# 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?*

* The client is DriverPass, a newly started company.
* They want their system to make it easier for people to prepare for driving tests.

### 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 high number of people failing driving tests at the DMV.
* In order to fix this, DriverPass wants the system to allow for people to take online classes and practice tests, as well as schedule on-the-road training sessions through an employee or directly online.
* The necessary components include account management, data storage, tracking, and reporting, user interfaces and networking capabilities.

### 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 tasks:
  + Securely manage user accounts with varying levels of access to system functions.
  + Assign and keep track of remaining driving lessons, online lessons and in-person lessons for customer accounts.
  + Allow driving lessons on an account to be scheduled by the customer or an employee, restricted by availability.
  + Keep track of scheduled driving lessons, including the driver, day, time, car, who scheduled it, who canceled it (if applicable) and who last modified it.
  + Notify administration when the DMV has an update regarding rules or policies.
  + Keep track of data related to online lessons, such as lesson name, time taken, score and status.
  + Keep track of driver comments on completed driving lessons.
  + Securely store all data and regularly create backups.
  + Create printable reports of subsets of tracked data.

## 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 time it takes to process an action, retrieve the response from the server and display it to the user should not exceed 7 seconds.
* The system should provide a notification to the administrators whenever the DMV has an update to rules, policies, or sample questions.

Rationale: A quick response time from the system ensures a smooth user experience, which is an important factor in retaining customers for online businesses. Since the content of DMV updates is too complex to automatically update the system, an administrator should instead be notified so they can perform the necessary updates.

#### 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 system should run on all major browsers (including Chrome, Firefox, Edge, Safari) for Windows, Linux, Mac and mobile platforms.
* The system will need a database to store information about customers, appointments, lessons, usage history, and more.
* The system back end should be based in the cloud.

Rationale: To support the client’s request of accessing data from any computer or mobile device, a wide range of devices need to be supported. This also increases the usability for customers. The client also requested a robust tracking system, which will require the database to efficiently store and retrieve the data from. The client also requested a cloud-based solution with easy maintenance.

#### 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 should have two types of accounts, “customer” and “employee” accounts. The customer accounts should have standard permissions, while employee accounts should have varying permissions based on their role within the company.
* Examples of permissions include modifying account permissions, creating new accounts, adjusting system parameters, adjusting system content, modifying customer appointments, viewing data reports, etc.
* Input validation will be needed for fields that request phone numbers, a state, e-mail addresses, credit card numbers/expiration dates/security codes, or any date/time information.

Rationale: The types of accounts capture the users that will be accessing the system, and a permissions-based system for employees allows for the system to grow with the business as well as meet the current needs. The input validation is needed to ensure that the data entered by users is usable by the system, since the data has strict formatting requirements.

#### 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 system should have adjustable content areas to accommodate updates from the DMV.
* The system should allow packages to be disabled by a user with the correct permissions.

Rationale: DMV updates are likely to be common enough that requiring a change in the codebase for every update would be prohibitive to normal business functions, so the relevant information needs to be adjustable by users. The client has defined “packages” that customers can register for and has requested the ability to disable registration.

#### 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 system should provide a registration method for users to create an account that requires their first name, last name, address, state, e-mail address, phone number, and credit card number/expiration date/security code. Employees with the correct permissions can also create an account for a user, given the necessary information is known.
* Users will be automatically assigned a generated username and password for the system. The system should prompt the user to change their password when they first log in.
* If a single client enters incorrect credentials 5 times within a rolling 2-minute period, that client should be locked from entering credentials for 5 minutes, and any accounts that had a matching username should be locked for 5 minutes. This event should be logged in the system.
* The system should provide a method to automatically generate and set a new password for an account. This method should require the username for an account, then send the new password to the e-mail address on file. The system should prompt the user to change their password after they log in with this password.

Rationale: Since the client requested that customers be able to schedule appointments over the internet, the ability to register over the internet is implied. There was also the explicit registration method of customers calling the business, so both methods should require the same information for consistency. Since registering by phone is an option, username and password should be generated by the system so that employees are not directly aware of customer credentials. An e-mail address is required to easily communicate these generated credentials with the customer, as well as enable the automatic password reset. Locking out a client and the accounts for a short period after repeatedly entering incorrect credentials should sufficiently discourage brute force attacks without significantly inconveniencing legitimate users.

### 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 validate user credentials when logging in.
* The system shall store and display information about reservations including the date, time, associated customer account, driver, car, and pickup/drop-off location, as well as who created it, canceled it and/or modified it.
* The system shall provide an option to purchase one of several driving appointment packages.
* The system shall produce data reports that users with the correct permissions can download.
* The system shall store and display information about online tests for each customer account including the test name, time taken, score, and status (not taken, in progress, failed or passed).
* The system shall store and display driver comments associated with reservations.
* The system shall prevent invalid reservations from being created. For example, if there are no drivers available for a certain time or if the requested driver has an active reservation for a certain time, then that would be an invalid reservation.

Rationale: These are mostly functions requested by the client. Validation of user credentials is necessary to ensure only authorized users access the system.

### 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 will need to detect if the client is using a mobile device and adjust accordingly if so.
* A customer using the interface will need to be able to view their own reservations, online test information, and driver comments, as well as create and cancel their own reservations. They will also need to have access to a form to change their contact and billing information, as well as access to contact information for the business. They will also need to be able to view a list of available packages and choose one to purchase.
* An employee using the interface may need to be able to view any customer’s reservations, test information, contact information or driver comments, as well as modify reservations or contact information, or enter driver comments. They may also need to be able to view and download data reports, view and modify user permissions, or reset user credentials. Whether the interface displays any of these options should be determined by the user permissions.

Rationale: An interface that works well for a desktop browser may not work well for a mobile browser, so the system should automatically detect the platform and choose the most fitting interface layout for the best user experience. Each type of user will require different things from the system, so the system should display the interface that exposes the functionality each user requires.

### 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?*

* The user has internet available to interact with the system.
* The user has an active e-mail account for communication.
* The user has created an account with the system before attempting to access functionality.
* The cloud solution used for the back end has built in backup and security measures.

Rationale: As a web-based system, internet access is necessary to function. The e-mail account is needed for quick delivery of user credentials. Creating an account is necessary to distinguish users in the system and provide the correct permissions. Since the client has requested that backup and security be taken care of, it is ideal that the cloud solution does so.

### 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 requires online courses to be added before it is fully functional.
* The system relies on manual data entry to function properly.
* The system is not built with accessibility in mind.

Rationale: Since the content of the courses is dependent on the current DMV policies and may need to be adjusted later, these are not something that can be built into the system. Much of the data needed to track reservations will be entered by users, so there may be errors that the system cannot detect. Since the purpose of the system is for driving lessons, accessibility options for visually impaired users were not considered.

### 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.*

Graphical user interface, chart, application

Description automatically generated with medium confidence