# 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 desired result of this project is to design and develop a user-friendly and efficient system that implements DriverPass's business needs.
* DriverPass is a company focused on helping people prepare for driving tests.
* The system should be able to provide online learning resources such as practice tests, and also allow customers to schedule, modify, and cancel driving lessons online.
* Role-based access for the platform with multiple permission levels for the employees. The system should operate on a cloud-based infrastructure.

### 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 seeks to reduce the failure rate of driving exams, both the written and the driving portion of the test.
* DriverPass believes this high failure rate is due to the lack of learning resources readily available to learning drivers.
* They seek a system that will offer Online courses and Practice tests to help the learners reinforce traffic laws and road safety, as well as get the learner comfortable with DMV multiple choice questions.
* The system will need a way to pair a student with a certified trainer for on-the-road training sessions.
* The system will need to handle booking, rescheduling, or canceling tests and training sessions.
* The system will need to be seamless with the DMV when the DMV updates rules, policies, or sample questions. The system should update the relevant employees when updates are made.
* **Components**:
  + User Management System, this component will allow role-based access control, adding or removing users, and resetting validation credentials.
  + The reservation system will be responsible for customers booking or updating appointments and notifying the customer and the assigned instructor of the appointment.
  + DMV Compliance: This component will automatically alert administrators of updates made by the DMV rules.

### 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 objectives:

* Provide Online Learning, allow customers to schedule driving lessons, and User Access Control.
* Process payments and ensure user data is securely stored,
* Ensure the system is automatically updated with the DMV rules update and alert administrators of the change, and change test content for current regulations.
* Cloud-Based System: The system should be accessible from any device.

Measurable Tasks

1. Design and implement user interface.
2. Secure user authentication and access role.
3. Lesson booking and instructor assignments.
4. Implement learning platform with DMV updates.
5. Implement a database for progress tracking, payment processing, and customer information.

## 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?*

* Web-based
* Ideally, the speed of the system should be extremely responsive so users wont get frustrated.
* Rolling updates for features, security, and performance.
* Ability to sync with DMV rules and test content.

#### 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 will be running in the cloud, so it's platform agnostic, and should run in the browser across different devices and operating systems IE. (Android, IOS, Windows, Linux).
* A cloud hosting provider such as AWS or Azure, so the system can scale easily, and cloud hosting services tend to be more secure.
* The backend will require database technology like PostgreSQL and RESTful API frameworks. Django for Python or Spring Boot for Java.
* A way to connect to the DMV API so the system can receive event-based updates.

#### 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?*

* Role-based access will help to make sure users have permissions relevant to their role.
* Single-Sign-On will make sure users can’t be logged in on more than one device.
* Passwords should be case-sensitive, but usernames shouldn’t be. That’s pretty common practice among applications.
* The admins should receive notifications about DMV Updates, Security breaches, or System errors.

#### 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 allow administrators to make changes to user accounts. Role-based access will help with this because permissions are based on roles and not hard coded into the system.
* Testing and Monitoring can be put in place to alert administrators of any issues after updates on the server running the service. Client platform updates shouldn’t affect the service running.
* Management access for things like password resets and removing access from users, and adding new users. Also, Security functions like looking at login attempts.

#### 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?*

* A username or email address, and password will be required for user accounts.
* Multifactor Authentication is also a great option to further increase the security of accounts.
* Using secure connection techniques and connections for data being transferred over a network like HTTPS and TLS will encrypt information over the internet.
* Hashing passwords instead of directly storing them in a database will ensure that even with data breaches, the passwords are unreadable.
* Captchas can help with bots and reduce the likelihood of automated logins and account creation.
* Handling brute force attacks can be done by implementing a lockout period and notifications to the account holder, as well as system administrators about suspicious activity, so the user can change their credentials.
* Handling forgotten passwords by sending an email with a code to the user's email on file, and they provide the code to input a new 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.”*

* User Authentication
  + The system needs to validate user credentials.
  + Users need to be able to change their passwords.
  + Role-based access for the system is a must to enforce permissions.
  + The system will lock accounts after too many failed login attempts.
* Reservations
  + Users should be able to schedule appointments with driving instructors.
  + The system will need to track appointments so that instructors don’t get overlapping appointments.
  + Customers should be able to reschedule or cancel appointments.
* Maintenance
  + IT admins will need to manage user accounts and settings.
  + Admins need to receive updates about DMV changes and system health.

### 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 different users of the interface would be customers, administrators, employees, and the owner. Different tools will be available for different users. Instructors will need to be able to check their appointments, as well as customers. Customers will also need to be able to access lessons and tests.
* Using responsive design to ensure that the User Interface works well across different screen sizes in modern browsers.

### 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?*

* Will the customer want to download lessons to study offline?
* Will the system also have accessibility features like screen readers or color blind settings?
* What kind of payment methods will the customer be able to use?
* Will the DMV help and be cooperative with the mission of the product?
* Will the customers have strong enough devices to use the system?

### 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?*

* Dependency on the DMV
* Data privacy and security issues. Handling sensitive data entails compliance adherence, and sometimes those compliance rules are updated.
* Training for employees on how the system works might be needed.

### 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.*

