# 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 this project is to develop a central application with GUI and cloud storage where DriverPass can track their customers’ progress with DMV driving exam prep-course, schedule on-the-road training sessions, and provide online practice exams.
* The client is the DriverPass company, and they would like to record their customers’ package type, progress with the online practice tests if applicable, schedule on-the-road sessions at 2 hours per session, driving instructor’s notes, and some of their customers’ personal information.
  + Package 1 - customer receives 6 hours of on-the-road training.
  + Package 2 - customer receives 8 hours of on-the-road training and an in-person session covering DMV policies and rules.
  + Package 3 - customer receives 12 hours of on-the-road training, an in-person session regarding DMV policies, and access to the online class with all content including the practice driver’s tests.
  + Driving Instructor’s Notes – driver shall record lesson time, start hour, end hour, and brief comments regarding the customer’s performance.
  + Customer’s personal information – includes first name, last name, address, phone number, email address, etc.

### 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?*

* This system will allow customers to log into their personal profiles to update personal information, view/schedule available on-the-road training sessions, upgrade their education package.
  + When customers have purchased Package #2 or Package #3 then they will be allowed to schedule an in-person session to review DMV policies and rules.
  + When customers have purchased Package #3 then they will gain access to the online class with all additional content including the practice driver’s exams
* This system will also allow for two administrative accounts and one moderator account.
  + The Administrative accounts will have full access to all data with the privilege to add, modify, delete, and open all accounts as well as access to all protected facets of the system.
    - These accounts include Liam (DriverPass owner) and Ian (DriverPass Information Technology Officer).
  + The moderator account will belong to the company’s secretary and driving instructors.
    - The secretary account(s) will only need the ability to schedule customer on-the-road sessions, cancel existing on-the-road sessions, and modify times for on-the-road sessions already scheduled.
    - The driving instructor will need to be able to report on-the-road session lesson time, start hour, end hour and driver comments to the various customers’ profiles.
* DriverPass is admitting the problem that they need a centralized software system to run their business with, but there is no existing software in the company to expand from and the owner states that they do not have the resources to maintain in-house servers.
* For this software package to meet full fruition the project requires several components.
  + First, user-friendly GUIs for customers and staff to navigate through.
    - This includes a common log-in screen, customer profiles, on-the-road session availability calendars, in-person DMV policy review session availability calendars, online course pages, online practice exam pages, and a menu screen listing customers’ profiles.
  + Second, this system will need to be run on a remote-cloud server operated by a third-party such as Microsoft, Google, Apple, or IBM.
    - This element is critical since it will allow DriverPass to spend less time maintaining server software and hardware.
    - This aspect will also ensure that DriverPass personnel will be able to access the system from their personal devices.
  + Third, this system will need to be developed utilizing efficient data structures and coding practices to ensure that the expenses related to the cloud server are minimized.
    - I would advise partially developing in C++ and storing user profiles as class objects in a Binary Search Tree for this purpose.

### 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?*

* Upon completion of this project the system will:
  + Open with a common log-in screen
  + For customers:
    - After log-in, display the customer’s profile showing personal information, on-the-road training progress, online practice exam progress (if applicable), in-person DMV policy review session progress (if applicable), driver’s notes, etc.
    - In the customer’s profile they will have the ability to update information, upgrade their educational package, access online course (if applicable), access practice exams (if applicable), schedule in-person DMV policy review session (if applicable) and schedule on-the-road training sessions.
    - If a customer fails to log-in, send automated email to the customer email address on file to reset their password.
  + For secretary:
    - After log-in, display list of customer profiles.
    - After selecting a customer’s profile, display customer’s profile.
    - From this GUI the secretary can cancel, modify, or create a new on-the-road training session appointment.
  + For driving instructors:
    - After log-in, display list of customer profiles.
    - After selecting a customer’s profile, display customer’s profile.
    - From this screen the driving instructors can select and finalize an active on-the-road training session with lesson time, start hour, end hour and driver comments relating to the session.
  + For owner and IT officer:
    - After log-in, display list of customer and staff profiles
      * Staff profiles include personal information and privilege level.
    - From this menu Administrators can reset passwords, remove user privileges, grant user privileges, access on-the-road session calendars, delete accounts, create accounts, etc.
      * The session calendars for on-the-road training and in-person DMV policy review sessions will show which user scheduled the session (customer or secretary), which user canceled a session and which user modified the session last.
      * On-the-road session appointments should include the driving instructor’s name and vehicle number, only accessible to the specific driving instructor, secretary, and administrators.
      * Allow global active/deactivate of educational packages.
* The measurable tasks needed for this system design to meet completion are:
  + First, development of the necessary GUI screens for log-in, customer profile, customer list, and session availability calendar.
  + Second, development of back-end code to store, sort and secure customer profile data.
  + Third, integration between GUIs and back-end code.
  + Fourth, deployment of system onto cloud server
  + Fifth, final testing of system before delivering to DriverPass

