# CS 255 Business Requirements Document Template

## System Components and Design

### Purpose

* The Client:

DriverPass is a company focused on providing driving educations for individuals preparing to take the Departments of Motor Vehicles (DMVs) driver’s license exam.

* Purpose:

The objective of DriverPass is to provide individualized training and resources to help customers successfully pass their driving tests.

* System Capabilities:

DriverPass wants to allow their customers to access online classes and practice test as well as in person driving lessons. The system must allow customers to make accounts to add and modify their information. On their online account the customer must be able to select packages and view driver and car availability with times to schedule in-person lessons. It must also track all user activities, such as bookings and cancellations, lesson progress, and test scores. Also, the system requires role-based access control for different users, data access from any device with downloadable reports, and secure management of accounts. Lastly, it needs to stay up-to-date with DMV regulations and ensure compliance with industry standards. The packages available to the customer are:

* Package One: Six Hours of Driving with a Trainer

This package includes 6 hours of in-car driving lessons with a certified trainer. The six hours are spread out over three separate driving sessions, with each session lasting two hours.

* Package Two: Eight Hours of Driving with a Trainer + DMV Rules Lesson

This package provides 8 hours of driving lessons with a trainer, divided into four separate two-hour sessions. In addition to the driving practice, this package includes an in-person lesson where customers are taught DMV rules and policies.

* Package Three: Twelve Hours of Driving with a Trainer + DMV Rules Lesson + Online Classes and Practice Tests

The most comprehensive option, this package offers 12 hours of driving lessons with a trainer, spread over six two-hour sessions. It also includes the in-person DMV rules lesson. Additionally, customers get access to online classes containing all training materials, as well as online practice tests to prepare for the DMV exam.

### System Background

DriverPass wants the system to:

* Book, modify, and cancel driving lessons:

Allow customers to schedule, reschedule, or cancel their driving lessons either online through the website or by contacting the office. By keeping track of the specific driver and car availability for scheduling. This provides flexibility for customers to manage their lessons according to their availability.

* Access up-to-date driver training materials and practice tests:

Provide students with the latest educational content and practice tests that are relevant to the current DMV requirements, ensuring they are well prepared for both the written and driving portion of the driver’s license exam. This content should be easily accessible through an online portal.

* Allow customers to schedule two hour in-person driving lessons:

Enable students to book driving lessons that last two hours each, allowing them to practice their driving skills with a qualified instructor and car. The scheduling system should allow customers to select a date and time that works best for them.

* Track student progress on lessons and practice tests:

Implement a system to monitor and record each student’s progress, including detailed performance analytics such as test scores, lesson progress status, and completed driving hours. This allows both students and administrators to review the student’s progress and asses their readiness for the DMV driver’s license exam.

* Manage reservations by assigning specific drivers, cars, and lesson details:

Ensure the system assigns available drivers, vehicles, and lesson times for each reservation. It should also gather details such as the pick-up and drop-off locations, making the scheduling process smooth and clear for the customer.

* Ensure authorized users access control with specific permissions:

Implement role-based access control so that different users, such as the business owner, IT officer, secretary, and students, have appropriate permissions. For instance, the owner and IT officer should have full access to all system functionalities, while students and the secretary have limited, role-specific access.

* Stay up to date with DMV driving test requirements:

Connect the system to external DMV sources to automatically update training materials, practice tests, and regulations as DMV standards evolve. This ensures that the learning materials and testing criteria are always in compliance with current DMV rules.

Problems DriverPass wants to fix:

* Inefficient and outdated driver training:

Traditional driver education often relies on outdated methods, leading to ineffective learning and high failure rates in DMV driving tests. DriverPass wants to close this gap by modernizing the learning process with up-to-date resources and effective services that meet the needs of students.

* Provide a system for effective training, practice tests, and lesson scheduling:

DriverPass wants to create a platform that allows students to access current driver training materials, take practice tests compatible with the DMV, and easily schedule or modify in-person driving lessons online. This system would simplify the entire learning process, making it more accessible and convenient for students.

* Prepare students to pass the DMV driving test:

The system is designed to help students master both the written and driving aspects of the driver’s license exam. With a focus on preparing students for the DMV test, it provides practice exams that mirror the official test and offers detailed feedback to improve performance, increasing students' chances of passing on the first attempt.

* Efficiently manage services through automation:

By automating business operations, such as scheduling lessons, tracking student progress, and assigning instructors and vehicles, the system aims to make it easier for the employees. This ensures that services are managed more efficiently while enabling the business to track user activity and maintain operations as smoothly as possible.

What are the different components needed for this system?

* User Interface (UI):
* Customer portal:

Allow customers to create accounts, schedule appointments, and access online classes and practice tests. Interface to display available packages, booking system for lessons, and customer progress. Ability to support password resets. Interface for customers to view test progress, score and status. Driver notes section showing lesson times, driver comments, and lesson durations.

