# 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?*

* This project is for our client DriverPass. The purpose is to offer an online platform to provide training for people before they take their driving test with the DMV. Providing them with online classes, practice tests and on-the road training if applicable.

### 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?*

* DriverPass asked us to build a system that enables customers to make reservations using their account for driving lessons, choose day and time they want the lesson, cancel, and modify appointments online.
* A potential opportunity in the market has been identified by DriverPass, where drivers with low skill levels do not pass their DMV skills test because of poor preparation. DriverPass hopes to monetize on this niche in the market by offering enhanced practice tests and driver training.
* User information would be stored in accounts and driving tests or practicing would be scheduled for users in such a system.
* Online payment and monitoring of progress will be possible for users.
* DriverPass will also be able to monitor its own employees' and users' cars used for training through the system.
* Administrators will be able to disable packages when registrations reach capacity.
* Cloud-based technology will enable users to access the entire system from any device with Internet access.
* The system will provide the user with the following functions:

**Liam (Owner):**

* + Track and print an activity tracking report for reservations to see who canceled it who modified it last.
  + Disable a package.

**Ian (IT Officer)**

* + Access to maintain the system
  + Modify system
  + Reset employee passwords or block access to employees no longer working with DriverPass.

**Secretary**

* + Make appointments.
  + Take calls.

**Customer:**

* + Make appointment.
  + Register for class.
  + Cancel and modify appointments.
  + Reset password.
  + Click link to contact us page to get support, information, and contact DriverPass to schedule over the phone.

### 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?*

* **Build a user database:** Provide system users with the option to log in to secure accounts and the ability to input personal information. Use the cloud to house a secure database.
* **Easy-to-use User Interface:**Ensure the customer has approved the overall design before building the user interface. A user interface should display information about the client's account, including their data, the progress of their service, and a picture of their driver. The admin-user interface should show options for scheduling, vehicle selection, and payment processing.
* **Automate the match between vehicles and schedules for DriverPass employees:**Implement a feature that organizes employees and vehicles. The system schedules employees to train drivers on the days the user requests based on the availability of cars. The modification function should be provided to users so that they may override the automatic selection.
* **DriverPass employee roles:**Differentiate between employee and general user accounts. Parameterize the permissions for each type of employee who will use the system with different permissions.
* **Automated system updates via the DMV website/database**: Activate a function to regularly check for DMV updates via the DMV website/database. Update administrator accounts with DMV updates through a notification service.
* **A cloud-based system for all users:**Create a cloud-based system. Provide a function that compiles specific data sets that can be downloaded as CSV spreadsheets. Implement the uploading of modified data to the cloud and update cloud data with the most recent changes.
* **User profile interactions:** Provide users with access to their schedules of services purchased, allowing them to update or cancel services when necessary. There will be three packages available for users to choose from. Adapt a dashboard user interface to display user progress. Set up a service that allows users to specify pick-up and drop-off locations when purchasing a service by connecting to an online map repository.
* **Database linkage:**Prepare user interface to be linked to databases based on Toni and Clark's research.

## 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 needs to run in a cloud web-based environment.
* Due to the frequency with which users schedule driving lessons, the system needs to be updated in real-time; this means that certain system parts, such as the system's scheduling portions, must be updated constantly. In addition, the system must update users whenever they or the company make changes, or a new user is added.
* System load times should not exceed five seconds. To use the system to its full potential, users need their content to load efficiently to take online tests, track their progress, and review in-person driving tests.
* The system implements an Easy UI (user interface).
* Scalability and flexibility are critical requirements for the system to accommodate a growing number of students and new and updated materials over time.
* Per DMV guidelines, system learning materials should be current, trustworthy, and accurate.
* Updates should be made as soon as the client adds new functionality.
* A database layer update should occur whenever progress on practice exams takes place, feedback is received from driving lessons, reservations are made, completed, updated, or canceled, or when the DMV releases new guidelines.

