# 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 the company called DriverPass.
* The purpose of this project is to build a system that will help DriverPass provide the customers with driver training.
* The system should enable the customers to take online classes and practice tests as well as make reservations for on-the-road training.

### 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 that DriverPass is trying to fix is that too many people are failing their driving tests at the DMV.
* DriverPass wants their system to provide a better driver training.
* User Interface – the visual component of the system where the users, the DriverPass customers and employees, will be able to input their information, make reservations, take online classes and practice tests.
* Database – will store the users’ information, online classes and practice tests progress, driving appointments’ information.
* Cloud Infrastructure – will outsource backup and security management to ensure minimal technical problems for the company.
* Integration with DMV – will connect to the DMV to receive updates on rules, policies, and sample questions.
* Security – user accounts will be assigned different roles with different access levels and permissions.
* Tracking – will monitor changes in the system, including reservations, modifications, and cancellations, and generate activity reports showing who made specific changes and when.
* Driver Matching Component – will be responsible for associating a particular driver with a user's reservation, ensuring that the user is scheduled to go out with the correct driver, at the specified time, and in a particular 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 customers should be able to make, modify and cancel appointments for driving lessons online.
* Company’s secretary should be able to make, modify and cancel appointments for driving lessons on behalf of customers.
* The data should be accessible from anywhere, online or offline, but editable only online.
* The system should provide role-based access control with different permissions for each role.
* IT officer, Ian, should be able to have full access to all user accounts with ability to reset or block them.
* The owner of DriverPass, Liam, should be able to track changes in reservations, modifications, and cancellations, and print an activity report.
* The system should accurately match and track what user was scheduled with what driver, car, and time.
* Each customer should be able to choose 1 out of 3 available packages.
* The owner of DriverPass, Liam, should be able to disable a package.
* The customers should be able to automatically reset their passwords.
* The registration of a customer will be handled by a company employee who should be able to enter customer’s information including but not limited to first name, last name, address, phone number, state, credit card number, expiration date, security code, pickup and drop-off location.
* The system should be connected to the DMV and notify every time there is an update to rules, policies or sample questions.
* The system should be cloud-based; backup and security should be outsourced.
* User interface should show user’s personal information, their online test progress, their photo, any special needs, driver’s photo, driver’s notes, a way to contact a user, a way to contact DriverPass.

## 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 be web-based, preferably run over the cloud. It should be accessible from any computer or mobile device with internet connection.
* The system should be responsive and efficient, providing quick access to data and reports. Users should experience minimal lagging when accessing the system online.
* The system should be available 24/7 to accommodate users accessing it from different time zones and schedules. Downtime should be minimized to ensure continuous access to services.
* The system should support regular updates and maintenance activities to introduce new features, fix bugs, and enhance performance. Updates should be rolled out seamlessly with minimal disruption to users.
* The system should be capable of handling increased user traffic and data volume as the customer base grows. It should scale seamlessly to meet demand without compromising performance.

#### 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 be platform-independent, capable of running on various operating systems such as Windows, Unix/Linux, and macOS to ensure broad accessibility for users.
* The system should be compatible with a variety of web browsers, including but not limited to Google Chrome, Mozilla Firefox, Safari, and Microsoft Edge, and mobile browsers.
* The backend of the system will require a robust database management system (DBMS) to store and manage user data, reservations, driving instructor information, system reports, and other relevant data. Integration with a reliable DBMS like MySQL, Oracle, or MongoDB is essential for efficient data management and retrieval.
* The system must be deployed on a web hosting platform capable of supporting web-based applications. Cloud-based hosting solutions like Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform are preferred to ensure scalability, reliability, and high availability.
* The system should also be compatible with mobile devices, including smartphones and tablets, to accommodate users who prefer to access the platform on the go. The system's web interface should be responsive and optimized for mobile browsers to ensure seamless user experience across different screen sizes and resolutions.

#### 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 distinguish between different users based on unique login credentials, such as username and password. User authentication should be performed securely to ensure that only authorized individuals can access the system and its functionalities. Additionally, roles and permissions should be assigned to users to control their access levels within the system.
* The system should differentiate customers based on the package they have purchased. Each package corresponds to a specific set of driving training services and features, such as the number of hours in the car with a trainer, in-person lessons, and access to online classes and practice tests.
* The system should treat usernames and passwords as case-sensitive to ensure accurate user authentication and data validation. Any other input data does not have to be case-sensitive.
* The system should promptly notify the admin of any critical issues or errors encountered during system operation. Additionally, detailed error logs should be maintained to facilitate troubleshooting and resolution of issues.

