# CS 255 Business Requirements Document Template

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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?*

**Client: DriverPass**, a Student Driving Education company, hired us to create this project. The goal is to create a programming application that is designed to help Driver Pass’s students prepare for their driving tests. The application aims to assist students with resources like online courses, driving lessons, and practice tests. It will allow students to book classes, track learning progress, manage appointments with students and teachers. The application is also designed to manage different user levels and security for DriverPass employees, who will handle management tasks from updating the lessons plant, handling students’ requests, managing test schedule, to task like maintaining the system operation.

**Purpose**: **Liam** (CEO of DriverPass) is our client, he and **Ian** (DriverPass IT officer) say that they want a system that can provide online lessons while mobile, something portable that students can use while in the house or away from home. The system User Interface also must be flexible, easy to use, and accessible from different device platforms.

### 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?*

**What does DriverPass want the system to do?**  
DriverPass wants the system to be able to let students **Select and Manage** their education online, be able to access to **online courses** and **practice tests** at any given time.

For **DriverPass** staff members, the system needs to be able to provide **Different Access** **Levels** for each staff employee. This allows the staff to access the system for different task roles

**Problem They Want to Fix**:

* **DriversPass** wants the system to be equipped with simple lessons planning capabilities, provide education tools to help the students with their lessons. The systems also need to be able to scale their size properly the handler simultaneously large number of students using the program at the same time.

**Components System Needed**:

1. **Online Course and Scheduling Platform**: For students to take online lessons, practice tests and learn DMV rules, and able to keep track of their progress
2. **Different User Security Roles**: To limit each user (owner, IT officer, secretary, and students) to their specific tasks.
3. **DMV Compliance and Regionals Law Compliance**: The system need to constant stay up to date with DMV rules and local traffic laws.
4. **IT Security and Defense**: The system must keep personal data, like credit card info, safe.

### 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?*

**System Capabilities**: When the system is completed, it should be able to:

* **Provide Online Access** to students, allowing access to the system from any device, facilitating scheduling, lesson tracking, and course progress.
* **Education Progress Management and Tracking**: Allow students to schedule and plan their lessons progress and view practice test results.
* **Security and Role-Based Access Control**: Implement secure, user-specific access controls for different employees and customers.
* **Compliance and Notifications**: Automatically update system content based on DMV changes and send notifications of new rules or test updates.
* **Activity Logs and Reports**: Track and log all user activity, including scheduling changes, and generate reports on user actions.

**Measurable Tasks**:

* **Lesson Scheduling System**: Students must be able to schedule, modify, and cancel lessons.
* **Customer Account Management**: Secure login, password resets, and personal info storage.
* **Driver-Student Pairing**: Automatically assign a driver, vehicle, and time to each scheduled lesson.
* **Course Progress Tracker**: Implement an online progress dashboard for students, showing test scores, lesson progress, and feedback from driving instructors.
* **Security and Data Handling**: Ensure secure handling of customer financial information and personal data with role-based access permissions.
  + These objectives ensure that DriverPass can efficiently manage customer training while allowing for future system expansion.

## 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:** DriverPass system must have a fast and concise response time. The app must maintain a high-performance rate during its peak hours, able to handle at least 1,000 users at the same time without losing performance quality. The application should operate efficiently across all platforms where users may access it, including desktops, tablets, and mobile devices.
  + **User Accessibility:** DriverPass must provide a simple and intuitive UI for all ages, and non-technology savvy students. The design ensures that students from all ages and ethnic groups able to use it.
  + **Security:** DriverPass system must have the ability to authenticate different levels of user and track which users access the system. DriverPass must ensure Data Privacy Protection with methods like encryptions and firewalls to protect the system and users’ data.
  + **Reliability:** DriverPass must be able to always operate, allowing the users to access the system whenever possible with the shortest intended downtime like update or backup. Regular data back-up schedule and recovery functions to allow the system to restore itself quickly.
  + **Maintainability:** DriverPass must be capable of handling any update of the lessons, test and system functions, allow the system to maintain itself and able to apply any updates needed and restore its functionality to users.
  + **Scalability:** DriverPass System Framework will be designed with a scalable infrastructure. The system must be able to handle expected growth of users, and the update and feature options will be added to the system in the future.The system should not require major re-coding or change in its framework when having major updates or redesign.
  + **Compliance:** DriverPass lesson plans must meet the legal standards of the DMV and local supporting regions.
  + **Efficiency:** Users are most likely to access the app from their mobile devices, this means limited data and power to share. The mobile-app version should be minimized with data and battery usage, and have real-time synchronization across other devices platforms

#### 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?*

* **Supported Environments:** DriverPass should be designed as a Cloud-based application, to be used as a Mobile and Web-Based Application for users. The application must be compatible with both iOS and Android platforms like phone or tablet. While allowing modern browsers like Chrome, Safari, Firefox, and Edge able to access it from desktop or laptops
* **System Speed:** DriverPass expects All user actions (login, loading content, test selection/results, DMV appointments) should respond within 2–5 seconds. Video lessons and simulations must run at a minimum of 60 FPS on supported hardware. The system should handle at least 1,000 concurrent simulations/quizzes without performance loss.
* **System Update Frequency:** DriverPass minor updates for bugs/fixes can be scheduled within a 48-hours period of notification and should take minimal downtime for system updates. Major updates for Content or new Features should be scheduled Quarterly or Bi-annually, unless required sooner.
* **Scalability**: DriverPass expect exponential growth in the future. The system is designed to provide services support growth from 1000 to 10000+ users simultaneously without decreasing 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?*

