# CS 255 Business Requirements Document Template

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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?*

* Liam, the owner of DriverPass is aiming to take advantage of a void in the market when it comes to training students for their driving test at their local department of motor vehicles (DMV). The system must be able to do several tasks as listed in the following:

-Provide training for customers via online classes for practice tests and in-person on-the-road training.

-Access data online from any computer or mobile device to download reports and information for offline usage.

-Assign different rights and roles to limit accessible features regarding security. Liam the owner must have full access to all accounts.

-Track reservations, cancellations, modifications, and an activity report to state who is responsible for each action.

-Create a reservation online for driving lessons using their account.

-Identify the driver the customer is scheduled to go out with to track the drivers and cars.

-Allow customers to make appointments, cancel, and modify appointments online.

-Allow customers to pick from 3 packages for driver appointments.

-Ability to disable a package should the owner not want any more customers to register for it.

-Store user information: First name, Last name, address, phone number, state, and their credit card number, expiration date, and security code.

-Display pick-up and drop-off location.

-Integrate with DMV for updates regarding new rules, policies, or sample questions.

-Must run off the web, preferably over the cloud.

-Utilize interface sketch to initialize the look of the system’s interface.

-Display online test progress: test name, time taken, score, and status. Statuses include: could not be taken, in progress, failed, or passed.

-Display driver notes to account for lesson time, start hour, end hour, and driver comments.

-Input form where students can input user information.

-Contact Us page for the company, and a way to contact customers.

### 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?*

* Components needed for this system:

-Interface displays online test progress, user information, driver notes, special needs, driver photo, and student photo.

-Input form for customers to input user information.

-Allow users to create, cancel, and modify online reservations to book on-the-road driving instructors.

-Allow back-end users to create, cancel, or modify information should a customer call over the phone.

-Allow users to recreate a password if the password is forgotten.

-Take practice tests online and track progress and results.

-Display pick-up and drop-off location.

-Allow the owner to have full access to accounts and control over the accessibility of each account.

-Allow the owner to be able to download critical information online to offline preferably utilizing a cloud network.

-Integrate with the DMV to receive news, updates, sample questions and policies.

### 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 should be able to store and display user information, online testing progress, and on-the-road instructor reservation information. Information should be fully accessible by the owner, who can distribute or limit access to different features. The owner needs to be able to download data and information from the online cloud to work offline. Information regarding the user and/or reservations should be able to be inputted, canceled, and modified by the customer online or by an agent via phone. There needs to be an option where a customer can contact DriverPass, and Driverpass can contact the customer. DMV sample tests, news and updates, and policies should be integrated. The interface of the system should look identical to the sketch provided by the client once completed.
* The measurable tasks that need to be included in the system design to achieve this are as followed:

-Collect Requirement 22-Jan to 4-Feb

-Create Use Case Diagrams 11-Feb to 18-Feb

-Build Activity Diagrams for Each Use Case 15-Feb to 9-Mar

-Research User Interface Designs 27-Feb to 7-Mar

-Build Class Diagram 1-Mar to 9-Mar

-Get Customer Approval 10-Mar to 11-Mar

-Build Interface 12-Mar to 24-Mar

-Link DB to interface 24-Mar to 3-Apr

-Build Business Logic 5-Apr to 27-Apr

-Test System 27-Apr to 7-May

-Deliver System 8-May to 9-May

-Sign-off Meeting 9-May to 10-May

## 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 needs to be web-based to facilitate accessibility from any computer or mobile device to align with the requirement of accessing data online from various devices and ease the process of updating and maintaining the system. Cloud services such as AWS, Google Cloud, or Azure can ensure scalability, reliability, and accessibility to host the application and databases.
* The speed of the system should include a page load time of 2-3 seconds for a smooth user experience and real-time updates when reservations, cancellations, and modifications occur. The system should be responsive and optimized for both desktop and mobile use.
* Regular maintenance updates should occur for minor updates, bug fixes, and security patches monthly. New features should be developed quarterly, and emergency updates should be deployed as needed.

#### 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 OS should be accessible from all major operating systems, including Windows, macOS, Linux, Android, and iOS. Compatibility with major browsers like Google Chrome, Firefox, Safari, Edge, and Opera for the client-side. The server-side infrastructure can run from either Linux or Windows depending on the technology stack used. The back-end tools required to support the functionalities are as follows:
* A regional database management system such as Microsoft SQL Server can be used to store structured data such as user information, reservations, and test results.
* A web server or cloud-native solution can host the web application.
* Programming languages such as JavaScript, Python, Java, Ruby, and PHP should be utilized for development.
* Authentication and security servers should be utilized for user authentication, data encryption, and firewall detection.
* APIs for communication between the client and server.
* Payment gateway for the integration of payment processors.
* Email service for sending notifications, confirmations, and communication.

