# CS 255 Business Requirements Document Template

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## 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 web application for the client DriverPass. DriverPass aims to improve the process of preparing for and passing driving tests.
* The system will allow customers to take online classes, practice tests, and receive on-the-road driving instructions. Customers can also schedule, modify, and cancel driving lessons through the system. They will also be able to access the system through various mobile devices and PCs, allowing them to download information for offline use.
* Customers and employees can access this web-based platform with their logins. Three different packages will be offered to customers based on the security they will require, so this application will be monetized. The data will be hosted on a cloud-based server to ensure scalability and security as the platform grows.

### System Background

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

* DriverPass wants the system to be a user-friendly web-based platform that will improve inefficiencies in driver education and enhance how customers prepare for and plan their driving tests at the DMV. DriverPass wants to reduce high failure rates of tests by offering a more intuitive and accessible platform which provides a better learning experience for beginners.
* Account management will be needed to assign different access roles for employees and customers. This will allow for accounts to be created, deleted, and updated within the database, as well as restrict access by various roles.
* The system will store employee and user data with cloud storage to ensure their data can be securely accessed from anywhere with an internet connection.
* The system will be able to securely process customers' payment information when they choose from the three packages offered.
* A reservation system must be in place so customers and employees can schedule or cancel online appointments.
* The system will need an intuitive, user-friendly UI that meets DriverPass requirements and is compatible with different devices, operating systems, and screen sizes.
* Customers will need an educational platform to track their status through different modules and tests.
* The system will track analytics with reports regarding customer activity and how the system is performing. Updates from the DMV will also be tracked to stay current with any regulation or testing changes.

### 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?*

* When the system is complete, customers will be able to access the web platform by creating a user login.
* With a user login customer will have access to their dashboard where they can set up payment, take practice tests, schedule driving lessons, communicate with instructors, track progress, and update account information.
* Customers will be able to schedule driving lessons by phone, online, and order additional resources by mail.
* The platform will have modules for lesson plans to educate customers at their pace.
* Progress through training programs will be monitored to track progress to to provide customers detailed feedback on areas the may need to improve.
* For employees, the system will allow them to communicate with customers, monitor customer progress with tests or training modules, manage customer packages, create customer profiles and assign driving lessons.
* Administrators will be able to manage the accounts for customers and employees for password resets, scheduling, assigning account permissions, monitor system usage, and employee activity.
* Owners will have access to reports about financial aspects, customer feedback, performance metrics, and oversee other business operations.
* These tasks will be achieved by utilizing tools the will facilitate proper account management, payment processing, intuitive UI, scheduling, tracking, and optimization for multiple devices and operating systems.

## Requirements

### Nonfunctional Requirements

*In this section, you will detail the different nonfunctional requirements for the DriverPass system. You will need to think about the different things that the system needs to function properly.*

#### 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?*

* System updates should occur quarterly, with critical patches applied as needed.
* The web application should be able to run on a cloud-based platform.
* The system should have scheduled maintenance during non-peak hours to ensure there is no downtime for users for peak hours, which could cause user dissatisfaction.
* The system should support at least 1,000 concurrent users without performance degradation, which would slow the system down.

#### 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?*

* The system must be compatible with Windows, macOS, and Linux to support users who use different platforms.
* The system will need to support different screen sizes for mobile devices and PC monitors to support
* The system will need to support different screen sizes for mobile devices and PC monitors to ensure a responsive and user-friendly experience across various devices, including smartphones, tablets, laptops, and desktops.
* The system will require a backend database like MongoDB to store user data, including account information, course progress, lesson schedules, and payment details, ensuring efficient data retrieval and management.

#### 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?*

* The system should notify admin when there are more than five unsuccessful login attempts with an incorrect password, so they can lock the account to prevent unauthorized access.
* Users must log in with their ID and password to access their accounts. Password input will be case-sensitive to enhance security and prevent unauthorized access.

#### 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?*

* IT administrators will need complete control over user management, course settings, and system monitoring tools via an intuitive admin panel. This will enable them to easily add, remove, or modify students, instructors, and other administrators without the need for any code changes.
* The system will maintain full backward compatibility with earlier versions after platform updates. Measures for backward compatibility will include data migration scripts, API versioning, and automated testing to ensure existing workflows remain functional post-updates.

#### 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 will be required to log in with a username and password. Multi-factor authentication is an option that adds extra security for users who want to access their accounts. When creating a new account, users must provide personal information to complete the registration process. Once registered, their details will be securely stored in the database.
* HTTPS needs to be used to encrypt data exchange between the client and the server to ensure that communications cannot be intercepted or subjected to man-in-the-middle attacks. TLS is crucial to encrypting sensitive data exchanged, including login credentials and payment details. Regular security updates and certificate renewals will be set up to keep connections secure and in line with current best practices.
* After multiple failed login attempts, accounts should be temporarily locked and admins notified. If a user forgets their password, they must reset it via email verification.

### 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 validate user credentials upon login to ensure their integrity and prevent unauthorized access.
* The system shall allow students to register for driving courses.
* The system shall enable instructors to schedule a course, monitor students' progress, manage course content for students, and provide feedback.
* The system shall track student progress to indicate if they are passing lessons and provide real-time performance feedback. Progress indicators will show completed lessons, quiz scores, and course status.
* The system shall allow administrators to monitor user activities, generate reports, manage accounts, and provide technical troubleshooting to solve system errors that could affect the user experience.
* The system shall allow users to update their personal information and preferences.
* The system shall receive updates from the DMV regarding regulations and policies to ensure course content remains current and aligns with official requirements, providing students with the most accurate and up to date information.

### 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.)?*

* Students can book driving lessons, track their progress, receive notifications, access all course materials, manage their accounts, and contact support.
* Instructors will utilize the user interface to manage lesson schedules, track student progress, provide feedback, and grade assignments.
* Administrators will use the UI to access tools for managing users, reporting dashboards, system settings, and troubleshooting options. These tools help them handle requests from students and instructors and monitor system performance effectively.
* Users will interact with the UI across various devices with touch screens or keyboards. Media queries will dynamically adjust UI elements based on screen size to ensure a seamless experience. Touch interactions will be used with larger buttons and intuitive navigation for mobile users.

### 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?*

* Users will have access to a fast internet connection and can use the web application with compatible devices.
* The system will rely on third-party email services for password recovery and notifications.
* Students will provide accurate information regarding their name, address, and payment details.
* To ensure a smooth transition to the new system, Instructors and administrators will need to receive training on how to use it effectively.
* All government regulations concerning online driver education will be adhered to, assuming continuous compliance is upheld.

### 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?*

* Some features may need to connect with third-party services, like payment processing, login verification, or mapping tools. This can create reliance on these services and may come with security risks.
* Development time may be limited, especially with the budget being unspecified. This can affect the range and complexity of features that can be added.
* The application needs an internet connection for most critical tasks because it relies on real-time data and scheduling. Offline functionality is limited.

### Gantt Chart

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

*A diagram with multiple colored boxes

Description automatically generated with medium confidence*