#### 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 provide administrative users, such as the IT admin, with the ability to manage user accounts without requiring changes to the underlying code. This includes functionalities to add, remove, or modify user accounts, adjust user roles and permissions, and reset passwords as needed.
* The system must be designed to seamlessly adapt to updates and changes in the underlying platform, including operating systems, web browsers, and other relevant technologies. This adaptability ensures that the system remains compatible and fully functional across different platforms and environments, even as updates or enhancements are introduced.
* The IT admin requires elevated access privileges within the system to perform various administrative tasks and responsibilities effectively. This includes full access to all system accounts and data, the ability to configure system settings and parameters, and permissions to perform maintenance tasks, such as database management, server configuration, and software updates. Additionally, the IT admin may need access to advanced troubleshooting tools and diagnostic utilities to identify and resolve technical issues promptly, ensuring the system's continued reliability and performance.

#### 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 be required to log in using a combination of username and password. Additional security measures such as multi-factor authentication (MFA) can be offered to the user for enhanced security. The system should enforce strong password policies, including requirements for minimum length, complexity, and expiration, to minimize the risk of unauthorized access.
* If a user forgets their password, the system should provide a secure password recovery mechanism that allows the user to reset their password through a verified and authenticated process. This may involve sending a password reset link or temporary verification code to the user's registered email address or mobile phone number, enabling them to regain access to their account securely. Additionally, security questions or other identity verification methods can be utilized to confirm the user's identity before allowing them to reset their password.
* The system should always have an option to click a link to reset a forgotten password on the login page. After 5 invalid login attempts, an automated email should be sent to the user with the link to reset their password. After 10 invalid login attempts, the user account should be locked out and require a call to the customer service to retrieve the account.
* All data exchange between the client and the server should be encrypted using industry-standard cryptographic protocols such as HTTPS to ensure the confidentiality and integrity of the transmitted data. SSL or TLS protocols can be implemented to establish a secure connection, preventing malicious attacks.
* The system should implement measures to detect and minimize brute force hacking attempts. For example, if an attacker repeatedly tries different combinations of usernames and passwords to gain unauthorized access, the user account should be locked out after 10 failed login attempts.

### 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 username and password during login.
* The system shall send a user an email with a password reset link after 5 failed login attempts.
* The system shall lock out a user account after 10 failed login attempts.
* The system shall send a user an email or a message with a password reset link when a user clicks a “Forgot password” link on the login page.
* The system shall provide online driving training courses.
* The system shall provide online practice tests.
* The system shall enable users and DriverPass secretary to make, modify, or cancel reservations for driving lessons.
* The system shall support multiple package options.
* The system shall track user progress.
* The system shall manage assigning driving instructors and keeping track of reservations.
* The system shall enable DriverPass secretary to register a new user.
* The system shall enable a user to modify their user account information.
* The system shall allow driving instructors to write notes after lessons.
* The system shall notify System admin about DMV changes.
* The system shall track system changes.
* The system shall notify IT admin about breaches in the system’s security.
* The system shall generate activity reports.

### 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.)?*

* Users should interact with the system through a web-based interface accessible via standard web browsers.
* The interface should be compatible with various operating systems (e.g., Windows, macOS, Android, iOS) to cater to diverse user preferences and device ecosystems.
* The interface should be responsive and adaptable to different screen sizes and resolutions, ensuring a consistent user experience across desktops, laptops, tablets, and smartphones.
* The interface should be compatible with various popular web browsers such as Google Chrome, Mozilla Firefox, Safari, and Microsoft Edge.
* The students should have access to course materials, practice tests, progress tracking, their account information, driver notes, special needs information, driver’s and student’s photos, payment history.
* The students should have access to account management and appointments management features.
* The secretary will require an interface that enables managing appointments, handling customer inquiries, and assisting with administrative tasks.
* The System admin will require access to comprehensive reports and analytics to monitor the performance and effectiveness of the training program.
* The System admin should have administrative privileges to manage system settings, user accounts, and course offerings.
* The IT admin will require full access to the system backend for maintenance, configuration, troubleshooting and security purposes.
* The driving instructors should be able to view their schedule and leave notes after driving lessons.