* Admin Interface:

For employees to manually schedule, modify, or cancel appointments in office. component for customer to add info such as name, address, payment details, pickup and drop-off location. Interface to view and manage reservations, customer history, and lesson logs.

* Owner and IT Interface:

Dashboard for the owner and IT to manage and download business data and reports. Administrative tools to enable or disable training packages.

* Database Components:
* Customer Database:

Store customer information like name, address, phone, email, payment details. Track customer bookings, training packages, and payment history.

* Lesson Schedule Database:

Manage and store data on lesson appointments, including driver assignments, cars, lesson times, and locations. Track which cars are assigned to which driver and which customer.

* Package Management Database:

Store details about the three driving packages, including available hours, types of lessons, and online class materials. Allow flexibility to disable or update packages as needed.

* Driver and Vehicle Database:

Keep track of instructors, vehicle, and driver schedules. Store notes and feedback from instructors after each lesson.

* Security and Access Control Database:

Handle role-based permissions for different user types admin, IT, customer. Track system activity for modifications to records bookings, cancellations and packages.

* Back-End Logic Components:
* Authentication and Authorization:

Secure login system for different user roles and role-based access control. Automatic password reset functionality for customers.

* Business Logic Layer:

Manages the reservations, training package selection, lesson schedules, and car/driver assignments. Ensures compliance with DMV updates. Handles business logic for future package customization.

* Payment Processing Module:

Secure payment processing credit card information during booking. Stores and manages customer payment information securely.

* Scheduling and Reservations System:
* Reservation:

Allows customers to book lessons based on availability of drivers, cars, and lesson times. Provides appointment modification for rescheduling or cancellations. Tracks reservations made by employees, with clear logging of who made or modified appointments. Supports two hour lesson increments based on the customer's selected package.

* DMV Integration Components:
* DMV Update Notification System:

Connect with the DMV to receive updates on rules, policies, and test changes. Notification system to alert the admin when DMV updates are available. Automatically update practice test content based on DMV requirements.

* Cloud Infrastructure and Security Components:
* Cloud Storage:

System to be hosted on the cloud to ensure accessibility from anywhere.

* Data Backup and Security:

Automatic backups of customer, schedule, and payment data to ensure no data loss. Encryption and security measures to ensure protection of sensitive data.

* Communication:
* Notification System:

Automated emails or text messages to remind customers about upcoming lessons and appointment changes.

* Customer Support:

Provide a way for customers to reach out to support for help with bookings or account issues.

### 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?*

* Customer Capabilities:
* Account Management

The customer must be able to make, add information, edit information, set passwords on a secure and accessible account.

* Booking and Reservations

Customer must be able to reserve and edit appointments with an instructor driver and car for a specific time and pickup and drop-off location.

* Training Package Selection

Customer must be able to view and select from the three different packages presented on the website.

* Access to Online Learning and Practice Tests

Customer should be able to view and interact with tests and lessons, while also keeping track of progress, status and scores.

* Notifications:

Customer needs to be notified of changes in their account, changes in reservations, of testing status and scores.

* Administrative Capabilities
* Appointment Management:

Administrators needs to be able to view and change appoints for customers.

* Customer Information Management:

Administrators must have the option to change customer information in the system.

* Payment Processing:

Administrator must be able to securely process payment for the customer.

* Driver and Vehicle Scheduling:

Administrators must be able to view availability and schedule reservations for the customer for a specific time and pickup and drop-off location.

* Owner and IT Capabilities:
* Full System Access:

Allowing authorized users to have full administrative access to all customer records, lesson schedules, payment information, and system logs.

* User Management:

Allows IT to manage accounts and accesses using role-based access for customers and employees.

* Reporting and Data Export:

Generation reports on system activities like bookings, customer activities, payments and activity logs. And be able to export theses report to be downloaded and stored.

* Package Management:

Allowing the owner to enable and disable packages.

* System Capabilities:
* Cloud-Based System:

The system is mean to be fully web-based and stored in the cloud so that it is accessible from any location.

* Secure Data Management:

Encryption and security protocols should put in place to ensure confidential information are secure and accounts are appropriately accessible.

* DMV Compliance:

The system needs to have communication with the DMV to update standards and information so that the material is current.

## Requirements

### Nonfunctional Requirements

#### Performance Requirements

* Web-Based System:

The system should be accessible over the web and cloud-based to avoid dealing with backups, security, and technical issues. Cloud-based also allows it to be accessible from any location.

* Quick Response and Data Retrieval:

The response of the system should be fast enough that the user is able to book, and access material easily. The system should be able to retrieve data quickly for the user.

* Regular Security Updates:

The system should be maintained and updated with small fixed, or larger updates as the client decides to add additional features. Updating frequently with changes in the security framework will keep the system more secure.