#### 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 platforms (Windows, Unix, Linux, etc.). The following mainstream browsers will be considered for development:
  + Chrome
  + Edge
  + Firefox
  + Safari
* As a cloud-based system, it must be compatible with any device that has an internet connection.
* A database will be required to support the backend operation of this application, which includes managing user account information and driving appointment information, like which student is paired with which car and driver at what time.
* Keeping a history of reservations and printing activity reports will require a tracking tool and database.
* It depends on our backend application and needs, whether it be a SQL or NoSQL database.

#### 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 of the system will have a unique username and password and other personal, relevant information attached to their account.
* A username must not be in use when creating a new account.
* Passwords must contain at least one capital letter, number, and special character.
* Users of the system will be assigned roles that define their authorization levels and access to system resources.
* Logging into the system requires case-sensitive input.
* Multi-factor authentication will be incorporated into the system to make it more challenging to hack into an account.
* Any issues must be reported to the admin as soon as they arise (for example, if there are multiple unsuccessful login attempts).

#### 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?*

* System users shall be able to create/add accounts. Customers and DriverPass staff have access to this functionality.
* Platform upgrades will begin as soon as Driverpass introduces new functionality to the website, allowing the system to be gradually upgraded as new functionality is requested.
* Adding, removing, and modifying users can be accomplished without modifying the source code; this is possible with a PHP-based web application as it allows direct access to and from the Database.
* In most cases, backend code is not affected by users' browser updates. Patches and updates are applied when client updates change the behavior of underlying system components.
* As agile scrum development allows, system application updates (frontend/backend/database layers) will be made at off-peak hours to mitigate adverse impacts on the application.
* The IT-Admin will have access to the ability to update the Database manually.
* The IT Administrator will have access to be notified if updates are not available.
* The IT Administrator will have full access to all accounts to make the necessary updates and maintain and modify the system.

#### 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 must accept Single Sign On (SSO) tokens.
* Role-based authentication must be configurable in the system.
* Logging into the system requires usernames and passwords.
* Encryption will be used to ensure the connection and data exchange between the client and the service remain private in case of a breach.
* Users will be notified (via email) and instructed to update their credentials if a brute force hacking attempt is made to their account or if their password is unsuccessfully tried three times.
* ﻿The user can reset their password using authentication methods to prove their identity if their password is forgotten.

### 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 at login.
* The system shall grant authorization levels according to each user's role, ensuring that only certain users have the highest level of access to the system, such as the IT administrator.
* The system shall allow users to add, remove, or modify their account information at any time.
* The system shall accept the following customer details when registering an account:
  + First/Last name
  + Address
  + Phone number
  + State
  + CC number
  + Expiration Date
  + Security Code
* The system shall accept and display driver photos.
* The system shall allow the user to purchase packages.
* The system shall only give a user three attempts at a password before sending an email to reset it.
* The system shall allow changes and updates to be made by the IT administrator.
* The system shall send notifications to keep it up-to-date and ensure that pertinent information is conveyed as soon as possible.
* The system shall display user exam progress and grades.
* The system shall generate downloadable CSV reports so that Liam (the owner) can work at home using Excel to figure out who is responsible.
* The system shall track who has made a reservation, canceled, and modified it last.
* The system shall allow registered users to schedule driving lessons.
* The system shall track which user has been partnered with which driver, time, and car to determine who the customer is scheduled to go out with.
* The system shall allow users to take online courses and practice tests.
* The system shall allow packages to be disabled if they are full.
* The system shall provide current DMV-compliant instruction materials.
* The system shall provide instructor notes.
* The system shall allow adding, modifying, and deleting exams and materials.
* The system shall allow users to reset passwords.

