# CS 255 Business Requirements Document Template

Complete this template by replacing the bracketed text with the relevant information.

This template lays out all the different sections that you need to complete for Project One. Each section has guiding questions to prompt your thinking. These questions are meant to guide your initial responses to each area. You are encouraged to go beyond these questions using what you have learned in your readings. You will need to continually reference the interview transcript as you work to make sure that you are addressing your client’s needs. There is no required length for the final document. Instead, the goal is to complete each section based on your client’s needs.

**Tip:** You should respond in a bulleted list for each section. This will make your thoughts easier to reference when you move into the design phase for Project Two. One starter bullet has been provided for you in each section, but you will need to add more.

## 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 project's purpose is to partner with DriverPass in developing a digital platform that transforms driver education by addressing high failure rates in DMV driving tests. Our client, DriverPass, led by Liam, seeks a system that combines online theoretical learning with practical driving sessions. The envisioned platform aims to be user-friendly, providing secure, role-specific access to information, scheduling for driving lessons, and comprehensive online courses and practice tests. Additionally, it will feature tracking and reporting functionalities, offer flexible training packages, ensure content is up-to-date with DMV regulations, and operate reliably on a cloud-based, web-accessible framework. This initiative is designed to enhance the learning experience for drivers, streamline DriverPass's operations, and contribute to safer driving practices.

### 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 is seeking to address the critical issue of high failure rates among individuals taking DMV driving tests with a sophisticated and integrated digital platform. This platform is envisioned to seamlessly blend online theoretical learning with practical, on-the-road training sessions, thereby providing a holistic approach to driver education. The core objective is to make driver training more accessible, interactive, and effective, thus significantly improving the chances of success at the DMV tests.

To achieve this, the system will feature a Learning Management System (LMS) that delivers interactive courses and practice tests designed to mimic the DMV's testing format, allowing users to engage with the material at their convenience and pace. This online component is crucial for theoretical preparation, covering the rules of the road, driving etiquette, and safety practices.

Equally important is the practical aspect of driver training, facilitated through an advanced scheduling tool embedded within the platform. This tool will enable students to book, modify, and oversee their driving lessons with certified instructors, ensuring that practical skills are honed in real-world scenarios. The scheduling system's ease of use and flexibility aims to remove barriers to accessing quality on-the-road training.

Underpinning the platform is a robust database that securely stores detailed user profiles, educational content, schedules, and financial transactions. This database ensures the integrity and confidentiality of user data while providing a foundation for personalized learning experiences.

A key feature of the system will be its user interface (UI), designed to be intuitive and responsive across various devices, thereby enhancing user engagement and satisfaction. Through this interface, users will navigate the platform's features, access learning materials, manage schedules, and track their progress.

Role-based access control (RBAC) is another critical component, designed to assign specific permissions and access levels based on user roles, such as students, instructors, administrators, and IT personnel. This ensures that users can only access information and functionalities relevant to their role, enhancing the system's security and operational efficiency.

To support the platform's business operations, a payment processing integration will handle registrations, purchases of training packages, and other transactions securely and efficiently. Meanwhile, a comprehensive notification system will keep users informed of updates, reminders, and alerts through various channels, including email, SMS, and platform notifications.

Given the dynamic nature of driving regulations and tests, a compliance and update module will ensure that the platform's content remains current and in line with DMV standards. This module will facilitate the seamless integration of updates from the DMV, ensuring that the training material is always relevant and accurate.

Hosted on a cloud infrastructure, the platform is designed for scalability, reliability, and uninterrupted access, providing a solid foundation for DriverPass's operations and growth. This digital platform represents a strategic initiative to enhance driver education, making it more engaging, accessible, and effective, ultimately leading to safer driving practices and increased success rates at the DMV driving tests.

### 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?*

The system designed for DriverPass should emerge as a fully integrated platform that not only merges theoretical and practical aspects of driving education but also prioritizes security, user engagement, and adaptability. It needs to provide an enriching online learning environment through a sophisticated Learning Management System (LMS), filled with interactive content, multimedia courses, and DMV-style practice tests tailored to various learning stages. A crucial component is an intuitive scheduling system that aligns learner availability with that of instructors and vehicles, simplifying the booking and management of on-the-road training sessions. Security is paramount, necessitating a robust framework to protect sensitive user data and transactions, supported by role-based access controls to safeguard information integrity across different user categories.

The interface design must be user-friendly and responsive, ensuring ease of navigation and accessibility on multiple devices for students, instructors, and administrative personnel. The platform should feature advanced tracking and reporting capabilities for administrative use, offering insights into user activity and training program effectiveness. Flexibility in training packages and secure payment processing will enable DriverPass to cater to diverse customer needs, incorporating a variety of services and payment options. An automated update system is essential to maintain content relevancy with the latest DMV regulations, ensuring the educational material remains current. Finally, leveraging cloud infrastructure guarantees scalability and reliability, with sufficient resources to support system demands and maintain high availability, underpinning the system's overall success and durability. This comprehensive approach, detailed through measurable tasks and milestones across the development lifecycle, ensures the platform not only meets but exceeds DriverPass's objectives and user expectations.