## 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 system will be cloud based and require adequate cloud storage space for the number of customers that DriverPass will be serving and the amount of practice study materials that will be offered. The cloud system must be fast enough to expeditiously buffer training videos, interactive practice materials, exams and run administrative systems. The system should be regularly updated as new bug patches and system features are developed.

#### 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?*

* This system should be accessible through Windows OS and MacOS with the option of later releases accessible for Android and iOS platform.
* Back-end integration will require tools for embedding this application into the DriverPass website, through a link to application or GUI window with application embedded into the DriverPass web page.

#### 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?*

* When a user logs into the system their username and password will be used to search for their specific user class instance in a database that will verify their individual profile with an access level designator that will specify if the user is a student, driving instructor, secretary, or administrator.
* The input for logging into a profile should be case sensitive, while searching for a student or employee profile, selecting date for driving practice appointment, driving instructors notes to students, or setting date for driving exam may not be case-sensitive.
* The system should inform administrators of problems when students fail to schedule road practice sessions, a student cancels a road practice session several consecutive times, access to higher tier material than they have paid for has occurred, a student has been inactive in the DriverPass system for over 2 months, a driving instructor has issued multiple complaints or failed results for a student, or if a student fails to pay for additional sessions.

#### 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 only users who should be able to add, remove, or modify user profiles should be the IT officer, Ian, and the owner of DriverPass, Liam.
* The system may need to be intermittently shut down while updates and system maintenance are conducted.
* The IT admin will need full access to all features and back-doors of the system since passwords may need to be reset, profiles may need to be blocked and clients and the server ping may need checked.

#### 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 log-in system will require users to enter a username and password to access the application.
* When securing the data exchange between the client and server I would advise encrypting the connection.
* If an account is the subject of a brute force hacking attempt, then the account needs to be locked and the IP address of the hacking attack blocked. If a user forgets their password an automated system should be able to send a reset code to the phone number or email address provided in their account.

### 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 confirm a user’s account when logging in.
* The system shall allow customers access to only the materials they have paid for.
* The system shall allow secretaries, administrators and driving instructors to schedule road practice sessions for students.
* The system shall provide a seamless experience with minimized processing time.

### 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 must include customer profiles with graphical buttons for scheduling road sessions, accessing practice materials and editing profile information.
* The staff interface must include a menu of student profiles, and a calendar interface to schedule road sessions.

### 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?*

* I have assumed that none of the customers or administrators will be accessing the system through Linux OS.
* I did not include any back-end feature for the IT officer to check connectivity or security between clients and the server.
* I did not document any administrative features to block connections that are attempting to hack the system, or features that lock customer accounts when some discrepancy has occurred.
* I have assumed that DriverPass has generated enough practice study materials to adequately populate the application.

### 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?*

* This system will be limited to serving the number of customers allowed by the cloud service storage space and network latency.
* This system will also be limited by the amount of practice study materials generated by the DriverPass staff.
* This application will be limited to the MacOS and Windows OS platforms with the option of later releases for Android and iOS.
* This application will be limited by the resources available to the team for GUI, cloud integration and system style research and development.
* This application will be limited to a hard deadline for development on May 7.
* This application will be limited by time and manpower according to the price of the application given to DriverPass since this project, at 6 day work weeks and 8 hour days, can be predicted to accumulate ~744 hours total and assuming a team of 4 software engineers will be working on developing this system, it should have a labor value of over $50,000 with the assumption that all software engineers are valued at ~$48.00/hour that would mean a stiff price for DriverPass or a high annual licensing fee for DriverPass to utilize the consulting company’s 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 picture containing screenshot, text, plot, diagram

Description automatically generated