# 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 the project is to create a system that provides up to date training for student drivers.
* The client for this project is DriverPass, owned by Liam, who envisions a system that provides online and in-person training to students in preparation for driving tests.
  + This system provides the owner with full administrative access to student accounts.
  + The company’s IT officer will have sufficient access to the system for maintenance purposes.
  + The secretary will have access to the system in order to schedule appointments for on-the-road training.
  + Students will have the ability to schedule, modify, and cancel appointments online.

### 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?*

* The owner of DriverPass views the current void in the market of training programs for student drivers as an ongoing problem.
* The owner wants to resolve this problem by developing a virtual and in-person training system to prepare students for driving tests.
* The components needed for the system include online training and practice test modules, a virtual dashboard, an appointment scheduling subsystem, as well as a tracking and maintenance subsystem. These components will work together to allow students to take online classes and practice tests, as well as schedule on-the-road training. The tracking and maintenance subsystem will allow the owner to overall administrative access to the system, whereas the IT officer will be able to maintain and modify the system.

### 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?*

* Users should be able to take online classes through the system.
* The system should provide users with practice tests.
* Users should have access to a dashboard that provides online test progress, student/driver photos, student information, along with driver notes.
* The owner should be able to have online access to student accounts, reset passwords, or block employee access to accounts.
* The system should enable DriverPass to identify the driver the customer is scheduled to train with.
* The secretary should have sufficient access to the system to schedule appointments.
* The IT officer should have sufficient access to maintain or modify the system, such as disabling packages.
* The owner should be able to track who makes, cancels, or modifies appointments.
* Users should be able to make, cancel, or modify appointments online.
* Users should be able to select and schedule three different on-the-road training packages.
* The system needs to be able to connect to the DMV to provide updates of new rules, policies or sample questions.
* The system needs to be able to run off the Internet using cloud services for storage.

## 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 will need to be structured as a web-based cloud application, compatible for both desktop and mobile platforms in order to meet all user requirements. Users will require access to online practice tests and the online scheduling system in order to complete exams and in-person instruction.
* The system will also require some offline capabilities. The owner of DriverPass needs to access analytic data from desktop and mobile platforms, both online and offline. Accordingly, the system will need to operate in both online and offline environments.
* The optimal speed of the system will depend on several factors, including scalability, response time, and reliability. The system should be fast enough to accommodate growth of customers over time. It should offer a minimum response time of 2-3 seconds with minimal lag time. Otherwise, students may become frustrated and stop taking online practice tests or give up on scheduling in-person lessons. Therefore, the system should be capable of processing at least 10,000 requests per second. This is the optimal speed for fast response times, minimal latency, and scalability to accommodate thousands of online students.
* The system should be continuously updated. This is because the system will maintain a connection to the DMV in order to update DriverPass whenever new driving rules, policies, or sample questions are available. Thus, the system will need to be updated on at least a daily basis in order to incorporate new laws, regulations, and 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 platform used will depend on several factors, such as the developer’s expertise, budget, and scalability requirements. Given the fact that this system will be a web-based platform with sufficient scalability to accommodate many online students, Microsoft Azure would be an ideal choice. Azure offers web hosting and cloud services consistent with DriverPass’ requirements.
* The back end will require a database to support the application, such as MYSQL. The database will be used to store customer information, including first name, last name, address, phone number, state, and their credit card number, expiration date, and security code. The database will also store user categories, such as student, instructor, and administrator.

#### 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 distinguish between different users with user authentication. At the time of registration, the user will be assigned a login username, a unique, case-sensitive password, and user category, such as student, instructor, or admin. This information will be stored in the system database.
* The system will authenticate the user’s username, password, and user category and every login attempt. This process will ensure that users are assigned proper permissions in order to ensure security within the system.
* The system should inform the admin of a problem whenever the application experiences an error or otherwise operates improperly. These potential problems include security breach, suspicious activities, low system resources, latency, connectivity issues, or data inconsistencies.

