# 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?*

* ***Purpose:*** The objective of this project is to develop a comprehensive system for DriverPass that provides students with online practice exams, a system for scheduling driving lessons, and administrative tools to manage user roles and track progress.
* ***Client:*** DriverPass, represented by:
  + *Liam:* Owner of DriverPass, who aims to enhance driver training by offering both online practice exams and on-the-road training services.
  + *Ian:* IT Officer, responsible for ensuring the system meets DriverPass’s technical needs and operates smoothly.
* ***System Requirements:***
  + Allow students to take online practice driving exams.
  + Enable the scheduling and management of on-the-road driving lessons.
  + Ensure online access to the system via any device with an internet connection.
  + Track user activity and generate reports.
  + Ensure secure access to the system through role-based permissions.

### 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?*

• ***Problem:***

* There is a high failure rate among students taking their driving tests due to inadequate preparation and limited practice.
* Over 65% of students fail their driving tests because they rely only on studying previous exam questions without sufficient real-world driving experience.

• ***Solution:***

* The proposed system will provide an integrated platform for online practice exams and scheduling on-the-road training sessions, while ensuring compliance with DMV regulations.

• ***Components:***

* Web-Based Platform: Accessible on both computers and mobile devices.
* User Role Management: Supports multiple roles (students, administrators, IT officers) with specific access permissions.
* Scheduling System: Allows students to manage and schedule driving lessons online.
* Activity Tracking: Logs and monitors user actions, generating reports on activity.
* Reporting: Provides various reports for administrative use.
* Security Features: Ensures safe access and data protection through security protocols.

### 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?*

* **System Objectives:**
  + Enable users to register and manage their accounts.
  + Allow students to schedule, modify, or cancel driving lessons.
  + Offer online practice exams with progress tracking for users.
  + Provide administrators with tools to manage user roles, reset passwords, and generate reports.
  + Ensure data security and compliance with DMV requirements.
* **Measurable Tasks:**
* **Implement Secure User Registration and Login:**
  + Develop a user registration form with secure login capabilities to track successful and failed login attempts, new user registrations, and unauthorized access attempts. This will:
    - Track and monitor user registration and login attempts using security logs and analytics tools.
    - Ensure only authorized users access the system.
    - Protect user data and the system’s integrity.
  + Integrate this feature into the web-based application using secure authentication protocols.
* **Develop Lesson Scheduling System:**
  + Create a user-friendly interface for scheduling lessons and develop backend logic for lesson management, tracking scheduled lessons, cancellations, modifications, and collecting user satisfaction ratings. This will:
    - Track scheduling activities in the system’s database.
    - Enable users to schedule, modify, and cancel driving lessons efficiently.
    - Collect feedback from users via surveys.
  + Integrate this feature into the system’s scheduling and calendar section.
* **Create and Manage Online Practice Exams:**
  + Develop an online testing module that includes a variety of practice questions to track the number of practice exams completed, pass/fail rates, and user progress. This will:
    - Offer students practice exams that closely resemble actual driving tests.
    - Analyze test results and monitor user progress using reporting and analytics tools.
  + Integrate this feature into the exams and assessments section of the system.
* **Track User Activities and Generate Reports:**
  + Implement logging and reporting features that track user activities, the types of actions taken, and generate comprehensive reports. This will:
    - Monitor system usage and user progress.
    - Use logging frameworks and reporting tools to gather and analyze activity data.
  + Integrate this feature into the admin dashboard and reporting section.
* **Ensure Role Management and Security:**
  + Implement role-based access control (RBAC) and security protocols to monitor the number of roles defined, permissions assigned, and any security incidents that occur. This will:
    - Assign appropriate levels of access based on user roles.
    - Protect sensitive information through security audits and access monitoring tools.
    - Monitor access logs and conduct regular security audits to track any security issues.
  + Integrate this feature into the admin settings and user management section.
* **Integrate DMV Compliance Updates:**
  + Set up an automated connection with the DMV to receive regulatory updates and notify users of any relevant changes. This will:
    - Ensure the system remains up to date with DMV rules and requirements.
    - Track update logs, change logs, and notifications sent to users.
  + Integrate this feature into the system’s compliance and updates section.
* **Develop a Flexible Package Management System:**
  + Build a system that allows for the management of different training packages, enabling future customization options. This will:
    - Track the number of packages managed, modifications made to packages, and user enrollments for each package.
    - Provide flexibility in offering and managing various training packages.
  + Integrate this feature into the package management and customization section.

## 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?*

* The system must be web-based and accessible from any internet-connected device.
* It should handle multiple concurrent users without performance degradation.
* The system should be updated regularly to ensure compliance with DMV requirements and maintain system security.
* The system needs to be cloud-based.
* The appointments should be updated in real-time.

