# 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?*

* DriverPass, our client, has identified a large gap in driver training resources that has resulted in a high failure rate for students taking the DMV driving test. The current failure rate is 65% for driving exams.
* This system is designed to improve success rates among students by providing structured training that is more than memorizing past exams.
* This system will also provide comprehensive driving preparation by combining online practice exams as well as in-person DMV lessons and hands-on driving opportunities.
* Security and data accessibility are very important and will be prioritized in this system by providing secure online access to training materials and reports tracking and academic information to authorized users.
* To ensure a stress-free schooling environment, this system will have virtual access to scheduling and making payments. It will allow students to modify and cancel lessons while ensuring the instructor’s availability.
* It will be a priority to have DMV compliance updates to ensure training materials are current and accurate by having automated notifications when the DMV regulations and policies change.

### 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?*

* Upon completion, this system will be a cloud-based system that allows students to book driving lessons online or over the phone. It will be able to provide structured training packages that include in-person driving lessons with an instructor, online practice exams to prepare for the written driver’s test, and in-person DMV rule explanations to give students access for any clarity or questions they might have. This system will also be able to track the students’ progress with lessons and tests, have role-based permissions for secure access, have updated training materials integrated from the DMV, and process online payments securely.
* The main problem that DriverPass wants to fix is the failure rate of students taking DMV driving tests. They want to do so by addressing issues like lack of proper training, inefficient scheduling, compliance challenges with the DMV, and security concerns. Additionally, there is currently no system that exists that provides a combination of online exams, in-person lessons, and hand-on driving practice and DriverPass is happy to be the first.
* There are many different components needed to make this work. First, is user management. Having items like role-based access controls, account creation and passwords, and tracking user activity will create a robust system. Next, scheduling and reservation access like an online booking system, instructor assignment (based on availability), lesson tracking, and cancellation and modification options will ensure the system is meeting the requirement. Also ensuring this system has training and testing, payment processing, and security and data management will ensure this system will work and include all the wanted features.

### 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 main objective for this system is to have a comprehensive training platofrom that helps students pass the DMV driving test by offering a hybrid approach with online and in-person lessons. It is essential that the system offers efficient scheduling, secure payments, progress tracing, and compliance updates.
* There are many different measurable tasks to achieve these goals. User management and authentication such as implementing role-based permissions, providing password recovery and account management and the ability to track logins, modifications, and activity history will ensure the system design can achieve the goals of this project.
* Another measurable task is the scheduling system. Once this system is complete, it should be able to allow students to book, modify, and cancel lessons. It should also be able to assign instructors and vehicles for each lesson and ensure there are no conflicts in doing so.
* The training and testing platforms are another measurable task that when the system is completed it will be able to provide online exams with progress tracking abilities, record score, test attempts and completion status, and allow the instructors to provide feedback.
* Having DMV compliance updates will meet the objectives and goals by having automated notifications for policy changes and ensure the current DMV guidelines are reflected in the training materials.
* This system will have secure credit card transactions, the ability to store billing details and track payment history and allow students to select different training packages.
* Security is of major importance so using encryptions for sensitive data, maintaining audit logs and implementing access control mechanisms will help to ensure the security goals of this project.
* Having reports and analytics is a great example of a measurable task for this project. When all done, the system will be able to generate reports of lesson booking, cancellation, and test scores. It will also be ale to provide management dashboards for business insights as well ass track students progress and performance trends.

## 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 environment that this system needs to run is a cloud-based web application that is accessible through desktop, mobile and tablets.
* This system should have the pages loaded in under 3 seconds for seamless user experience and have the transactions for booking and payment processed within 2 seconds. The system should be able to do this while supporting at least 1,000 simultaneous users with no noticeable performance degrading.
* The system should have quarterly software updates to help with performance optimization as well as security patches every month to mitigate vulnerabilities.

#### 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 should be able to run on Windows, macOS, Android, IOS and Unix-based systems.
* The back end does require some tools for his application. The database should be MySQL or PostgreSQL for structured data. The server should have cloud-based scalability and programming languages like Python and JavaScript. Lastly, the system needs APIs to integrate with the DMV policy update services for automatic compliance.

#### 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 will be able to distinguish between different users by having an unique identifier (User ID).
* Case sensitivity should be inputted for passwords but not for names and email addresses, those should allow both upper and lower case without distinction.
* The system should inform the admin of a problem when there have been multiple failed logins which could indicate brute-force attack). The admin should also be notified if there is a double scheduling error or a payment processing failure.

#### 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 admin will be able to add, remove, and modify users with an interface, so without changing the code.
* The system will adapt to platform updates by being compatible with OS updates that ensure it is still functional after Windows/, macOS/Linux patches. The new features should be integrated with no disruption of the existing functionalities.
* The IT admin will need access to system configurations, user access, reports, and troubleshooting. They can also restore accounts, reset passwords, and monitor system logs.

