# 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?*

### Client: DriverPass.

* + Owner: Liam
  + CIO: Ian
* The client aims to create an online Learning Management System (LMS) tailored to aid users in preparing for their driver's examination. This LMS will enable users to develop customized learning plans from a range of specified packages and monitor their progress efficiently. It will also enhance communication between application proprietors and users, enabling direct feedback and the capacity to revise lesson plans when source materials are modified.

### 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?*

* The system is being created to mitigate the high failure rates that many test-takers encounter and to fill the market gap in driver training offered by the DMV. Until users pass their tests, accessing both virtual and in-person training options will be easier. Liam (Owner) wants to fill the “void in the market for training drivers at the DMV.” This niche market will benefit consumers since “so many people are failing at the DMV.”

The system that DriverPass needs to create will allow valuable marketing intelligence to be available online and offline, enabling a thorough understanding of its user base. DriverPass will provide the most accurate information using a direct DMV connection. The system will also be web-based with offline reporting tools to enhance user experience and data accessibility.

### Objectives and Goals

*When completed, what should this system be able to do? What measurable tasks need to be included in the system design to achieve this?*

* The application aims to assist users in learning and developing the skills necessary to pass the DMV exam. Additionally, the application will help DriverPass better understand its business by creating marketing intelligence from user data and actions.
* The objectives and tasks that will need to be completed are as follows:
  + House the database of users:
    - Create a function that allows system users to input personal information into a secure account that can be created via login.
    - Create a secure database that is housed in the cloud.
  + Intuitive user interface (UI):
    - Get customer approval for the overall design before building the user interface.
    - Create a UI showing the client user information about their account, including personal information and progress tracking, notes from their driver, scheduled services, and photos.
    - Create the admin UI that shows the admin-user options for scheduling, car choice, payment processing, and other client-user information.
  + Automatic car-scheduling match for the DriverPass employees:
    - Create a function that organizes employees and cars currently at DriverPass.
    - Create a function that matches available employees with available cars and schedule them to train drivers on the user-requested days. Allow users to override the automatic choice through a modification function.
  + Rules for the DriverPass employees:
    - Create a parameter that distinguishes employee accounts from general user accounts.
    - Create a parameter for each type of employee using the system and assign that parameter to the proper permission.
  + Automatic system updates from DMV:
    - Create a function that regularly tracks the DMV updates via the DMV website/database.
    - Create a notification system that updates administrator accounts of DMV updates.
  + Cloud access for all users:
    - Design the system to be used in the cloud.
    - Create a function that compiles specific data sets to be downloaded to a CSV spreadsheet file.
    - Create a function to upload modified data to the cloud and update the cloud data with the most recent modifications.
  + User profile interaction for school scheduling, paying, etcetera:
    - Create a function that allows users to access their scheduled services purchased, make changes when necessary, cancel, or pay for services.
    - Users can buy and upgrade any of the three packages offered.
    - Create a function that displays user progress on a dashboard UI.
    - Create a service that connects to an online map repository for setting pick-up and drop-off locations when a user purchases a service.
  + Link database (DB) to UI:
    - Build the UI using Tony and Clark's research, using the UI that will be linked to the DB.
  + Test System:
    - The testing team will use static and dynamic tests to ensure the system performs correctly. This is to take 10 days.
  + Deliver the finished Product:
    - System testing with the test team must be finished before the product can be delivered.

## Requirements

### Nonfunctional Requirements

*This section 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 DriverPass system is easy to use on PCs, Macs, and smartphones. To guarantee the best possible access, a web application that works with common PC browsers, such as Firefox and Chrome, and a specific smartphone mobile application must be created.
* The system must support video streaming, an essential part of the DriverPass business strategy. Although the users' bandwidth will ultimately determine the stream quality, the infrastructure should be strong enough to support several users streaming videos simultaneously.
* The system must be updated frequently to match updates for mobile operating systems and web browsers. For instance, when a new version of Google Chrome is released, the DriverPass web application should be tested with the updated version, and any necessary changes should be made. The system should be updated to guarantee continued compatibility with recent browser improvements.

#### 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?*

#### To ensure compatibility with any operating system that supports web browsers, the DriverPass system is suggested to be developed for web browsers using HTML as the delivery language. Additionally, the mobile application needs to be at least compatible with the iOS and Android operating systems. While there are other specialized mobile operating systems, marketing strategies should initially encourage users to access the web application until a dedicated mobile app can be developed, contingent upon supporting market research.

#### A comprehensive database must be developed and integrated with the DriverPass interface to securely store user information pertinent to clients, administrators, and drivers. Depending on the development team's preferences, a backend framework such as ASP.NET Core or Node.js will be necessary. SQL will be utilized as the standard tool for the server to manage database queries effectively.

#### 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?*

#### To gain access to the site, users will be assigned distinctive usernames that are securely stored in a database. The system will effectively prevent the account creation process and notify the user of the issue if a new user attempts to create an account with a username already in use. It is crucial to acknowledge that both usernames and passwords will be case-sensitive. The usernames will be considered distinct if one is entirely lowercase and the other is identical except for one uppercase letter.