### 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.)?*

* Customers must be able to create, modify, and cancel appointments for driving lessons, choose appointment package, take online lessons and tests, create/update profile, choose pickup/drop off location, and view their appointments using the interface.
* The secretary must be able to schedule appointments.
* The admin (IT officer and owner) must have full access to the entire system and user interface.
* The Owner needs full access over accounts, update passwords, and to be able to download activity reports.
* The users will interact with the cloud-based applications interface using any browser (mobile, computer, etc.) that is connect via the internet.
* The different users for this interface are customers (Students), Owner, Secretary, and Administrators (IT officer/Owner).
* View notifications to stay informed about updates and errors.
* DriverPass is a web-based application, so the interface interaction will occur through a browser regardless of whether you are on mobile, tablet, or desktop.
* Following are the pages that will be included in the interface:
  + Home
  + Account Registration
  + Course Material
  + Driving Lesson Reservation
  + Student Account
    - Update account
    - Test progress (status showing not taken, in progress, failed, or passed).
    - Contact form.
    - Driver notes (table showing lesson time, start/end hours, and driver comments)
  + Contact DriverPass
* The user interface consists of basic messages/buttons for the customer’s needs, such as the following:
  + Enter/Update Information to Create or Update Account (Name, Address, Phone Number, State, and Credit Card Information)
  + Upload Photo
  + Enter Username and Password
  + Reset password.
  + Make Reservation for Driving Lessons.
  + Click Here to Call to Make an Appointment.
  + Modify Appointment.
  + Cancel Appointment
  + Display Appointments
  + Display Online Test Progress (not taken, in progress, failed, or passed)
  + Display Driver Photo
  + Display Logo
  + Choose package:
    - **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.
  + Choose Pick-Up/Drop Off Location
  + Take Online Course
  + Take Practice Tests
* User interface consists of basic messages/buttons for the IT Officer (full access-admin) needs, such as following:
  + Enter Username and Password
  + Display Logo
  + Display Online Test Progress (not taken, in progress, failed, or passed)
  + Display User Information
  + Display Special Needs
  + Display Driver Photo
  + Display Student Photo
  + Display Driver Notes
    - Lesson Time
    - Start Hour
    - End Hour
    - Driver Comments
  + View Reservations
  + View Cancelations
  + View Modifications
  + Modify Driving Session Reservation Availability
  + Reset Employee Credentials
  + Remove Employee Account (to block access)
  + Update The System
  + Revoke/Modify User Access
* User interface consists of basic messages/buttons for the secretary needs, such as following:
  + Enter Username and Password
  + Schedule Customer Appointment
    - Choose Package
    - Enter First Name and Last Name
    - Enter Address
    - Enter Phone Number
    - Enter State
    - Enter Credit Card Number
    - Enter Expiration Date
    - Enter Security Code
    - Enter Pickup/Drop Off Location
* User interface consists of basic messages/buttons for the Owner needs, such as following:
  + Enter Username and Password
  + Download Activity Report (for tracking of reservations, cancellations, and modifications)
  + Disable a Package
  + (The Owner should have access to all the same needs as the IT officer’s)

### 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 team will have all the tools, skills, and resources necessary to implement a cloud-based system available for all device types.
* Our team members will be equipped with the necessary experience to implement a high-speed, high-functioning, and secure cloud-based system.
* The users have a web browser-enabled device to connect to the software via the internet.
* Internet access will be readily available to users to enable constant access to the system.
* Every user has a debit/credit card.
* All methods we will use will be within the budget for the system. The budget for the system was not specified.
* DMV guidelines are consistently updated.
* The website will receive more traffic than in-office visits or phone calls.

### 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?*

* There is a limitation around consistency, speed, and access to DriverPass guidelines if/when they change due to the reliance on DMV guidelines.
* Communication issues will lead to poor quality, causing budget overruns and extensions.
* If the internet connection is lost, the system will not function.
* A poor internet connection will slow down the system.
* There may be a limit on the number of resources, equipment, and team members available to meet the allotted deadline of 15 weeks, starting January 22nd and ending May 10th.
* This system is web-based and therefore requires network access to be used. Without network access, user data cannot be created, updated, or deleted. As a result, users can only access content online, such as study material and practice exams or reservations for driving lessons.
* Without a budget, this could lead to budget limitations once the figures are known, such as how many employees will be required and whether contractors will be needed.

### Gantt Chart

### Timeline Description automatically generated with medium confidence