# CS 255 Business Requirements Document

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 client is the company DriverPass. They offer learning tools such as online classes and practice tests, as well as physical on-the-road training, to help prepare their customers to pass their driver’s test at a DMV. The purpose of this project is to develop a system that facilitates these operations.

### 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?*

* Store data in an online database that allows data to be downloaded remotely for use offline.
* Allow for the creation, modification, and deletion of user accounts.
* Have configurable access controls that prevents data from being read/changed unless the current user has been given explicit access to do so. DriverPass’s IT officer needs to have access to these controls.
* Allow for the creation, modification, and deletion of reservations. Reservations are two hours long and include a date and time, driver, and car.
* Include framework for appointment packages such that complex packages can be added or removed in different releases. Allow DriverPass to toggle a package’s availability to customers.
* Connect to DMV and send notification to DriverPass when the DMV has an update.
* System is cloud-based.
* UI that displays information based on interview mockup.
* Web pages for homepage, input forms, contacting DriverPass, and contacting students.

### 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?*

* When completed, the system should provide the customer with the means to:
  + Create a new account
  + Purchase an appointment package
  + Create/modify/remove reservations
* The secretary should be able to:
  + Create customer accounts
  + Access existing customer accounts
  + Create/modify/remove reservations
* The IT officer should be able to:
  + Create employee and customer accounts
  + Access existing accounts
  + Manage account access controls
* The IT officer should be able to setup relevant controls for any additional types of users.

## 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 will run on a cloud-computed, web-based environment.
* The system will not be running any intensive processes. As long as the system is responsive, the performance of the system does not need to be of great focus.
* The system must be open to updates at any time, as the system would always need to be updated to reflect what the DMV requires.

#### 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?*

* Optimally, the web-based system should run on as many systems as possible. Windows and Mac systems are a hard requirement, and consideration should be taken as to how accessing this system would function on Android and iOS mobile devices.
* This system would require its own database to store customer, driver, and package information. It would also need to access the DMV’s website to alert DriverPass when the DMV makes changes.

#### 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?*

* Different users will be distinguished by an ID number upon account creation, as well as their email address and/or phone number. In order to signup for on-the-road lessons, the user would also need to provide their learner’s permit, which would also serve as identification.
* Users’ privileges and account type can be changed by an initial admin account created when the system was first set in place. The system does not need to have different account creation functions for each user type.
* Input for email should not be case-sensitive as email addresses are not considered case-sensitive when initially created.
* Input for passwords should be case-sensitive to increase the number of possible passwords.
* The system should inform the admin of a problem if an account has different privileges than what its account type should have. It should also inform an admin if two account entries with identical email addresses, phone numbers, or learner’s permits.

#### 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?*

* Users’ privileges and account type can be changed by an admin account. The users themselves can change most information about themselves including their name and password, although if the have submitted their learner’s permit, then their account name must match the permit. Changing their email address would require an authentication from their email and a new email that doesn’t already exist in the system.
* Main updates to the system will come from DMV changes. These changes will be nonfunctional, the system should not behave differently. Instead, the system need only allow for the content to be replaced.
* The IT admin needs to be able to access users’ general account information and privileges, except for the password. The admin shouldn’t be able to change a user’s account info without their login credentials, but they can delete accounts.

#### 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 can login with either their phone and password, or email and password. The users should also be able to opt in for two-factor authentication using either an SMS message or a 2FA app.
* Passwords should be hashed before being stored in the database, ensuring account security in the case of a “password” leak.
* ALL communications between the users and the server should be sent with HTTPS. The webpage should prevent any communication with web browsers that do not have a correct implementation of HTTPS.
* If a user makes several failed attempts to login within a short time, the account should be completely locked for a set amount of time.
* If a user attempts to login with the correct credentials but didn’t respond to 2FA, the login should be denied, and a message should be sent to the user’s email encouraging them to change their password.
* If a user attempts to login with the correct credentials, responds to 2FA, but their IP address is unusual for the given user. The login process should require confirmation from the user’s email before allowing them to login.
* If a user forgets their password, then the user should be asked to respond to 2FA, and a confirmation should be sent to their email address for them to change it.

### 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 accounts.
* The system shall store user account information.
* The system shall validate user credentials when logging in.
* The system shall provide access to DriverPass’s content.
* The system shall allow users to purchase packages.
* The system shall allow the existence of different types of users with different privileges.
* The system shall allow the admin to manage accounts.
* The system shall notify the IT admin whenever there is a DMV update.
* The system shall store information about scheduled appointments.
* The system shall be available from as many operating systems as possible, including Windows, Android, and iOS.
* The system shall communicate with client devices through proper encryption.

### 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 general layout of the interface was provided during the initial interview.
* The user interface needs to provide customers with access to their account information, the content that they have access to, packages to be purchased, and the appointments they have.
* Driver accounts need to access their account information and their appointments.
* Admins need a completely different interface that has access to all appointments, the database of user accounts, packages for sale, and content available.
* In general, accounts would need an interface for every one of their given privileges.

### 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?*

* My main assumptions have been the user’s operating systems, security measures, and admin role. The client did not specify what operating systems their users would be running, so I assume they want as much compatibility as possible with the most popular platforms taking precedence. The client did not mention the level of security that they require, but I assume since the system relies on user accounts that include financial information that it would need to be properly secured. Lastly, the client voiced a desire for an administrative account that “manages the system,” and I made several assumptions as to how that account is intended to fill that role.

### 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?*

* Our expected date to start delivering this system is May 8th, so development must be finished by then.
* A budget hasn’t been specified.
* The system needs to be cloud-computed and run on a web-based environment, so the system is limited to implementations that are compatible with both of these requirements.
* The system be limited to a few forms of security.

### 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.*

[Insert chart]