### 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?*

* Users are familiar with basic technology such as web browsers and online forms.
* Users have basic required hardware/software to be able to use the system’s functionality.
* Users are eligible to receive driving lessons
* Users have access to stable internet connections 24/7.
* Users, especially the System and IT admins, have a basic understanding of security practices.
* The system will adhere to relevant regulations and standards, such as those set by the DMV, for providing driving lessons and practice tests.
* The system will be properly maintained and updated, and any issues will be resolved in a timely manner.
* DMV will notify about any changes in a timely manner, and the provided information will be correct.
* The system will maintain accurate records of user activities, reservations, and transactions to facilitate tracking, reporting, and accountability.
* Users meet eligibility requirements for accessing the provided services and obtaining a U.S. driver’s license (such as but not limited to age requirements, legal status, etc.)

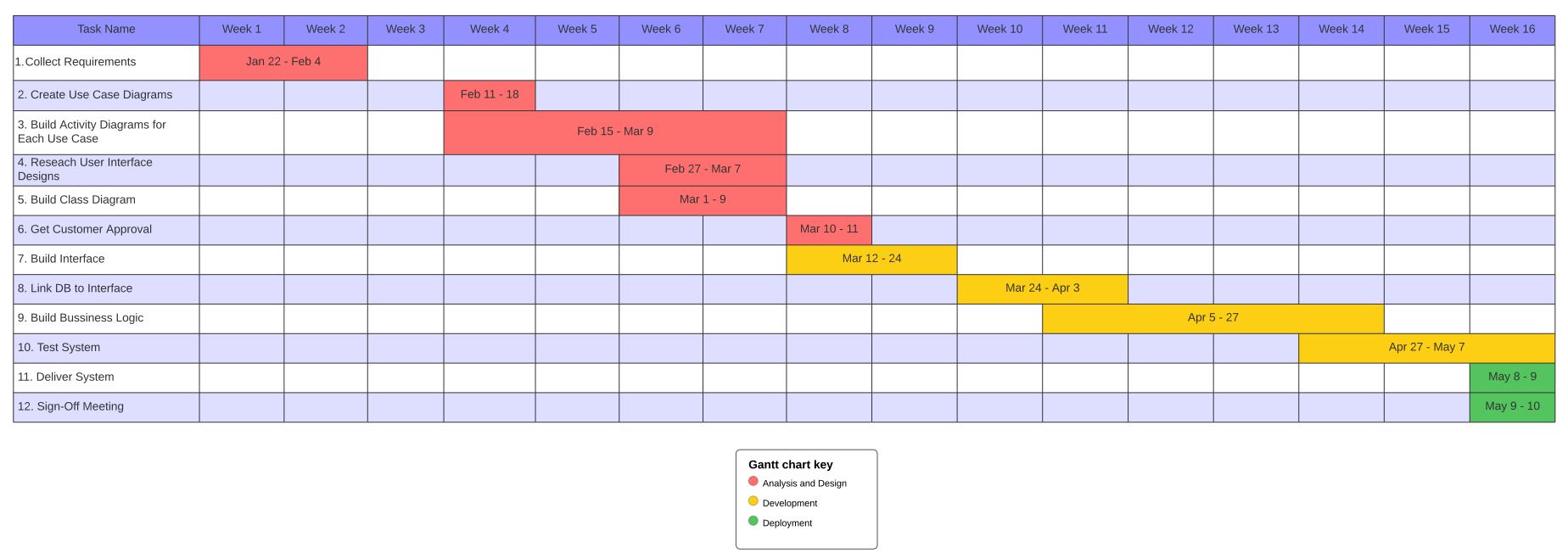
### Limitations

*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 is not voice activated.
* Most features of the system will stop functioning once the internet connection is lost.
* The project’s time constraint is 16 weeks.
* The system must be compatible with a wide variety of operating systems, web browsers, and devices which will require more resources in terms of manpower, budget, and technology.
* Compliance with DMV can be challenging as there is no way to predict future changes to the legal requirements and laws.

### 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.*

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