# 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 goal of this project is to create a robust and expandable DriverPass system that improves student driver education. DriverPass aims to close the gap in the industry by providing students with a more thorough and efficient method of getting ready for their driving exams. Nowadays, a lot of students don't study enough for their driving exams and just study past exams instead of getting enough practice behind the wheel or exposure to a variety of driving situations. The system will provide students with a dual approach to training: online practice exams and on-the-road driving lessons. The online platform will feature a set of practice tests that mimic the DMV's driving test structure, allowing students to practice at their own pace and track their progress. In addition to this, DriverPass will offer on-the-road driving lessons that provide real-world experience under the guidance of professional instructors. The system's ability to plan and oversee driving lessons, including package selection, scheduling, and progress tracking, will be a major feature. Additionally, students will be able to schedule classes online using a mobile app or web interface, offering them convenience and flexibility. The system must also allow for the generation of reports about training results and student progress, keep a thorough activity log to trace all system actions, and guarantee safe access for various user roles (e.g., students, instructors, and administrative staff). Moreover, In order to reduce hardware and maintenance issues and provide accessibility across multiple devices, the DriverPass system will be cloud-based. This will enable administrators and students to engage with the system from any location, whether online or offline. Additionally, the cloud architecture will guarantee that data is regularly backed up, securely stored, and conveniently accessible, all while adhering to legal requirements. The system's ultimate goal is to increase the number of people who pass their DMV driving tests by providing them with a better and more thorough preparation experience. The integration of elements like lesson administration, progress monitoring, user authentication, and flexible scheduling into the DriverPass system will simplify operations for administrators and customers alike, resulting in an easy-to-use and effective training environment.

### 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 aims to address a significant gap in the current driver training market. Many people don't prepare well enough for their DMV driving tests, frequently depending only on past exam papers instead of receiving thorough and well-rounded instruction. This leads to many failing their examinations. DriverPass hopes to address this problem by developing a system that provides a comprehensive approach to driving test preparation, integrating in-car instruction under qualified instructors with online practice tests. Through the system, students will be able to understand DMV-specific regulations, practice taking tests, and gain the hands-on experience necessary to pass their driving exams. The system for DriverPass will require several key components to meet its objectives effectively. These components are designed to handle the core functionalities of the system, such as training, scheduling, reporting, data management, and user security.

### 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 must accommodate both on-the-road and online training approaches. The system will give users access to practice exams for online training that are meant to resemble the format and level of difficulty of the DMV's real exams. Students can become more accustomed to the kinds of questions they will probably face on the driving test by taking these tests. Throughout these tests, the system will monitor pupils' development, giving them performance feedback and pinpointing areas in which they still need to grow.
* The system must facilitate scheduling driving lessons for the on-the-road training component, which includes assigning students to available instructors and vehicles. DriverPass provides a variety of lesson packages that combine in-car instruction with in-person instruction covering DMV regulations and guidelines. These packages must be adaptable enough to make future additions of additional packages or revisions.
* For smooth access from any place and on any device (desktop or mobile), the system needs to be cloud-based. Benefits from cloud computing will also include scalable resources to manage different user traffic volumes, automatic updates, and lower infrastructure expenses. Additionally, data is safely backed up and readily accessible by administrative and customer-facing users thanks to cloud storage.
* The system should be able to track user activities and generate reports to monitor system usage and changes. The system should be able to track and report on student progress across all aspects of the system, including practice tests, scheduled lessons, and feedback from instructors. Some of the measurable tasks for this objective include developing a progress dashboard for students and instructors that shows performance in tests, completed lessons etc.
* The system must keep all training materials and practice tests current by integrating with the DMV to receive updates on rules, regulations, and test content. Measurable tasks to achieve this objective include adding an automated update system to receive and integrate updates from the DMV regarding test rules, a notification or an alert system that notifies admins and content managers about any new update in any of the rules from the DMV.

## 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 has to be web-based and usable on a range of platforms, such as tablets, smartphones, and PCs.
* It should load pages within 3 seconds under normal traffic conditions.
* Up to 1,000 concurrent users must be supported by the system without causing performance deterioration, and it must manage simultaneous access by numerous users (students, teachers, and administrators).
* The system should be able to scale automatically based on user demand to ensure optimal performance during peak usage times.

#### 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 cloud-hosted, ensuring high availability and fault tolerance.
* The system should support all modern web browsers (Chrome, Firefox, Safari, Edge) and mobile platforms (iOS, Android).
* A reliable relational database (such as MySQL or PostgreSQL) should be used by the system to handle user information, reservations, payments, and training materials.
* There should be no end-user dependencies on particular operating systems; that is, the system should run equally well on Windows and macOS.

#### 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?*

* When a user logs in, the system needs to correctly check their credentials, considering their various responsibilities (admin, student, teacher, secretary).
* **User activities** (e.g., scheduling, test completion, lesson feedback) must be accurately recorded and timestamped to ensure traceability.
* When problems like duplicate reservations or erroneous test attempts happen, the system ought to notify administrators of the errors.
* All financial or personal data must be processed precisely, with all data encrypted and verified before being stored.