#### 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 be compatible with major operating systems including Windows, Mac, and Linux.
* It should use a relational database for data storage and management.
* The back-end server should support scalable web technologies to handle varying loads.

#### 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 accurately distinguish between different user roles such as students, administrators, and IT officers.
* Input should be case-sensitive where applicable to ensure data integrity.
* The system should notify administrators immediately of any discrepancies or 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?*

* The system should allow administrators to add, remove, or modify user roles without changing the underlying code.
* It should adapt seamlessly to platform updates.
* IT administrators should have full access to configure system settings and manage users.
  + The IT officer will have full access to all accounts with the ability to reset passwords and block access to accounts.
  + IT officer will also be responsible for maintaining and modifying the system.

#### 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?*

* Secure authentication methods must be used for user logins.
  + Each user must have a unique username and password to log in, along with multifactor authentication.
  + Provide password recovery options for users who forget their passwords.
    - There should be a “forgot password” link to reset the password on the login screen.
    - User should authenticate access by answering security questions or providing the email associated with that account, and receiving a link to reset the password, sent to that email.
* All data exchanges between the client and server should be encrypted.
  + The cloud will handle data exchanges between the client and server.
* Implement account lockout mechanisms after a set number of failed login attempts.
  + The system should lock any end user account that has more than 4 unsuccessful login attempts, to prevent “brute force” hacking.
    - If a user is locked out of their account, there should be a number to call to provide user authentication and regain access to the account.
  + Admin accounts should be locked after 3 unsuccessful login attempts.

### 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 during login.
  + The system shall establish the role of the user and provide appropriate access.
* The system shall allow users to register for new accounts.
* The system shall enable users to schedule, cancel, and modify driving lessons.
  + The system shall provide options to schedule, cancel, or modify driving lessons.
  + The system shall track who scheduled, canceled, or modified a driving lesson.
* The system shall provide online practice exams.
* The system shall track and display user progress on practice exams and driving lessons.
  + The system shall create reports that are available to download.
* The system shall be connected to the DMV to stay updated with new policies, rules, and sample questions.
* The system shall allow administrators to manage user accounts and lesson schedules.
  + The system shall track which user is matched with a certain driver, time, and car.
* The system shall provide a dashboard for administrators to view system activity and user progress.
  + The system shall create reports that are available to download.

### 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.)?*

* The interface must be user-friendly and accessible on various devices including desktops, laptops, and mobile devices.
* Different users (students, administrators, IT officers) will need interfaces tailored to their specific roles and permissions.
  + Admins need to be able to schedule/cancel/modify reservations and input customer information.
    - Admins need to have access to customer’s contact information.
  + Customers will need to be able to:
    - Select a package.
    - Enter payment information.
    - View/edit profile.
    - Change password.
    - Schedule/cancel/modify a scheduled driving lesson.
    - Take practice tests.
    - See driver’s notes.
    - Choose a pickup/drop-off location.
    - Access online class
* The user interface should support tasks such as registering, scheduling lessons, taking practice exams, and viewing progress reports.
  + The interface needs to display online test progress, student information, driver notes, any special needs, and a photo of the driver and the student.
* Interaction with the interface should be intuitive, with clear navigation and responsive design.
* There should be a page for contacting the business.
* The system needs to run over the cloud.

### 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?*

* It is assumed that all users have basic internet access and familiarity with web applications.
* It is assumed that users will access the system from a variety of devices, including desktops, laptops, and mobile devices.
* It is assumed that all users will primarily speak and read English, and thus the system will operate primarily in English.
* It is assumed that IT administrators will have the technical expertise required to manage user roles, system settings, and respond to security incidents.
* It is assumed that the necessary APIs or data feeds will be available from the DMV for integrating compliance updates into the system.
* It is assumed that cloud service providers will offer reliable uptime and data security features.

### 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?*

* The system will not function without internet access and power.
  + Users must be online to make changes to their data to prevent data inconsistencies.
* If the user is not logged in when they receive a notification, they will not see it until they log in again.
* Real-time updates and data synchronization may depend on the reliability and speed of internet connections.
* The system will require periodic maintenance and updates, which may cause temporary downtime.
* Customization of training packages will need to be managed by developers or system analysts, limiting the flexibility for non-technical users.
* The initial version of the system may not support multiple languages due to time and resource constraints.
* Scalability might be limited based on the initial infrastructure setup; additional resources may be required to handle increased load as the user base grows.
* Security measures such as multi-factor authentication may add complexity to the user experience, potentially requiring user education and support.

### 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 screenshot of a project

Description automatically generated