#### Platform Constraints

* Platform-Independent:

The system should be web-based and cross-platform and run on any system. It should seamlessly run on Windows, Linux, MacOS, and mobile browsers. In the future if the client decides to create a native app on a mobile operating system, then it must be able to share the same database.

* Database and Other Backend Tools:
* Database requirements:

The system will need an organized relational database to manage the different sections that must be stored therein. Data tables include, customer information, reservations, driving lesson scheduling, test results, and package details. Tools like MySQL, or Oracle can be used to create and manage this database.

* Web Server:

To handle client requests and serve data, a web server will need to be used.

* Security Tools:

To secure sensitive information security tools to encrypt the data like SSL encryption will be necessary.

#### Accuracy and Precision

* Different users will be identified by their unique login credentials and assigned roles, such as Boss, IT Officer, or Secretary, each with specific permissions and access levels.
* Usernames are case-insensitive to avoid confusion, but passwords should be case-sensitive for security.
* The system should alert the admin if there are critical issues, such as failed login attempts, forgotten password requests, unauthorized access attempts or system errors that affect the systems functionality.

#### Adaptability

* User Management:

The admin should have access to a dashboard where they can create new users, delete users, or modify user roles and permissions without needing to write or modify code. Roles such as Owner, IT Officer, Secretary, and Customer can be predefined, and the admin can assign or revoke roles via the interface.

* Adapting to Platform Updates

The system should be designed to handle platform updates smoothly, whether they are web browser updates, operating system updates, or backend tool upgrades. Here’s how this can be managed. Since the system is cloud-based and runs in web browsers, it remains platform independent. Browser compatibility should be a priority, and occasional testing with major browsers should be carried out to ensure functionality. Regular maintenance and testing is crucial to retain functionality.

* IT Admin Access Needs
* IT User Management:

IT Admin needs to have the ability to create, modify, disable, and delete user accounts and reset passwords for employees and customers, as well as role assignment and permissions.

* Security Management:

IT Admin needs access to activity logs to track system usage, user actions, and other system events for monitoring. Also, to block or grant access to the system as needed, especially if an employee leaves or there is a potential security threat.

* DMV Integration:

Handling connections and updates from the DMV, ensuring that the system is receiving current information for education and test material.

#### Security

* Users need to provide a valid username and password to log in, ensuring their input match those stored in the system.
* Using HTTPS to encrypt data exchanged between the client and server and implement secure protocols.
* If a brute force attack is detected, temporarily lock the account after a set number of failed attempts and alert the admin to review the activity.
* If a user forgets their password, provide a secure password reset link through their email.

### Functional Requirements

* The system shall validate user credentials when logging in.
* The system shall allow users to reset their passwords if forgotten, through a secure process.
* The system shall enable the IT admin to add, modify, and remove users without changing the code.
* The system shall allow the IT admin to assign and manage roles and permissions for different types of users.
* The system shall allow customers to make, modify, and cancel driving lesson reservations online.
* The system shall allow the secretary to schedule appointments for customers over the phone or in person.
* The system shall track which driver, car, time, and customer are associated with each driving lesson.
* The system shall prevent scheduling conflicts by ensuring that a car and driver cannot be double-booked.
* The system shall allow customers to select from one of three driving packages.
* The system shall allow the owner to disable specific packages if they no longer want customers to register for them.
* The system shall track the completion of driving hours for each customer based on the selected package.
* The system shall generate reports showing the activity logs for all user actions, including reservations, cancellations, and modifications.
* The system shall allow the owner and IT admin to view and print activity reports for auditing purposes.
* The system shall show the customer’s test progress, including the names of tests taken, scores, time taken, and the test status.
* The system shall connect to the DMV to receive updates on new regulations.
* The system shall notify the IT admin when DMV updates are received and allow them to review or implement the updates.
* The system shall ensure that all user data, including payment information, is securely stored and transmitted.

### User Interface

* The interface should be user-friendly and accessible on various platforms, with clearly labeled navigation for managing accounts and reservations.
* The interface will cater to several types of users, including the Boss, IT Admin, Secretary, and customers.
* Each user needs specific functionalities. The Boss manages all accounts and settings, the IT Admin handles technical issues and user management, the Secretary schedules and modifies appointments, and customers access their reservations and progress.
* Users will interact with the interface primarily through web browsers on desktops and mobile devices for now.

### Assumptions

* The design does not cover detailed user training or customer support processes.
* The design assumes users have access to web browsers and are familiar with basic online operations. It also assumes that the technology used will be compatible with current web standards and security practices.

### Limitations

* The system may face limitations in scalability if the number of users or data grows significantly, and it might have constraints in integrating with various external systems or adapting to future technology changes. Also, the addition to some functions the client chooses to add in the future may be limited.
* Constraints could be budget for development and maintenance, time restrictions for enabling updates, and potential technology limitations depending on the platforms used.

### Gantt Chart