#### 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?*

* The login requirements are multi-factor authentication for the IT and admin roles, while the students can login though email and password. The password must meet the strength requirement meaning it must be 8+ characters, have a mix of uppercase and lowercase letters, numbers and symbols.
* The connection or data exchange between the client and the server can be secured by implementing TLS encryption. Sensitive data like payment information and personal details can be stored with AES-256 encryption.
* If an account encounters brute force hacking, there will be a temporary lock on the account for ten minutes (this would occur after 5 failed login attempts). The admin would be notified of suspicious login attempts following the incident.
* If a user forgets their password, they will be able to reset it with an email verification link. If the recovery fails after multiple attempts, the admin can manually assist.

### 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 reset passwords, provide role-based access controls and track use activity.
* The system shall allow students to book, modify, or cancel driving lessons online or over the phone.
* The system shall assign instructors and vehicles, prevent scheduling conflicts, and track lesson history such as lesson time, instructor, feedback and student progress.
* The system shall provide online practice exams, record student test scores, display test status, and enable instructors to add feedback on students’ driving performance.
* The system shall allow secure payment transactions, store billing details securely, verify payment before confirming a booking and generate receipts for successful transactions.
* The system shall receive automatic DMV updates. Notify administrators when DMV regulations change, update training materials according to DMV guidelines, and display DMV compliance warnings when the content is outdated.
* The system shall encrypt user credentials and sensitive data with AES-256 encryption, implement multi-factor authentication for admins, lock accounts after five failed login attempts, and maintain an audit log.
* The system shall generate students’ progress reports showing completed lessos and test scoes, provide analytics on lesson bookings, and offer downloadable reports such as Excel or PDF formats.

### 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 first thing the interface needs to be is user friendly. It must be intuitive and simple for all users to navigate. Next, the user interface must also be responsive and accessible on different devices (desktops, phones, and tablets. The user interface has role-based functionality meaning it displays relevant features depending on the user type. Lastly, the user interface must have efficient security to ensure the safety of the users, using things such as encryption and user authentication.
* There are five different users for the interface, the first being the students or the customers. They need to be able to book lessons and take online tests. In the user interface, they need to be able to schedule, modify, or cancel lessons. They should also have access to test progress and scores and be able to view instructor feedback and driving session history.
* The next user type is the instructors. Their primary role is to conduct driving lessons, so they need to be able to view assigned student schedules and provide lesson feedback and track the students’ performance history.
* Secretaries are another user needed for this interface. They are there to manage booking so they must be able to input student information, modify lessons, and process payments.
* The IT administrators are a needed user for the interface because they are there for system maintenance. They need to be able to manage user accounts and access levels. They also should have the ability to reset passwords and oversee security settings and compliance updates.
* Lastly, the business owner, Liam, is a user of this interface. His role is to manage business operations. He must be able to view reports on bookings, cancelations, and revenue. He can approve system modifications and monitor compliance updates.
* The user will interact with the interface in a variety of ways. The interface is accessible through web browsers like Chrome, Edge, and Firefox, which should be the primary method for all users. The mobile app, available on IOS and Android, will allow students to book lessons and view test results from their smartphones. Tablets are another way to access the interface geared for the instructors and secretaries to manage schedules.
* The key features of the user interface include the dashboard, which can be personalized, the navigation bar that allows quick access to the main functions, the forms and tables tab that helps with scheduling, payment, and reports, and lastly, notification and alerts used to set reminders for upcoming lessons, DMV updates and system changes.

### 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 assumed that the users have reliable internet access to us ethe cloud-based system. It is also assumed that the students and instructors will primarily use a web browser or mobile app to access the system while secretaries will go through the desktop interface and do not use the app.
* It is assumed that all users have basic computer literacy skills and instructors and secretaries will require minimum training to use the system successfully. It is also assumed that users will enter accurate personal information for account and payment settings.
* It is assumed that the system will not support offline modifications to prevent data inconsistency across servers. It is also assumed that payments are processed successfully, and error handling only occurs when the payment fails.
* It is assumed that the users will follow the login security measures. It is also assumed that that the DMV will provide consistent updates on any rule changes. Only IT admins will have full system control to prevent unauthorized access to sensitive information.

### 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?*

* In this system design there are some limitations. The system relies on a few external factors for the DMV compliance updates as well as the payment gateways. If something happens to either of these external sites, there is nothing our system can do about it. The system also cannot offer offline modification due to its design to prevent data redundancy. Lastly, the system design is limited by user error such as having an unnecessary scheduling conflict because someone typed in the wrong information by mistake.
* The system also has some resource limitations. The program is heavily dependent on instructor and vehicle availability. If there are unexpected absences or during peak time, there may be limited bookings available.
* There is also some time constraints associated with this system. The project schedule could be delayed by several factors including customer approvals or testing phases needing delays. With needing connection to the DMV database, payment gateways, and cloud storage, there are many factors that may require the overall timeline to be extended.
* Just like with any system, there are budget limitations. Cloud hosting is typically associated with ongoing expenses for storage, security and scalability. Also having advanced features like customization tools may require future funding beyond the initial start up cost.
* Lastly, there are some technological constraints due to this being an online service. While the system does have security, there will always be cybersecurity risks that handling properly may require continuous updates. There are also platform compatibility constraints that mean the browser dependencies ( such as Edge or Chrome) may impact performance.

### 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.*

*A screenshot of a computer

AI-generated content may be incorrect.*