# 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
* **Problem**: There is a void in the driver training program which is causing 65% failure during the DMV driving test.
* **Purpose**: The purpose of the project is to build a better training business that includes online classes, practice exams, and practical road driving sessions.

### 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 core business idea of DriverPass is to provide a driver training program that enables drivers to pass the test. The training program includes different packages with online classes, practice exams, and practical road driving sessions.
* The DriverPass wants to solve the void in the driver training program needed to pass the DMV test.
* Different components needed:
  + 10 vehicles and drivers to coordinate the training program
  + Training instructors
  + Offline Access: The system needs to provide read-only access to the data even without an internet connection.
  + Security/Roles: The system needs to implement proper security features with different levels of permission or roles. User needs the ability to reset their password.
  + Training Registration: Training registration can be done through the online system or over the phone.
  + Reporting System: Every user activity needs to be tracked. This includes registration, modification, cancellation, etc. This enables report generation as needed.
  + Infrastructure: Cloud-based serverless application. Preferably serverless, it needs to have automatic backup and autoscaling.

### 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 cloud-hosted web application with a user interface matching the client’s user interface requirement.
* Users should be able to create and modify their contact information.
* Users should be able to reset passwords.
* The system should provide 3 different training packages for users to select:
  + Package One: Six hours in a car with a trainer.
  + Package Two: Eight hours in a car with a trainer and an in-person lesson where we explain the DMV rules and policies.
  + Package Three: Twelve hours in a car with a trainer, an in-person lesson where we explain the DMV rules and policies—plus access to our online class with all the content and material. The online class also includes practice tests.
* An authorized user should be able to disable the package.
* The system needs to allow customers to register, modify, and cancel the driver training program. The customers also should be able to take online courses and take practice tests. They also should be able to view their progress online and able to reset their password.
* The system should be able to track all user activities related to reservations, practice exam progress, and the persons involved in such activities and generate reports if needed.
* The system should allow the authorized user to update the permissions and roles.
* An authorized user should be able to access all the activities even while there is no internet connection. They should be able to generate reports of the activities.
* The system should be able to get a notification whenever there is an update in DMV rules, policy, and sample questions.

## 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 should be able to run on all modern web browsers such as Chrome, Edge, Firefox, Safari, etc. It includes both desktop and mobile browsers.
* The system should be cloud hosted with the ability to auto scale as needed to provide optimal performance.
* The server can implement the reverse proxy to prevent DDoS attacks and maintain stability.
* The system should be updated frequently to make sure all the security patches are applied to minimize the data breach.
* The system has a database that needs to be updated on any Read, Update, and Delete operations. To make the database available as much as possible, it will have more than one instance running.
* To provide smooth performance, the caching mechanism should be there.

#### 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?*

* This system is web-based, so the system should be able to run on any operating system as long as it has modern web browsers.
* The system itself should be hosted either on Linux or Windows server.
* The backend needs a database to store information. It can be relational or no-sql based on the backend application. Database choice also depends on whether the system is read-heavy, write-heavy, or equal.

#### 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 distinguish the different users based on their email addresses. Only one account can be created using the given email address.
* Yes, the input is case-sensitive. It increases the system's security.
* The system will contain different roles to provide fine-grain authorization.
* The system should inform the admin whenever there are incorrect information submissions for more than a certain threshold. This report should contain all the necessary information including the IP address of the client and should be written in the database.

#### 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 core functionality of the system is to be able to create accounts as needed, either by users or by privileged users.
* Privileged users should be able to add or remove accounts.
* Users should be able to update their information.
* The system should be compatible with desktop as well as mobile browsers.
* Browsers update shouldn’t affect the system functionality.
* The platform update will be done during non-office hours with the proper announcement. The deployment will be performed using blue-green deployment to prevent the system to go offline.
* The IT admin needs full access to the system to ensure only the current employer has access to the system. They should be able to reset any account password too.

#### 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 need a valid username and password to log into the system.
* To provide a secure exchange of data between the client and the server, an HTTPS connection will be used to provide a secure encrypted data exchange.
* An account will be locked when there are too many attempts of a failed login. The user and IT admin will get a notification of a locked account. Users can contact the admin to update their password and unlock their accounts.
* User can reset their password whenever they want to reset password using forget password link. To make sure only designated user reset their password, a one-time unique time-limited link will be sent to the registered email address of the user when they begin the password reset process.

### 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 be a web-based application.
* The system shall allow users to sign up, and reset their password.
* The system shall allow privileged users to create and delete accounts.
* The system shall allow privileged users to reset any account password, and enable the account.
* Registration shall accept the following fields:
  + First name
  + Last name
  + Address
  + Phone
  + State
  + CC number/expiration date/security code
* The system shall provide three different types of training packages:
* Package One: Six hours in a car with a trainer.
* Package Two: Eight hours in a car with a trainer and an in-person lesson where we explain the DMV rules and policies.
* Package Three: Twelve hours in a car with a trainer, an in-person lesson where we explain the DMV rules and policies—plus access to our online class with all the content and material. The online class also includes practice tests.
* The system shall allow a privileged user to disable the training package.
* The system shall provide role-based authorization.
* The system shall track user activities related to reservations made, canceled, and modified.
* The system shall be able to generate detailed activity reports.
* The system shall provide offline access to the data.
* The system shall be able to get a notification whenever there is an update in DMV guidelines.
* The system shall provide user progress and instructor feedback.

### 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.)?*

* User interfaces:
  + Home page
  + Account registration page
  + Course material access page
  + Driving lesson reservation page
  + Student Portal - Two columns layout
    - Block for test progress, contact form, driver notes, etc.
    - The test progress block contains courses in progress with the test name, time taken, score, and status. Status can be not taken, in progress, failed, or passed.
    - Driver notes block contains lesson time, start hour, end hour, and driver comments.
  + Contact page to contact students and DriverPass.
* The interface users and system access levels are shown below:
  + DriverPass Admins – full access over accounts, update passwords. Full access to the system.
  + DriverPass IT Admin – full access over accounts, update passwords. Full access to the system.
  + DriverPass secretary – access to schedule, modify and cancel appointments
  + Students – Access to create an account, reset the password, select training package, and access learning materials. Also has access to schedule, modify, and cancel appointments.
* Users will use web browsers to interact with the DriverPass system. They can use any modern web browser from any device: desktop, mobile, or tablet.

### 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?*

* There will be changes in DMV guidelines which will be available publicly.
* The system is online 24 hours and 7 days a week.
* The system will be used by the younger generation more than the older generation, as users need to understand the online system.
* The users will have a stable internet connection to use this application.
* In the near future, we can assume there will be a mobile application for DriverPass.

### 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?*

* This is a web-based application and needs internet connectivity. Users won’t be able to log in and see training materials when they are not connected to the internet.
* Limitations in the budget can highly affect the infrastructure and the application performance. This limitation also restricts the autoscaling feature and database choice. This can significantly affect customer numbers.
* The DriverPass currently has only 10 cars, which can cause a huge delay in road training during peak hours.
* As DriverPass needs to comply with the DMV guidelines, there can be some gap between the DMV website and the actual law. Moreover, there will be some delay between DriverPass system updates to reflect the new DMV rules.
* There is a time limitation to perform a proper feasibility study between different technologies and frameworks out there based on the project plan.
* The Agile Development Team may need further training to work on this project as this is a cloud-based web application, and it is fairly new to our development team.

### 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.*

*Timeline

Description automatically generated*