*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 be able to make changes to users without changing the case. This is because the owner requires access to all user accounts so he can reset them if someone forgets their password, or block access if an employee is dismissed from their job.
* The IT admin will require sufficient access to the system to maintain and modify the application. These tasks include monitoring the system for security incidents, unusual activities, performance issues, troubleshooting, and disabling driving packages no longer available to students.
* The system will adapt to updates by using a module, flexible design that monitors changes at DMVs websites and incorporating these changes using APIs. This approach will allow the system to integrate changes in a streamless manner without major disruptions to the application. Once the system integrates new platform updates, the changes will be integrated into the user interface to allow customers to receive new online tests as well as updates driving laws and regulations.

#### 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?*

* In order to maintain security, a unique username and case-sensitive password should be required to log into the system. Additionally, two-factor authentication should be implemented as an additional layer of security for logins.
* The connection between the client and server can be secured using data encryption and establishing a secured connection between the client on the service. This approach helps to prevent security incidents such as man-in-the-middle attacks.
* In the event of a brute force hacking attempt, the compromised user account should be locked and owner of the account should be notified immediately. Law enforcement should also be notified of the security incident.
* If the user forgets their password, the system should provide the user with a password recovery feature that sends a password reset link to the user’s email address.

### 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 new accounts.
* The system shall assign user appropriate permissions for students, instructors, and admin.
* The system shall store user profiles in a database.
* The system shall store scheduled appointments in the database.
* The system shall allow users to create, modify, or cancel appointments.
* The system shall store and provide access to with online practice tests.
* The system will store data in a cloud-based system.
* The system shall monitor DMV websites for new driving laws regulations.
* The system shall update the application with updates from the DMV.
* The system shall store student progress completing online practice exams.
* The system shall record and store analytics regarding how often students log onto the system and which features they use the most.
* The system shall allow admin to download analytics data that can be used offline.
* The system shall store driver and student photos.
* The system shall store driver notes entered by the user.
* The system shall authenticate users using a username/email and password combination.
* The system shall provide an option for users to enable two-factor authentication.
* The system shall establish secure connections with the client and encrypt data transmitted over the server.
* The system shall implement account lockout procedures to temporarily lock user accounts after brute force attacks.
* The system shall allow users to initiate a password recovery process if they forget their password.
* The system shall send a password reset link to the user's registered email address for password recovery.

### 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 will interact with the interface using a browser on both desktop and mobile platforms. This is because the system will be built on a cloud-based platform that offers flexibility for both online and offline access.
* The needs of the interface will largely depend on the user.
  + Students require an interface that allows them to register for new accounts and schedule, view or modify appointments. The interface should also allow students to view their online test progress, driver notes, driver/student photos, and any special needs they may have. The student interface should also show their profile information, which includes their name, address, phone number, and email address.
  + On the other hand, admin users require an interface that allows them to disable driving packages, view web analytics, lock user accounts, reset passwords, and monitor the system for secure breaches. Admins will also need the interface to view, modify, and cancel appointments.

### 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?*

* There are several assumptions made in the design that are not specifically addressed above. These assumptions include the follow:
  + The users have basic technical proficiency.
  + The users have internet access.
  + The users have a compatible computer or a mobile device.
  + The students have a credit card to pay for services.
  + The students have email accounts.
  + The students consent to collection and storage of personal data.

### 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 primary limitations in the system design include scalability and integration. The system may face difficulty scaling up to a very large number of students on a national or global scale. Additionally, the system may face difficulty integrating with DMV websites, given that local DMVs can be highly decentralized and may require different APIs for full integration.
* The system design is also limited to the resources, time, budget, and technology available for the project. The project’s budget and timeline are largely determined by the client or the project lead. For example, the client may not have the budget required to use certain technological resources or they may want the project completed on an expedited basis. These factors are largely outside the control of the analyst and should be considered limitations of the system design.

### 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

Description automatically generated*