#### 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 will implement a user management and authentication system by creating user roles such as an admin with full access to all accounts, instructors to access scheduling, training and student info, and customers who could access their own schedules, training materials, and progress reports. Each user will possess a unique username or email address and password for login. A user Id will be assigned to each user upon account creation.
* The system should have a reporting mechanism to inform the admin of any detected errors. Notifications should be sent via email, SMS, or an admin dashboard. System downtime, high error rates, unauthorized access attempts, suspicious activities, performance issues and other mechanisms are a few examples of errors that should trigger an alert to the admin.

#### 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?*

* An administrative interface must be implemented to make changes to the user without changing code. This is done by having fields where an admin can create new users with the required details, modify access to update user information, change roles and reset passwords, and the ability to deactivate accounts and assign roles and permissions.
* The system should be designed with a modular architecture so that individual components can be updated or replaced without affecting the entire system. DMV integration should occur as an external dependency. Other adaptations should include automated testing, staging environment for testing, cloud-managed services, scalability, and lastly, real-time monitoring and alerts for system performance and security.
* The IT admin should have access to manage, troubleshoot, and monitor the system to ensure functionality. The IT admin should have full admin access and ability to manage user accounts and roles, including adding, removing, and modifying users.

#### 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?*

* The user needs a username and password to login. The connection between the client and the server is secured by using HTTPS encryption and secure authentication protocols.
* A limited amount of login attempts should be implemented to mitigate “brute force” hacking attempts. A temporary lock on the account and a CAPTCHA should occur after a set number of failed login attempts.
* If the user forgets their password, there should be an option for the user to request a password reset utilizing their username/email. Verification should be sent to the user’s email with a rest link that allows the user to create a new password.

### 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 allow users to create an account.
* The system shall validate user credentials during login.
* The system shall enable users to reset their password if forgotten.
* The system shall allow users to update their personal information.
* The system shall assign different roles and permissions to users, such as Admin, Instructor, and Customer.
* The system shall provide full access to all accounts for the admin (Liam).
* The system shall restrict access to certain features based on user roles.
* The system shall provide online training materials, including practice tests and tutorials.
* The system shall allow users to schedule in-person on-the-road training sessions.
* The system shall enable users to track training progress.
* The system shall display driver notes, including lesson time, start hour, end hour, and driver comments.
* The system shall allow users to create, modify, and cancel driving lesson reservations online.
* The system shall track reservations, cancellations, and modifications, including the user responsible for each action.
* The system shall enable users to choose from three different driving lesson packages.
* The system shall allow the admin to disable a package to prevent further registrations.
* The system shall provide users with access to their data from any computer or mobile device.
* The system shall enable users to download reports and information for offline use.
* The system shall generate activity reports detailing reservations, cancellations, and modifications.
* The system shall integrate with the DMV to receive updates on new rules, policies, or sample questions.
* The system shall update training materials and practice tests based on the latest DMV information.
* The system shall use SSL/TLS to encrypt data exchanged between the client and server.
* The system shall implement rate limiting and CAPTCHA to prevent brute force attacks.
* The system shall lock user accounts temporarily after a certain number of failed login attempts.
* The system shall notify the admin of any suspicious login activity or potential security breaches.
* The system shall provide a user-friendly interface for scheduling, training, and managing user information.
* The system shall display online test progress including test name, time taken, score, and status.
* The system shall have a “Contact Us” page for users to reach out to the company.
* The system shall securely store user credit card information, including card number, expiration date, and security code.
* The system shall integrate with a payment gateway to process payments for driving lesson packages.
* The system shall display pick-up and drop-off locations for driving lessons.
* The system shall allow users to input their personal information through a form.

### 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 needs an intuitive, user-friendly, and accessible design that caters to the specific requirements of Admins, Instructors, Customers, and IT Admins. The interface must be secure and responsive for mobile and web-based access.
* The admin has full control over the system and user management. The instructors schedule management, student progress tracking, and feedback. The customers create accounts, schedule lessons, access training materials, and view progress. The IT admin monitors the system, manages security, and deploys updates.
* The user will interact with the interface through intuitive navigation that supplies clear menus, buttons, and forms.

### 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?*

* Some critical components of the design that were not specifically addressed include user support, UI design specifics, performance metrics, data retention policies, legal compliance, and third-party integrations beyond the DMV.
* The assumptions made about our users in the design include technological literacy, device and internet access, security awareness and usage patterns.

### 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 may face performance issues if infrastructure is not properly scaled.
* Measures are in place to secure data, there is always a risk of data breaches or sophisticated cyber-attacks.
* Accessibility featured for users with disabilities might not be fully implemented in the initial design.
* Dependence on the DMV for updates means any delay or issue on their end could affect the system’s functionality.
* Data synchronization issues could arise, especially with offline access and later syncing.

### 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.*

