# 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?*

* Create a system through which DriverPass clients can interact with DriverPass(our client):
  + Create a cloud-based platform to facilitate client-company interactions.
  + Connect with DMV to ensure compliance
    - Notify DriverPass users of DMV updates
  + Offer online classes and practice tests to clients
  + Offer on-the-road training to clients
    - Make reservations
      * Track and index “made” reservations
        + Store information such as client-driver pairs at certain times
      * Comprehensive UI for Clients
      * Store client information in database
    - Assign instructors to clients
    - Store information regarding availability of instructors and timeframes
  + Provide for online and offline access to data from any PC or Mobile device
    - Provide report downloads
  + Provide an avenue for system administration
    - Ability to add or remove service packages
    - Index user permissions
    - Account administration
      * Password resets
      * Information changes
      * Access provisioning and revocation
    - Create printable log files
      * Log user changes or actions
      * Log reservation creations and changes

### 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?*

* Handle user and client registration
  + Populate database with user and client information
    - Name
    - Age
    - Address
    - Pickup Location(if client)
    - Permissions
      * Owner(Liam): All permissions
      * Admin(Ian): CRUD permissions on all account and system levels but Owner
      * Secretary: CRUD access on all client reservations and database fields
      * Drivers: Read access
      * Students: Read access ability to CRUD their own reservations
        + Access to online environment based on selected package
* Take reservations from clients and secretary
  + Populate database with:
    - Client and their desired driver
    - Time of lesson
    - Package
      * Relevant package information like hours remaining.
    - Desired client pick-up location
* Train clients for their DMV road test:
  + Provide online GUI capable of:
    - Reserving packages and lessons
      * Display different package options for purchase
      * Host form for making reservations that has database integration
    - Hosting practices tests for package 3
      * Provide error checking and feedback to clients
    - Hosting online learning materials for package 3
      * Sample questions
      * DMV policies
* Integrate with the office environment
  + Reservations for both the online and office environment must be synchronized
  + Changes to system made in office must populate online
* Necessary components:
  + Database for information storage
    - NAS storage to handle ingestion of large volumes of data
  + Webserver to host online site and handle database calls
  + Administration portal/panel on Webserver

### 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?*

* Register a user
* Register a client
* Host a webservice capable of:
  + Taking reservations and making database calls
  + Online practice tests
  + Online sample problems
  + Cloud based access
* Provide downloadable reports
* Reservation auditing:
  + Tracking drivers-clients
  + Tracking reserved times and cars
* System logging:
  + Provide logs for any system interaction
* Integrate with DMV:
  + Notify staff of DMV changes
  + Auto-populate webservice with updated sample problems, policies, or other important 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?*

* System must be web-based:
  + System must be compatible with modern browsers:
    - Edge
    - Chrome
    - Firefox
    - Opera
  + System must be compatible with mobile browsers:
    - Safari
    - Chrome for Android
    - Firefox for Android
    - Opera for Android
* System should be fast, but more importantly, scalable:
  + System should be interactive within 2 seconds of loading the webpage
  + System must be capable of scaling to hundreds, even thousands of clients
    - System performance must not degrade at scale
* System should be updated based on client needs or to ensure compatibility with desired browsers and backend.
  + The system will be updated with new features as rollout begins and the system adoption is more concrete.

#### 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?*

* System should use a Windows environment as that is most likely what is used at the office.
  + Ian will have experience with Windows administration which will prove helpful when administrating the Windows server.
* System will require a backend database
  + Database must be capable of:
    - Storing user and client information
    - Storing reservation information
    - Storing information related to the state of the clients on the webservice:
      * Practice test scores
      * Practice problems
      * Online material progression
    - Storing information of reservations made in office.
  + Database must provide avenues for updating information across multiple forms

#### 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?*

* Authentication:
  + Users will have a distinguished username and password, like Active Directory
    - Usernames will be case-insensitive as to minimize administrative intervention
    - Passwords will be case-SENSITIVE as the benefit of the added security is large
  + System should lock out a user on login and notify the system administrator after five failed login attempts, or if login IP address has changed within an impossible time.
* System Accuracy and Precision:
  + Common strings like name and address will be parsed and edited before database submission in order to “lint” the data.
  + Forms will have helper-text available to guide users on how to structure their input, in addition to the input parsing.
    - Will also protect against various cyber attacks