* **Supported Platforms (Front-End)**: DriverPass must have support for iOS and Android platforms for mobile devices like phones and tablets. The Web based applications should be able to run on all major modern browsers like Chrome, MacOS, Widow, and Linux.
* **Back-End Platform (Server-Side)**: DriverPass will run on cloud infrastructure (AWS, GCP, or Azure) using either Windows Server or Linux (Ubuntu/CentOS). This will help to ensure scalability, cost-efficiency, and maintenance of the DriverPass system.
* **Other Tools:** DriverPass system requires a robust database, API services, cloud storage (e.g., AWS S3) to ensure the highest performance quality and quick UI reactions. Also monitoring tools (e.g., Datadog, CloudWatch) for real-time tracking and performance metrics.

#### 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 Identification:** DriverPass system will have a Role-base access control application, recognize and verify unique user accounts via ID, usernames, emails, phone, and equip with MFA to verify each access.
* **Input Sensitivity (Case-Sensitive Input)**: Usernames and Passwords will be required for Case-sensitive with requirement of numbers of letters, case, special characters. Limited access attempts before system send notification to admins and require stronger verification.
* **System Notifications for Admin:** DriverPass notified IT Admin when there are suspicious activities, system failures, students troubleshooting, or access denied by DriverPass.

#### 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 (Add/Remove/Modify Users Without Changing Code)**: Student users are able add and modify their account without the need to change code. IT Administrator users are allowed to access and modify all users’ accounts, including removing the accounts without the need to change code.
* **System Adaptation to Platform Updates**: DriverPass is built with cross-platform frameworks to enable smooth updates across multiple platforms. The system will also have backward compatibility, allowing the older version to be used.
* **IT Admin Access:** IT admins will manage users account, system settings, and maintenance through the admin dashboard. They will have access to all authorized accounts and system settings, with the ability to modify and make updates accordingly.

#### 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 Login Requirements**: User can log in using their email or phone number in addition to their username and a strong complex password. This will follow with a multi-factor authentication (MFA) action to verify access. Optional Biometric authentication with fingers or facial is allowed.
* **Securing Data Exchange (Client-Server Communication)**: Communication exchange is encrypted with HTTPS protocol. Security encryption for data holding in the Front-end devices and Back-end server.
* **Brute Force Protection (Response to Hacking Attempts)**: The system allows a limited 5 log-in attempts for users. Once exceeded, DriverPass will lock the account, and notify the IT Admins. IT Admin will contact users via preset methods to verify access. If not verify, investigation can be followed up.
* **Forgotten Password Process**: User can reset their password by initiate a request for password reset link send to the register email or and OTP code send to the register phone number access reset link.

### 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 user credentials, allow users to: account creation, password resets, and profile updates. IT Admins are allowed to access other user accounts for legal purposes.
* The system shall enable students and teachers to schedule, modify, and book their lessons accordingly. And each change will be notified to the appropriate user.
* The system shall allow teachers and students to track lessons’ progress accordingly. Students can see how far they at, and teachers can update their lesson plans.
* The system shall provide practice and mock tests for students and allow them to review their results and feedback.
* The system shall be able to process secure payments, generate invoices, and support various payment methods.
* The system shall send alerts to users for appointments, test results, and system-update.
* The system shall manage user roles-based account and restricting access based on role privileges.
* The system shall allow students to schedule driving tests and notify them of any changes or updates.
* The system shall store data securely, ensuring encryption, backups, and recovery processes for sensitive information.

### 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.)?*

 **User Types and Their Needs**:

* **Students**: Students will need to book lessons, take practice tests, track their progress, make payments, and receive updates.
* **Instructors**: Instructors will need to manage their availability, plant the lessons, track students’ progress, and provide feedback.
* **Admins**: Admins will need to manage users account, maintain system performance, check security alerts, open investigation.

 **Interface Platforms**:

* **Mobile (iOS/Android)**: The primary platforms for students and instructors to access when using DriverPass, should enable user to schedule, track the progress, and review test on the go.
* **Browser-Based Interface**: allow access for all users and equip with proper functions relating to user’s role. Admins will use this interface more to manage system settings, oversee users, and handle payments or system issues.

 **Interaction with the Interface**:

* **Students**: Students will interact via mobile and web, using touch-based navigation on mobile and mouse/keyboard on web. The interface should be simple and intuitive, with clear calls to action for scheduling, payments, and test practice.
* **Instructors**: Instructors will primarily use mobile devices for lesson management and feedback, though browser access should be available for bulk student management tasks.
* **Admins**: Admins will likely interact with the system through a browser-based dashboard, with tools to manage users, settings, and security alerts.

### 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 will have reliable internet access to use the web or mobile app.  
• Users have access to modern devices that meet the system’s minimum hardware and software requirements.  
• The mobile app will be downloaded through official app stores (Google Play, Apple App Store).  
• It is assumed that all users will have at least basic digital literacy to navigate the app or website.  
• It is assumed that third-party services used by DriverPass are available and functional.

### 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?*

• Budget constraints may limit the frequency or scope of feature updates and support services.  
• Time constraints schedule could delay full implementation of advanced features  
• The system currently targets U.S.-based users, non-English user will require content change with different langue based.  
• The quality of user experience may vary based on device performance, internet speed, or regional access limitations.  
• Dependence on third-party platforms could pose a risk if those services experience outages or policy changes.

### 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.*

[Insert chart]