# 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?*

* Client: Liam with DrivePass
* The purpose of the project is to help students pass the DMV driving test by giving them online practice tests and in person drive time with a trainer

### 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 problem they want to fix is the too many students fail when taking their driving test
* Different components that are needed for this system are
  + Run over the cloud to deal with backup and security
    - store user information
    - store driver information
  + access to data from any computer or mobile device
    - access both online and offline, but modify only online to prevent data redundancy
    - download reports for working at home and using programs like excel
  + Let users take online classes and tests and track progress
  + connect to the DMV to stay updated on any changes and get a notification when updates happen
  + Track who made a reservation, who canceled it, who modified it last. All this must be clear in case something goes wrong. The owner wants to be able to print an activity report and figure out who is responsible.
  + identify the driver the customer is scheduled to go out with, since they have many drivers and many cars. They have to be able to track which user is matched up with a certain driver, time, and car.

### 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 do the following once completed
  + Users
    - take online classes and practice tests
    - make, cancel, and change reservations
      * each driving lesson is 2 hours long
      * set day and time for reservation using online account or call or visit office
    - create accounts
      * first name, last name, address, phone number, state, pick up and drop off location (should be the same location), and their credit card number, expiration date, and security code.
    - reset password if needed
    - pick from one of three packages
      * Package One
        + 6 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.
* DrivePass employees
  + Owner can disable packages if they don’t want any more costumers to register for it
  + Owner needs full access to all accounts to reset passwords or revoke permissions where needed
  + IT officer is responsible for maintaining and modifying the system
  + Secretary needs ability to make, change, and cancel appointments as well as help costumers set up accounts

## 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 be web based with a cloud-based network to handle backups and security of user information that is compatable with as many types of operating systems as possible.
* The system will need to run fast, with little to no loading time. The primary user is those without licenses, which usually involves a younger audience. Younger audiences expect efficiency in the products they use, especially when it’s one they may not want to use (like a studying app).
* The system will need to be updated frequently. Compliance with all DMV guidelines is a must, and with the sensitivity of the data being stored keeping the system up to date to stay ahead of potential bugs, exploits, and attacks, keeping the system up to date is also a must. The system should be updated sometime in the middle of the night (US time) to prevent users from being interrupted.

#### 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 client wants the application to be accessible to as many users on as many systems as possible, both desktop and mobile. So, the system should support all major web browsers (Edge, Chrome, Firefox, etc.), as well as android, apple, and windows mobile browsers.
* The backend will need to be a cloud database to store and access user information.

#### 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?*

* Each user will have a unique email, password, and possibly a unique username to distinguish between different users.
* The email will not need to be case sensitive, but the password will be, and I would recommend the username be as well to allow for more users to have memorable usernames without a bunch of arbitrary numbers and symbols at the end.
* The system should inform the admin as soon as a problem is detected, for incorrect username/password combinations for example I would recommend after 3 attempts the user will need to reset their password and the admin is informed. If the system goes down or the database becomes inaccessible the admin should be informed immediately.

#### 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 client wants the ability to add, remove, and modify users without changing code, in order to add new users, remove users no longer using the service (or employees that are no longer with the company), and modify existing users (like changing passwords when current ones are forgotten).
* The system will adapt to platform updates by receiving update information and passing along the information to IT.
* IT will need access to the server running the system, the database, and the system itself for maintaining and modifying it.

#### 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 will need to user either their username or email, and the password attached to that account.
* HTTPS will secure the connection and data exchange; I would also recommend utilizing a third-party CA as well to verify that users only access the real client's application and not a fraudulent one.
* In order to prevent a brute force attack, after 3 incorrect password attempts the user would become locked out until a new password is created.
* If the user forgets their password, they need to be able to automatically reset it (I recommend an email with a one-time use password reset link). The owner also wants the ability to reset another user's 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 confirm login information for returning users
* The system shall be able to differentiate between different types of users and their access levels (Owner, IT, Receptionist, Customer)
* The system shall lock user account if there are 3 invalid password attempts before a successful login.
* The system shall allow for a password reset either by sending a one-time password reset link to the email of the user or by the owner using their account.
* The system shall notify IT of any changes made to the DMV guidelines so the system can be modified to reflect the changes.
* The system shall receive and confirm new user information (first name, last name, address, phone number, state, and their credit card number, expiration date, and security code).
* The system shall allow either the user or the receptionist to change information on a user's account when there is a change (first name, last name, address, phone number, state, and their credit card number, expiration date, and security code).
* The system shall be able to allow users to select from one of 3 possible packages (when a package is not disabled by the owner) as well as change what package they are signed up for. (Packages described in Objectives and Goals section of this report)
* The system shall allow the owner to disable packages and enable them at any time
* The system shall be available online for all functionalities, but available offline for looking at downloaded reports and some work from home by the owner using excel.
* The system shall allow a user to make, and change reservations for drive time with an instructor. The system will need to be able to not double book a driver for the same time slot.

### 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 UI will need to be able to adapt to different operating systems and screen sizes for mobile and desktop usage.
* The different users for the interface are Owner, IT, Receptionist, and Customer.
* The owner will need to be able to access reports, download reports for home use, view customer files, be able to add, modify, and delete users, and be able to reset passwords for other users.
* IT will need to be able to view the system and be able to make changes to the system when needed.
* The receptionist will need to be able to make and change appointments, as well as create new users and change existing user information when they call the office.
* Owner and receptionist should see a page for contacting students
* The customers should see
  + online test progress
    - what's in progress and what has been completed
    - Test name, time taken, score, and status (not taken, in progress, failed, or passed)
  + their information (first name, last name, address, phone number, state, and their credit card number, expiration date, and security code)
  + driver notes
    - any comments the driver left and times for the lessons (Lesson time, start hour, and end hour)
  + any special needs they have on file
  + their drivers' photo
  + their own photo
  + a page for contacting DriverPass

### 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?*

* I have assumed that there will be a username that is case sensitive, a password that is case sensitive, and an email address that is not.
* I have assumed that there will be 3 invalid password attempts before the user is locked out
* I have assumed that there is room in the client's budget for a third-party CA.

### 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 future changes to available packages will require a change in the code
* Future changes to web browsing, cloud storage, and DMV guidelines are unknown
* The speed of the system will be dependent on the speed of the user's connection
* The budget for DriverPass is limited and the client want minimal technological requirements on their end so they can focus on the business end
* The timeline is just under 4 months to complete the project (as shown in the Gantt chart below.

### 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.*