#### The system administrator will be promptly informed of any errors in the system, and the information will be recorded in an error log. This communication will encompass critical information regarding processes that consume more resources than anticipated, improper CPU usage, memory-related issues resulting from cache size, zombie processes, concerns regarding load averages, and any challenges associated with disk read/write speeds.

#### Adaptability

*Can you change the user (add/remove/modify) without changing the code? How will the system adapt to platform updates? What type of access does the IT admin need?*

#### Users will be generated as objects within the system and stored in the database. Therefore, it is imperative to guarantee that the system code remains unaltered when adding, removing, or modifying users. If implemented efficiently, this interface would enable updates without requiring comprehensive system refactoring for a single class change.

#### IT administrators must possess elevated access to maintain the system effectively. They can retrieve usernames and particular user information, enabling them to implement requisite updates. However, they will not have access to the information undergoing modification. For example, IT support can enter the updated payment information into a user's account when they seek to modify their payment methods. This guarantees the user cannot access the prior payment or the newly submitted information once it has been processed.

#### 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 must create a distinct user ID and a strong password. The password must contain at least ten characters and incorporate a mix of uppercase letters, lowercase letters, numerals, and special symbols.
* To guarantee the security of data transfers, all communications will occur over HTTPS employing TLS protocols.
* Users who have trouble remembering their passwords will be allowed to try to access their accounts more than once. After a certain number of unsuccessful attempts, the account will be locked. Users need to reset their passwords using the "forgot password" link or contact the IT department directly to get access back.
* This policy aimed to lessen the possibility that outside parties would attempt brute-force attacks on user logins.
* This rule was implemented to lessen the possibility that outside parties would attempt brute-force user login attacks.

### 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 initiate user validation upon sign-on and enforce the security policy for successful and unsuccessful sign-in attempts.

### The system shall allow users to review active course subscriptions and facilitate the reservation of available driving slots.

### The system shall have users who can modify (edit or cancel) previously scheduled driving reservations.

### The system shall have a scheduling sub-system to give users visibility into available driver slots.

### The system shall have driver trainers’ access to review their schedules.

### The system shall have Instructors who will be empowered to engage with course participants by posting grades and sending messages.

### The system shall support the ongoing maintenance of content, allowing for updates to training materials by changes from the DMV.

### The system shall have A comprehensive reporting function implemented within the system.

### The system shall have reporting features that will include options for offline data exploration, such as downloading information in CSV format.

### The system shall collect data to support the generation of key performance indicators (KPIs).

### The system shall automatically calculate KPIs and make them available online to authorized roles.

### The system shall allow designated roles to function as proxies for other accounts.

### The system shall have an entitlements framework established to manage Role-Based Access Control (RBAC) effectively.

### The system shall have a scheduling sub-system to operate seamlessly across multiple platforms.

### 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 system is intended to be accessible from any internet-connected device that facilitates user interaction, such as personal computers, tablets, and smartphones. It will cater to three primary user groups: administrators, employees, and customers.
* Customers can securely log in and review their account balances, schedule driver tests, and practice sessions, and monitor their account status and progress using their credentials. In addition, customers will be able to access their billing information and personal profiles.
* Employees can access the schedules of the vehicles they are assigned to operate and their own. They can also modify their employee profiles, including their availability.
* Administrators can reset passwords and unlock accounts, acquiring comprehensive information regarding users and staff. The system enables users to view and modify employee schedules, add or remove users, and manage DMV updates regarding driver tests. Managers will also schedule user driver tests and practice session appointments.
* In addition to keyboard support for inputting names and relevant information, the user interface will be optimized for touch-and-click interactions. The design must prioritize mobile device compatibility and user-friendliness.

### 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 expected that all users will access the application using contemporary gadgets, such as smartphones, PCs, and modern web browsers.
* The coding language used for the application still needs to be discovered.
* Users can utilize features like high-contrast viewing modes, support for slow connections, and color-blind accessibility to enhance their experience on their preferred devices. The final color palette and overall website design are also still being decided.
* It has yet to be decided where the driver-test videos will be hosted. If hosted on the DriverPass server, they will use up storage space and bandwidth. An alternative solution to bandwidth issues would be to host them on a third-party platform that is free to use, though this could come with extra fees or other complications. For example, using YouTube as a host could lead to ads that are incompatible with DriverPass's business strategy.

### 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 balance between team size and project timelines may result in limitations. Prioritizing the delivery of a complete system may require a minor development team to reduce or modify some features.
* The database host and available bandwidth must be considered when optimizing the user interface. Modifying the interface for situations requiring less bandwidth, such as using smaller images or fewer animations, could be necessary.
* The project's budget has yet to be decided. If costs start surpassing expectations, it will be crucial to discuss re-evaluating project requirements or funding opportunities.
* The system will only support online updates, and reservations can only be made within the United States.
* The system's initial iteration will adhere to something other than ADA compliance requirements. Leading to ads that are inconsistent with DriverPass's business strategy.

### 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.*

