# CS 255 Business Requirements Document Template

## 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?*

* Design and develop a comprehensive system for DriverPass.
* Support DriverPass in helping students prepare for their driving tests.
* Create an integrated platform that offers:
  + Online practice exams.
  + On-the-road training scheduling.
* Collaborate closely with DriverPass to ensure the system meets their needs.
* Support DriverPass's goal of improving driving test pass rates among students.
* Cater to various users, including:
  + Students.
  + Driving instructors.
  + Administrative staff.
* Enable all users to interact with the platform effectively to achieve their objectives.

### 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 has identified a significant societal problem: many students struggle to pass their driving tests on the first attempt.
* The challenge is due to inadequate preparation in:
  + Theoretical knowledge.
  + Practical driving skills.
* DriverPass aims to address this issue by offering a solution that combines:
  + Online practice exams.
  + Accessible on-the-road training sessions.
* The goal is to provide students with comprehensive resources to prepare thoroughly.
* DriverPass believes their system will:
  + Increase the likelihood of students passing their driving tests.
  + Improve road safety.
  + Reduce the frustration and costs associated with retaking the test.

### 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?*

* Online Practice Exams:
  + The system should offer a variety of practice exams that simulate the actual driving test, covering both written and practical components.
  + The practice exams should be accessible to students at any time, allowing for flexible study schedules.
  + The system should track student performance on these exams and provide feedback to help students identify areas for improvement.
* On-the-Road Training Scheduling:
  + The system should allow students to schedule driving lessons with qualified instructors.
  + It should display available time slots and locations for on-the-road training, enabling students to choose sessions that fit their schedule.
  + The system should manage bookings, ensuring that instructors are notified of scheduled lessons and that students receive reminders.
* Student Progress Tracking:
  + The system should track each student's progress through the practice exams and driving lessons.
  + It should provide a dashboard that shows the student’s readiness for the actual driving test based on their performance in the practice exams and the number of completed driving lessons.
* User Management:
  + The system should support different user roles, including students, instructors, and administrators.
  + Each user should have access to features and functionalities relevant to their role, with appropriate permissions and access controls.
  + The system should facilitate easy registration and account management for all users.
* Payment Processing:
  + The system should include a secure payment processing feature that allows students to pay for access to practice exams and on-the-road training sessions.
  + It should support multiple payment methods and generate receipts for completed transactions.
* Reporting and Analytics:
  + The system should generate reports for administrators and instructors, providing insights into student performance, system usage, and the effectiveness of the training program.
  + It should offer analytics that help DriverPass continuously improve the system based on user feedback and performance data.

## 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 should respond within 3-5 seconds for all user interactions, such as logging in, scheduling lessons, or accessing practice exams. This ensures a smooth and user-friendly experience, especially for students and instructors who will be using the system regularly. The system must be able to handle increasing loads as DriverPass grows. Initially, the system may handle hundreds of users, but it should be designed to scale to thousands without performance degradation. This includes managing peak usage times, such as just before driving tests. The system should maintain 99.9% uptime to minimize disruptions for students and instructors, particularly when booking lessons or taking practice tests.

####  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 must function on common platforms like Windows, macOS, and mobile operating systems such as iOS and Android. It should be accessible via major browsers like Google Chrome, Mozilla Firefox, Safari, and Microsoft Edge. The system should be responsive, ensuring a seamless experience on both desktop and mobile devices. The system will require a robust relational database (such as MySQL, PostgreSQL, or SQL Server) to store user data, lesson schedules, and practice test results. The database should support efficient querying and data integrity, with backup mechanisms in place for disaster recovery.

#### 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 must accurately distinguish between different types of users, including students, instructors, and administrators. Each user must be identified through a unique username or email, and all inputs (such as login details and personal information) must be case-sensitive to ensure security and precision. The system should alert the administrator in case of invalid data entries, failed processes (such as lesson bookings or payment errors), or potential system failures. Accurate error messages should be displayed to users to guide them in correcting input 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 must allow the IT administrator to modify, add, or remove users without requiring code changes. For example, Ian (DriverPass IT officer) must be able to assign or revoke access to instructors or staff members easily. The system should also allow changes in user roles or permissions through a simple interface. The system must adapt to updates in its underlying platform, including changes to the web hosting environment, database updates, or security patches, without breaking functionality. Regular maintenance windows should be scheduled to apply updates with minimal downtime.

#### 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 must log in using secure credentials (username and password). Two-factor authentication (2FA) should be implemented for additional security, especially for sensitive roles like administrators and instructors. Passwords must be encrypted both in transit (using SSL/TLS) and at rest. All sensitive data, including user information and payment details, should be encrypted during transmission using secure encryption protocols. The system must comply with relevant data protection regulations such as GDPR or CCPA, ensuring that user data is handled and stored securely. If there is a "brute force" hacking attempt (e.g., repeated failed login attempts), the system should temporarily lock the user’s account after a set number of unsuccessful login attempts and notify the system administrator of potential security threats. If a user forgets their password, they must be able to securely reset it through a password recovery process involving email verification or other secure methods.

### 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 allow users to register for practice exams and driving lessons.
* The system shall provide a secure login system for students, instructors, and administrators.
* The system shall allow instructors and students to schedule, modify, or cancel driving lessons.
* The system shall track user progress on practice tests and driving lessons.
* The system shall offer secure payment processing for lessons and exams.
* The system shall generate reports and analytics on user activity, lesson completion, and test performance.
* The system shall provide an interface for DriverPass administrators to manage users and system settings.

### 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**:

* **Students**: Need to be able to view available lessons, schedule lessons, take practice tests, and track progress. They will interact primarily through a web interface but may also access it through mobile devices.
* **Instructors**: Need to see their scheduled lessons, leave feedback for students, and track student progress.
* **Administrators**: Will require access to manage all users, view reports, and manage lesson availability.

**Interface Design**:

The user interface should be simple and intuitive, with mobile responsiveness as a key priority. Students and instructors will interact with a dashboard that displays lessons, test scores, and schedules. For administrators, a more robust interface will be needed for managing users and system data.

### 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?*

* The users will have basic familiarity with web and mobile interfaces.
* Students will have access to the internet, a mobile device, or a computer to schedule lessons and take tests.
* The IT team at DriverPass will handle any minor technical maintenance and updates to 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?*

* The system will initially support only English language users.
* There is no plan to support offline modifications to data due to concerns with data redundancy.
* The system will depend on a reliable internet connection for its web-based features, and there may be limitations in rural areas with poor connectivity.

### 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.*