#### 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 must allow modifications to user roles and permissions without needing a full system overhaul.
* Without altering the code, administrators ought to be able to add, remove, and update course options and training packages. This gives us the freedom to introduce new products or stop supplying certain ones.
* The system shouldn't need to undergo significant rewrites in order to readily accommodate platform modifications (such upgrades to mobile OS or web browsers).
* If administrators ever need to move to a different database or cloud service, they should be able to migrate user data (such as reports and progress) with ease.

#### 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?*

* User authentication should be secured through strong password policies, requiring complex passwords with regular expiry periods.
* In order to guard against data breaches and interception, all data transmissions should take place over encrypted connections (HTTPS).
* The system should feature role-based access control (RBAC), ensuring that users only have access to the features and data they are authorized for. For example, students can view lesson bookings but cannot access admin features.
* When the system encounters a brute-force assault (many unsuccessful tries to log in), it should temporarily lock the account and notify the system administrator.
* Secure password recovery alternatives like email verification and SMS code authentication must be provided by the system.

### 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 Registration and Management**: The system shall allow users (students, instructors, admins, and secretaries) to create and manage their accounts. During login, it will verify and authenticate users, making sure they have the right access according to their roles. Moreover, It will enable users to safely retrieve their passwords through phone or email verification.
* **Online Practice Exams**: The system shall provide students with practice exams that mirror the DMV’s format and difficulty. It should track the students’ progress on tests, showing which questions were answered correctly/incorrectly and their overall score. It should also track the students’ progress on tests, showing which questions were answered correctly/incorrectly and their overall score.
* **Driving Lesson Scheduling**: The system shall allow students to schedule driving lessons online, selecting from available slots based on the instructor’s availability and car assignments. It shall display available packages (e.g., 6-hour, 8-hour packages) and allow students to choose their preferred option. Additionally, It shall send automated confirmation emails or SMS once lessons are booked, modified, or canceled.
* **DMV Integration and Compliance**: The system shall integrate with DMV databases to receive updates about new rules, policies, or test content. It shall automatically update the online practice tests based on DMV changes, ensuring the content is always up to date.
* **Payment Processing**: The system shall support secure payment processing for students enrolling in lesson packages, integrating with major payment platforms. The system should support secure payment processing for students enrolling in lesson packages, integrating with major payment platforms.
* **Progress Tracking and Reports**: The system shall track students' progress on both the online practice exams and the on-the-road driving lessons. Instructors will be able to leave feedback on students’ performance after each driving lesson. The system should be able to generate real-time progress reports for students to monitor their progress.

### 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 user interface must offer a responsive, easy-to-use, and simple platform that allows different user roles to quickly access and handle their assigned activities. For consumers who connect while on the go, the interface needs to support a variety of devices, guaranteeing accessibility on desktop and mobile browsers as well as mobile applications. The different users for this interface are:
  + Students: They need to check training package details, track their progress, access online practice exams, and schedule, alter, or cancel driving lessons. Their primary means of interacting with the interface will be through a mobile app or web browser.
  + Teachers: They need access to review student progress reports, view lesson plans, and record comments on students' performance. For simplicity of usage when traveling, instructors will primarily utilize the interface via a tablet or mobile device.
  + Admins: Administrators are responsible for overseeing user accounts, creating reports, updating training materials, and keeping an eye on system activity. To access management tools and administrative capabilities, they will communicate via a browser.
  + Secretaries: They must help with consumer inquiries and schedule, adjust, or cancel classes on behalf of the students. Secretaries will utilize the desktop browser interface to quickly access customer management and booking functions.

Each user will interact with the system via a responsive design that works across browsers and mobile devices, ensuring flexibility and accessibility for all stakeholders.

### 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 expected that teachers, administrators, secretaries, and students would know how to use mobile applications and online browsers to interface with the system for things like scheduling, scheduling tests, and managing accounts.
* The design assumes that users will interact with it while having a stable internet connection. While certain features can be accessed offline (like downloading reports), internet access is necessary for essential functions like scheduling and taking tests.
* Multi-device accessibility: The system is expected to be optimized for desktop, tablet, and smartphone use, as well as for users accessing it from a variety of devices. The system is meant to work with modern web browsers and mobile devices, therefore no specific operating system or browser is assumed to work with it.
* It is assumed that users will continue to use strong passwords and refrain from disclosing their login information. Users must adhere to fundamental security protocols in order for the system's security features, such as role-based access control and password recovery, to function.

### 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?*

* Real-time offline functionality: The system does not provide real-time booking, revisions, or updates when offline, although it does permit access to some reports offline. To plan courses, check test results, or access real-time data, users must be online, which could restrict functioning in places with spotty internet access.
* The system is designed to allow basic customization of lesson packages, but deeper changes (e.g., adding new modules or significant modifications to the core functionality) will require developer intervention. Non-technical users may not be able to easily adjust advanced features without additional support.
* Even though the system is designed to be scalable, reaching a high number of concurrent users may eventually necessitate a larger investment in cloud infrastructure in order to maintain performance. As Driver Pass expands, financial limitations may make it more difficult to scale quickly to accommodate user demand.
* The system is made to be responsive on a variety of devices, including desktop, tablet, and mobiles, but some features—like scheduling or detailed reports—might work better on larger screens. Sophisticated processes might not display as well on smaller mobile screens.

### Gantt Chart

*Please include a screenshot of the GANTT chart that you created with Lucid chart. Be sure to check that it meets the plan described by the characters in the interview.   
  
  
A screenshot of a computer

Description automatically generated*