## 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?*

* DriverPass wants to focus on running the business with minimal technical problems, so the system should have good performance and availability hosted on the cloud, providing access anywhere online. It should have reasonable performance for loading web pages, with flexibility to scale resources as needed. The system should have minimal downtime and be highly available. Updates from the DMV on rules/test questions need to be propagated quickly to ensure content is up-to-date.

#### 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 should run on a major cloud platform like AWS or Azure which provides web hosting and database support. The back-end will likely require a SQL database like MySQL or a NoSQL database like MongoDB for storing user data, courses, scheduling information, etc. The application can be built using standard web technologies like Java/Spring or Node.js.

#### 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?*

* User accounts must accurately distinguish between different user roles like admin, instructor, customer via role-based access controls. Input validation with sanitation is needed to ensure accurate data entry. The system should be case-sensitive for passwords. The admin should be alerted for security incidents, system outages or performance issues.

#### 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?*

* While user creation/modification requires developer involvement, the system should allow the admin (DriverPass owner) to disable or enable certain features like lesson packages through some settings interface without coding changes. The IT officer (Ian) needs full admin access to perform system maintenance and modifications. The system should be designed with a modular architecture to adapt to future platform and technology updates easily.

#### 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?*

* User authentication is required for logging in, with strong password policies like minimum length, alphanumeric, special characters. Data should be encrypted during transmission using HTTPS/SSL. Repeated failed login attempts should temporarily lock the account and log the incident. Users need an automated, secure password reset mechanism like email or SMS-based One-Time-Passwords. The system should be able to track who made changes to records for auditing purposes.

### 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 deliver online classes with course material, practice tests, and the ability for customers to track their test progress.
* The system shall enable customers to browse and purchase different lesson packages with varying durations and features.
* The system shall allow customers to schedule driving lesson reservations by selecting date, time, and being matched with an available instructor and car.
* The system shall provide an interface for instructors to log details, notes, and feedback after each completed lesson.
* The system shall allow admins to track all system activity, including lesson bookings, cancellations, record changes, and generate reports based on this data.
* The system shall provide role-based access control, differentiating between user types like admin, instructor, and customer, and assigning specific permissions to each role.
* The system shall integrate with the DMV system to automatically fetch the latest rules, policies, test questions, and receive update notifications.
* The system shall generate reports for the admin on utilization rates, pass/fail rates, revenue, and other relevant metrics.
* The system shall allow customers to register new accounts, requiring them to provide details like name, address, and payment information with implemented input validation.

### 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.)?*

To ensure a smooth user experience, the driving school system will require a role-based interface. This means different user types will have access to specific functionalities through dedicated views. Here's how it will work:

* Admins: They will have a comprehensive dashboard to manage user accounts and roles, configure system settings, generate reports, and access audit logs for comprehensive oversight.
* Instructors: Their portal will display their upcoming lesson schedule, allowing them to efficiently log feedback and update lesson statuses after each session.
* Customers: The core experience starts with a user-friendly registration and login process. Once logged in, they can browse and purchase lesson packages, schedule driving lessons, and access online classes and practice tests for self-paced learning. To provide maximum flexibility, the customer interface will be accessible via both web browser and a dedicated mobile app, allowing for on-the-go scheduling.

The overall user interface will prioritize a modern aesthetic, with a focus on responsiveness to ensure a seamless experience across all devices. Additionally, a consistent look-and-feel throughout the different views will promote user familiarity and ease of navigation.

### 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 system is designed to be accessible by a variety of user devices. Customers can access the system through web browsers on computers or mobile devices, ensuring they have a reliable internet connection for optimal functionality.

DriverPass prioritizes secure transactions by integrating with established payment gateways and processors. This allows customers to make online and in-person payments with confidence.

Instructors will have the flexibility to access the system and log feedback after each lesson using devices like tablets or laptops. This ensures instructors can stay mobile and efficient while managing their schedules and student progress.

To maintain up-to-date information within the system, DriverPass integrates with the DMV through designated access points, such as APIs. This enables the DMV to seamlessly transmit the latest rules and test questions to DriverPass, ensuring students have access to the most current information.

Finally, a central database serves as the core storage facility for all application data. This centralized approach allows for efficient data management and retrieval across all system functions.

### 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?*

While DriverPass strives to deliver a robust and feature-rich experience, there are some initial considerations to keep in mind:

* Budgetary limitations might necessitate a phased approach, where advanced functionalities and cutting-edge resources are introduced gradually as the system evolves.
* The absence of in-house expertise in specific areas, like machine learning, could limit the immediate implementation of features such as automated grading.
* The system relies on the capabilities provided by the chosen cloud vendor for crucial functionalities like scaling, monitoring, and security. Therefore, careful vendor selection and ongoing evaluation are essential.
* DriverPass also has an external dependency on the DMV's systems. Any disruptions on their end could potentially impact DriverPass's ability to provide users with the latest information.
* The lack of a dedicated testing team means development resources will be allocated for testing as well. This might necessitate creative solutions to ensure comprehensive code quality without hindering development speed.

### 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.*

