# CS 255 Business Requirements Document Austin Gaines

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 objective is to create and plan an overall system for DriverPass to address the issue of the DMV driving test's high failure rate. DriverPass, the client, requires a system to handle online driver's education, such as practice tests, on-the-road training appointments, and user administration, through the web.
* The system will incorporate various functionalities for customers to book driving lessons, attend online courses and practice tests, and for staff to administer bookings, user accounts, and training packages.

### 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 has seen that over 65% of students fail their driving test due to insufficient preparation. They wish to correct this by providing a hybrid learning system combining online and in-car, on-the-road training.
* The system would have to provide facilities for user management (roles, registration, passwords), a driving lesson booking system for bookings, a delivery system for online practice and classes, an admin activity tracking and reporting module, and an interface for DMV update notifications.

### 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 will allow customers to sign up and buy one of three preset training packages.
* The system will provide an online customer portal for booking, modifying, and canceling two-hour driving lesson appointments, including time, date, and pickup location.
* The system will provide online practice tests and track user progress (e.g., test name, duration, score, status: not taken, in progress, failed, passed).
* The system will provide administrative users (Owner, IT Officer, Secretary) with different levels of access to create/manage user accounts, view reservations, and print activity reports.
* The system will have the feature to receive and display updates from the DMV regarding rules and test content.

## 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 must be a web-responsive system, which can be used on any web-enabled computer or mobile.
* The system should load pages and give responses to user queries (like submitting an exam or fixing an appointment) within 2-3 seconds in order to give a smooth experience to users.
* The system must be cloud-hosted, with the cloud hosting dealing with the backups and the security as asked for by Ian.
* Content, especially practice tests, would have to be refreshed in near real-time whenever new rules or sample questions are released by the DMV.

#### 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 is platform-user-neutral, running on any operating platform (Windows, macOS, Linux, iOS, Android) with a standard web browser.
* The back end will require cloud-based server infrastructure, a relational database (e.g., MySQL, PostgreSQL) to store user data, reservations, packages, and test results, and an application server on which to execute the business logic.

#### 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 shall distinguish users (Customer, Secretary, IT Officer, Owner) based on role-based access control (RBAC). Each role has pre-defined permissions.
* Login username (assumed to be email address) shall not be case-sensitive but password shall.
* The system will alert the IT admin via a dashboard alert or email for critical system failure, high login failure rate over a threshold value (likely brute force attack), and new updates availability from the DMV.

#### 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 IT Officer (Ian) shall have an admin dashboard to create, delete, or modify user accounts and reset passwords without being required to change the source code.
* The system shall be designed in modular structure to enable updates of the platform and libraries. The underlying infrastructure updates shall be performed by the cloud hosting company.
* The IT admin shall have full administrative access to take control of all user accounts, system settings, and examine system logs.

#### 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 will login with a designated username and safe password.
* Everything data exchange between server and client will be encrypted using HTTPS/TLS encryption.
* Sequential failed login attempts identified originating from a single IP address or for a single account will cause the system to temporarily lock the account and notify the IT admin.
* The system will provide a "Forgot Password" feature that allows users to reset their password securely by utilizing a time-limited link sent to the registered email address.

### 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 will verify user credentials upon login.
* The system will allow customers to register for a new account by providing their personal and payment information.
* The system will allow customers to book and purchase one of the three fixed packages of training.
* The system will allow customers to schedule driving lesson appointments online.
* The system will allow customers to reschedule booked driving lesson appointments online.
* The system should provide an option for cancelling driving lesson bookings by customers online.
* The system should allow the secretary to book and schedule appointments on behalf of customers.
* The system should assign a specific driver and vehicle to each customer booking.
* The system should track the progress of customers on practice tests done online.
* The system should display test results like test name, time taken, score, and status.
* The system will include a Forgot Password facility for users to change their password using email.
* The system will provide the functionality to reset user passwords and manage user accounts for the IT officer.
* The system will maintain a log of all system activities for use in reporting.
* The system will provide the facility to generate and print activity reports.
* The system will include an admin interface to inactivate a training package.
* The system will read and display notices from the DMV.
* The system will allow drivers to enter and save comments for each lesson.

### 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 must be a web-based, responsive application available on any laptop, desktop, tablet, or mobile phone using a normal web browser.
* The different users are the Owner Liam, the IT Officer Ian, the Secretary, and the Customers.
* The Customer interface will allow users to register, login, view and modify their own information, purchase a package, schedule driving lessons, view their lesson timetable, cancel/reschedule lessons, try practice tests online, and view their test scores and progress.
* The user interface for the Secretary will provide access to all of the features of a customer, plus the ability to manage appointments for any customer, view the master schedule of all lessons, and view customer contact information.
* The user interface for the IT Officer and Owner will provide administrative features like full system access to view, enable, or disable any user account, generate system activity reports, manage training packages, and view notifications from the DMV.
* The interface must include a customer dashboard page, the way Liam diagrammed, with at least: an area for online test progress, user information, driver feedback on previous lessons, special requirements, and photographs.
* Users will reach the interface by accessing a browser on their own devices. A mobile app is not required initially.

### 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?*

* It is assumed that every user will possess good internet connectivity and a modern web browser with which to access the system.
* It is assumed that the cloud hosting provider will do all the server maintenance, security patching, and data backuping, as preferred by the client.
* It is assumed that the DMV will have a method of updating computerized information and sending messages to the system.
* It is being assumed that customers have a valid email address to recover passwords and create an account.
* It is being assumed that the secretary would be delegated with scheduling appointments for all customers.
* It is being assumed that the sketch shared by Liam is one-page conceptual layout and other pages like login, registration, and scheduling will have a consistent design language.
* It should be anticipated that the system will take credit card payments from a trusted third-party payment gateway.

### 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 initial system does not allow non-technical users to create or remove entire training packages without developer assistance, as confirmed by Sam in the interview. Packages can only be enabled or disabled.
* The system requires a constant internet connection for all core functions. Data cannot be modified while offline, as this would cause data redundancy.
* The system's functionality is constrained by the initial project timeline and budget, which does not include the development of native iOS or Android mobile applications.
* The system's ability to provide up-to-date test materials is limited by the timeliness and format of the updates provided by the DMV.
* Customization beyond the initial three packages and the features outlined in the requirements would require a new project phase with additional time and budget.
* The system's reporting capabilities are limited to the data points explicitly tracked by the system, such as user activity and test scores.

### 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.*

