# 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?*

* Client: DriverPass
* Problem to address: There is a need for better driving training as many people fail their driving tests at the DMV
* Project purpose: The purpose of this project is to provide better driver training through online courses and live instruction.

### 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 system will offer appointments for live training sessions, in person lessons, and online courses that include practice tests.
* The problem DriverPass seeks to solve is making sure all the drivers get the same level of skills and training through new training and existing training that already exists.
* The different components of the system include:
  + 10 vehicles and drivers
  + Instructors
  + Web-based distributed application that stores user information, course material current with DMV regulations and online reservation system. Backend and database layers are included in this distributed system.
* Reporting for Reservation tracking.
* Report downloading for offline use.
* System roles defining access for owner, IT officer, secretary, and customers/students.
* Schedule appointments for driving lessons.

### 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 create accounts.
* Users should be able to reset passwords.
* Users should be able to select one of the instructions packages.
* Users should be able to make, cancel, and edit driving reservations.
* Users should be able to view online course material from any device.
* Users should be able to take practice exams.
* The system should track user practice exam progress.
* The system should store and allow modification of user contact information.

## 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?*

* This is a web-based distribution system. The backend will be Linux-based servers or Windows-based servers serving various browser clients.
* The system should be performant as the application may have network intensive activities, such as accessing current DMV-compliant testing material and sending in data to make reservations or updating user account information.
* The system should update the database layer any time progress is made on practice exams, drivers submit feedback from driving lessons, reservations are changed or when the DMV releases more current guidelines.

#### 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?*

* Since the system is web-based, it should run on any platform. Browser development will be considered for certain browser such as:
  + Chrome
  + Edge
  + Safari
  + Firefox
* Since support is being used for chrome hopefully most chromium-based browsers should be easily supported.
* The backend will require a database. We can choose a SQL or NoSQL-based solution, depending on the needs.

#### 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?*

* System users should be distinguished by password-protected accounts.
* Usernames and passwords should be used for authentication.
* System users shall be assigned roles defining the authorization levels and access to system resources.
* Input shall be case-sensitive for greater security.
* A limit shall be placed on the number of incorrect password submission attempts and will result in notifying the administrator.

#### 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?*

* Systems users should be able to create/add accounts.
* System users shall be able to modify their account info and it should be editable via form submission/POST requests. The underlying system code should be written to accommodate this feature.
* System users shall be able to delete/remove accounts.
* In many cases, the users’ browser will continually update. This will not affect backend code in most instances. When necessary, patches and updates will be made when client updates affect underlying system behavior.
* System application updates will be done when features/bug fixes are completed as agile scrum development allows, and only during off-peak-use hours to mitigate negative application impacts such as early morning.
* Agile development will allow smaller changes to be implemented more frequently and with less regression risk than larger, major application overhauls.
* The IT admin will need full access to accounts for updating passwords or removing access to former employees.
* The online course and package system should be designed with scalability in mind such as adding more packages and more courses such as different test types and course types.

#### 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 shall need usernames and passwords to log into the system.
* Network requests shall be made through HTTPS, providing secure communication between clients and backend applications.
* Sign-in form submission shall be made via HTTPS POST requests, preventing sensitive data from being transmitted in the URL of the request.
* Sensitive data should be encrypted to ensure security across networks.
* Too many incorrect sign-in attempts shall result in a locked account. Locked accounts will notify the IT admin and that will send an automated message to the user to notify of them steps to be taken to recover the account.
* Password reset requests can be handled by the users. The requests should send an email to get code or set up two factor authentication through an authentication system or their mobile phone number.

### 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 require user authentication and authorization when logging in. Authorization access is determined by account type.
* The system shall be web-based. Instructional material may be accessed offline by download but the data can only be updated/modified online.
* The system shall track user activity, indicating which user made a reservation, canceled a reservation, and last modified it.
* The system shall provide reporting, such as a detailed activity report.
* The system shall list the DriverPass course package types and allow future packages to be added or changed.
* The system shall accept customer details for account registration:
  + First name
  + Last Name
  + Address
  + Phone
  + State
  + CC number, expiration date, security, or other payment form such as PayPal.
* The system shall allow users to reset passwords.
* The system shall provide instructional material compliant with current DMV guidelines.
* The system shall display user exam progress/grades.
* The system shall provide instructor feedback to students.
* The system shall allow exams/material to be modified.
* The system shall allow users to be contacted by instructors, secretary, or admin.

### 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 interface will include the following pages:
  + Home page
  + Account registration page
  + Course material access page
    - The course material page should include sections for downloading the course material for offline users and allows practice exams.
  + Driving lesson reservation page
  + Student info page
    - The student info page should include practice exams progress/grades.
    - The student info page should also include student contact information.
  + DriverPass contact page.
* The interface users and system access levels are shown below:
  + DriverPass owner – full access over accounts, update passwords and system
  + DriverPass IT officer – full access over accounts, update passwords, and backend system.
  + DriverPass Secretary – full access to schedule and account information.
  + Customers/Students - access to create and account, learning materials, schedule, and appointments.
* The system is web-based, so the interface interaction will occur through browsers whether mobile, tablet, or desktop. Currently there are no plans for native device app versions of DriverPass.

### 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 system is not accounting for outages in power, or internet for when that happens there is no plan for backup.
* It assumed that DMV guidelines available online are accurate and are kept current.
* A native app may become a priority as many users like to use apps over their browser.
* DriverPass users have a working client device that can connect to the internet, with an operating system and browser that meets the minimum system requirements.
* It is safe to assume that most customers will be younger and more tech savvy. Therefore, the website will receive more traffic than in-office visits.

### 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?*

* As a web-based application, the system is reliant on network connectivity. This means user data can be accessed when the network isn’t available. This also means course material is not available when there is no internet except for when downloaded.
* Electricity must be available to power the DriverPass system and client devices.
* Physical services will have a considerable upfront cost as well as costs related to the maintenance. I recommend using a cloud-based database architecture such as AWS. This allows for less upfront capital expenditure and can dynamically scale due to demand which can lower pricing.

### 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]