#### 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?*

* Malleability:
  + Administrative panel for:
    - Adding users and clients
    - Removing users and clients
    - Resetting passwords or test progression
    - Overall site administration
      * Changing of package configurations
      * Changing of module and package availability based on business requirements
  + Hierarchical organization with users and clients is delegated only the permissions necessary to complete their functions in the system.
    - Owner will have all permissions
    - IT Admin will have all permissions besides ability to CRUD “Owner” accounts
    - Secretary will have CRUD permissions on all client-generated reservations
    - Drivers will have read access to pertinent information
      * Client name
      * Client pickup-location
      * Client’s online progression
    - Clients will have CRUD access to their own account and CRUD access to creating their own reservations
* Adaptability:
  + System should be modular
    - No changes to one module should affect core functionality of other modules
    - System should allow for addition or deletion of modules
    - System should be automatically updated based on DMV information

#### 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?*

* Login:
  + Domain secured by a “login” landing page.
  + Username – case-insensitive
  + Password – case-sensitive
  + In the event a user forgets their password:
    - They may submit a password change request
      * If approved by IT admin, the user will receive email instructions on how to change their password
  + In the event of five unsuccessful logins or a large IP location change:
    - Account is locked
      * Will need administrator to unlock account as well as change password
* A REST API with Authorization Headers will be used to communicate with the webservice
  + API will handle all device-server information transfer
* HTTPS and TLS will be incorporated to send encrypted data packets between the device and server

### 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 provide a landing page to the user that displays relevant company information
* The system shall allow a user or client to “log in” by filling out a secure form and validating the provided information against the database
* The system shall display a dashboard of modules including Online Test Progress, Information, Driver Notes, Special Needs, Driver Photo, and Student Photo
* The system shall link of the with the webpage that hosts the HTML for the desired module
* The system shall provide forms to take online reservations as well as display already reserved times and drivers from all other clients or company sites
* The system shall send and receive all this information from the central database
* The system shall list and allow for purchase of various lesson packages and should facilitate the scheduling of such from the same system
* The system shall host online resources like problems and practice tests for clients that bought the required package
* The system shall have reports available to download from any location or device
* The system shall keep logs so it can be audited

### 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.)?*

* Overarching needs:
  + Clean template
    - Modules should be color coordinated
  + Objects that scale based on browser preferences
  + Considerations for other browser and user-defined preferences
  + CSS styling to keep with webpage themes
  + Broad device compatibility
* Administrator/Owner
  + Log into Administrator Dashboard
  + CRUD user and client accounts
  + CRUD site modules like packages and reservations
  + Reset or replace user and client accounts passwords
  + View website and connection metrics
* Secretary
  + Log into Secretary Dashboard
  + CRUD client reservations
* Driver
  + Log into Driver Dashboard
  + Upload a photo
  + Read client name and pickup location
  + Update “Driver Notes” module for each of their clients
* Client
  + Login to Client dashboard
  + Update their information and upload a photo
  + Create reservations based on their purchased package(s)
  + If applicable package is purchased:
    - Access online practice tests and sample questions
* Interfaces
  + In Office
    - Additionally, the user will be able to interact with the system by going to the office and describing their query to the secretary
  + Mobile
    - User should be able to interact with touchscreen and touch-keyboard to interface with the hosted system
  + Browser
    - User should be able to use keyboard, mouse, or touchscreen to interface with the hosted system

### 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?*

* Assuming DriverPass has the budget to build out the program with the described functionality
* Assuming all system components and software can be procured or designed within the allotted time period.
* Assuming there is adequate infrastructure in place to support a hosted service and database for DriverPass
* Assuming the IT Administration is familiar with a Windows environment administration
* Assuming users will have an adequate internet connection
* Assuming all devices accessing online resources will support modern browsers and protocols
* Assuming DriverPass will handle educating its users on system usage

### 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?*

* Time
  + Five-month deadline from inception to sign-off meeting
* Technology
  + Based on the interview, DriverPass is a small company
    - System components must be optimized to handle the workload but also stay within the constraints of their budget
  + One server will handle the workload up until a certain point where it will then create outages
  + DriverPass has one IT employee to handle administrative tasks across the whole system

### 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 project

Description automatically generated