# 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 purpose of this project is designing a system called DriverPass. Which will provide students with access to online materials to better prepare for driving.
* The client Liam is the Owner of Driver Pass. Liam wants the users to be able to take online classes and practice tests with an option for on the road training to pass their road 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?*

* **DriverPass** currently faces challenges in delivering a seamless customer experience. The existing system lacks centralized data management and automated processes, leading to inefficiencies and potential inaccuracies in information delivery. The system’s core components should include:
* **Customer Portal:** For reservation management, progress tracking, access to online resources, and account management.
* **Admin Dashboard:** For managing employee accounts, tracking reservations, generating reports, and administering system settings.
* **DMV Integration:** For receiving and distributing updated regulations and sample questions

### 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 achieve the following key objectives:

* **Customer Empowerment:** Enable customers to easily book lessons, manage their accounts, track progress, and access updated DMV information.
* **Operational Efficiency:** Streamline reservation processes, automate administrative tasks, and provide valuable data insights for management.
* **Data Accuracy:** Ensure consistent and reliable access to the most current driving regulations and training materials.

## 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?*

* **Environment:** The system shall be a web-based application accessible via standard web browsers (Chrome, Safari, Internet Explorer, Edge) on both desktop and mobile devices.
* **Response Time:** All critical operations (e.g., reservation booking, user login) should complete within 3 seconds under normal load conditions. Page load times should ideally be under 2 seconds.
* **Scalability:** The system architecture should be designed to accommodate a potential increase in users and data volume.
* **Update Frequency:** The system will be updated on a bi-weekly basis to address bugs, implement minor feature enhancements, and ensure ongoing security. Major updates (significant feature changes) will occur on a monthly basis, with a phased rollout to minimize disruption.

#### 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?*

* **Operating Systems:** The back-end of the system will be deployed on a Linux server (e.g., Ubuntu) for stability, security, and resource efficiency.
* **Database:** The system will utilize a relational database management system (RDBMS) such as PostgreSQL or MySQL to store and manage data.
* **Web Server:** A web server (e.g., Apache or Nginx) will handle incoming requests and serve the web application.
* **Programming Languages/Frameworks:** The system will be developed using [Specify Technology - e.g., Python/Django, JavaScript/React].
* **API Integration:** The system will incorporate APIs for integrating with the DMV’s data feeds (where available) and potentially third-party services (e.g., payment gateways).

#### 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?*

* **User Authentication:** User accounts will be uniquely identified through a secure password hashing algorithm (e.g., bcrypt) to prevent unauthorized access.
* **Input Validation:** All user input will be rigorously validated to prevent data corruption and security vulnerabilities. Specifically, date and numeric fields will be validated to ensure they conform to expected formats.
* **Data Integrity:** The database schema will be designed to enforce data integrity constraints, ensuring data consistency and accuracy.
* **Alerting:** The system will automatically alert administrators of critical errors, such as database connection failures, system downtime, or security breaches. Alerts will be delivered via email and/or a centralized monitoring dashboard.

#### 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?*

* **User Management:** Users can be added, modified, and deleted through the admin dashboard. Role-based access control will be implemented to restrict access to sensitive features.
* **Platform Compatibility:** The system will be developed using responsive design principles to ensure optimal viewing experience across various screen sizes (desktop, tablet, mobile).
* **IT Admin Access:** The IT administrator will have full access to the system’s configuration settings, database management tools, and monitoring dashboards. The IT admin will have the ability to troubleshoot, deploy updates, and manage system security.
* **Change Management:** A formal change management process will be followed for any modifications to the system’s functionality or architecture.

#### 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?*

* **Login Requirements:** User authentication will utilize strong passwords, requiring a minimum length (e.g., 12 characters) and incorporating a mix of uppercase and lowercase letters, numbers, and symbols. Multi-factor authentication (MFA) will be strongly encouraged, leveraging SMS verification or authenticator apps.
* **Data Encryption:** Data transmitted between the client and server will be encrypted using HTTPS (SSL/TLS) to protect sensitive information during transmission.
* **Brute-Force Protection:** The system will implement rate limiting and CAPTCHA challenges to mitigate brute-force attacks. IP address blocking will be employed for suspicious activity.
* **Account Recovery:** A secure password reset process will be implemented, allowing users to regain access to their accounts if they forget their passwords.
* **Vulnerability Management:** Regular security scans and penetration testing will be conducted to identify and address vulnerabilities.

### 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:**

* Provide a customer-facing portal for reservation management, progress tracking, and account access.
* Allow administrators to manage employee accounts (password resets, access control).
* Generate reports on reservation activity and customer tracking.
* Provide notifications on DMV updates.
* Integrate with the DMV to distribute regulatory changes and sample questions.
* Support multiple driving package options (clearly defined with cost structures).
* Allow instructors to track student progress.
* Prevent double-booking by drivers.

### 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.)?*

**Core Needs:** The interface must enable customers to book driving lessons and access learning resources, while allowing administrators to manage the system efficiently.

**User Groups & Their Needs:**

* **Customer:** Simple reservation booking, access to online classes & DMV updates, account management.
* **Administrator:** Centralized management of customer & instructor data, reporting & system configuration.

**Interaction Methods:**

* **Primary:** Web browser (desktop & mobile) – responsive design.

**Key User Flows:**

* **Customer:** Book lessons, view/cancel reservations, track progress, manage account.
* **Administrator:** Manage instructors, oversee reservations, generate reports, configure system.

**Key Design Considerations:**

* **Responsive Design:** Fully adaptable to all devices.
* **Intuitive Navigation:** Clear and easy-to-us

### 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?*

* [Insert text] All users have access to compatible web browsers.
* Users have a basic understanding of navigating web-based applications.
* DriverPass has adequate IT support for system maintenance

### 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?*

* **Resource Constraints:** The system’s development is planned between January 22nd and May 10th.
* **Budgetary Constraints:** The project budget is dependent on DriverPass’s financial resources.
* **Technical Constraints:** The system must accommodate potential limitations in customer hardware (e.g., older mobile devices) and network connectivity.

**Operational Constraints:** A limited number of instructors, vehicles, and time slots will need to be managed efficiently within the system

### 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.*

