports, indicating who made a reservation, canceled it, or last modified it.
* The system shall support communication channels between the company and the user, such as contact forms or messaging.
* The system shall display test progress for customers, showing completed tests, tests in progress, scores, and statuses.
* The system shall store and display driver notes, including comments and lesson times.
* The system shall provide an input form for student information, including name, address, and other relevant details.
* The system shall be adaptable to changes in user information without requiring code modifications.
* The system shall be compatible with specified platforms, such as Windows or Unix.
* The system shall support the IT admin with appropriate access rights for managing accounts and system modifications.
* The system shall prioritize data security, including secure connection and data exchange between client and server.

### User Interface

* Students/customers should have the ability to access online classes and practice tests, make reservations for driving lessons, and view their test progress and results. They will interact with the interface through either a browser or a mobile device, ensuring flexibility and accessibility.
* Secretaries need to be equipped with features that allow them to answer phone calls, schedule, modify, and cancel appointments on behalf of the customers. Their interface can be browser-based or a dedicated application, providing ease of use and efficiency.
* Administrators/IT officers have responsibilities related to system maintenance and modifications. They require comprehensive access to all accounts for tasks like password resets and access management. It is important for them to receive timely notifications about any system issues or problems. Their interface can be a browser-based administration panel or a dedicated application tailored to their needs.

### Assumptions

* User Technical Skills: It is assumed that the users of the DriverPass system have basic computer literacy skills and are familiar with common web or mobile application interfaces. This assumption implies that they can navigate through the system, understand its features, and perform tasks without significant assistance.
* System Compatibility: It is assumed that the DriverPass system will be compatible with the devices and platforms commonly used by the target user base. This includes compatibility with popular web browsers, mobile operating systems, and screen sizes to ensure a seamless user experience across different devices.
* User Training and Support: It is assumed that DriverPass will provide the necessary user training and support materials to guide users in using the system effectively. This may include documentation, tutorials, or online help resources to assist users in understanding the system's features and functionalities.

### Limitations

* Time Limitations: Time constraints can limit the development, testing, and implementation of the system. The project may have a fixed timeline, and there might be limitations on the amount of time available for each phase, such as requirements gathering, design, development, and testing.
* Budget Limitations: Budget constraints can limit the allocation of financial resources to the development and maintenance of the DriverPass system. Limited funding may impact the scope of the project, the selection of technologies and the level of system security.
* Technological Limitations: The chosen technologies, frameworks, and programming languages may have certain limitations that could impact the system design. For example, certain technologies may have restrictions on integration with third-party services or may not support specific features required by the system.
* Functional Limitations: The functional requirements outlined earlier may not cover all possible scenarios or user needs. Certain edge cases or specific user requirements may not be addressed within the scope of the initial design. These limitations could impact the system's ability to cater to all possible user scenarios effectively.

**Gantt Chart**

