# 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
* Purpose: DriverPass wants their system to offer driver training so that more people pass their driving test at the Department of Motor Vehicles (DMV).

### 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?*

* Problem: There is a void in the market for offering driver training. This has led to many people failing their driving tests.
* Solution: DriverPass’s solution to this problem is to create a web-based system that allows customers (people preparing for their driving test) to participate in online materials, DMV lessons, and practice tests that will help them pass their driving test. This system also should offer the ability to reserve driving lessons through an online account or by phone scheduling. To access these privileges, customers must purchase 1 of the 3 packages that offer varying amounts reserved for driving lessons, and the option for lessons and/or online materials.
* Components:
  + Reservation Tracking: Shows which user created, modified, or deleted a reservation. IT role only.
  + Universal Account Access Key: Accesses any account to restrict access to select users, reset passwords, and monitor accounts. IT role only.
  + Purchase Packages: Shows 3 packages available for customers to purchase that offer varying times allotted for driving lessons while specific packages offer DMV lessons and/or access to online materials.
  + User Interface: Displays online test progress, driver notes, an input section for information, a link to contacting DriverPass, a special needs section, and photos of the driver and customer. Formatting provided is what the customer role would see.
  + Web Interface: Allows an online user to participate in online classes, take practice tests and to reserve a driving lesson to include the day and time. It also allows a customer to modify their reservation or cancel it. Customer role only.
  + Database: Stores all transactions, activities and information concerning users on the system. This includes, but is not limited to driving lesson times, driver notes, customer information, online classes, practice tests, etc.
  + Web-Based Functionality: Allows data accessibility and modification on any device while connected to the web. Accessible by all roles within the system.
  + Data Backup: Recovers data that may be lost when web connection is lost. The owner prefers using the Cloud for Data Backup.
  + DMV Notifications: View updates involving DMV rules and procedures. Admin/Company role only.
  + Security: Applies the principle of least privilege among other practices in the Business Logic Layer. Different roles will be given different privileges.
  + Call System: Helps people reserve driving lessons, answering questions, or resolving basic problems. This will be normally run by the secretary.
  + Input Form: Allows a customer or a secretary per customer request to fill in general student information on the system for a way to contact the customer.

### 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?*

* Any role within the system should be able to:
  + Access data and modify it from any online device in coordination with their respective role.
  + Download data available to their role into reports.
* When assigned an IT role in the system, the user should be able to:
  + Access every account for resetting passwords and restricting access.
  + Track which user of the system made a reservation for a driving lesson, who canceled a reservation, and who modified a reservation last.
  + Print a report involving an account’s activity.
* When assigned a customer role in the system, the user should be able to:
  + Make reservations either online using their accounts or by calling the office and scheduling with the secretary.
  + Make a reservation using the following information, no matter what method (online or phone) is used to create said reservation:
    - First name
    - Last name
    - Address
    - Contact number
    - State of residency
    - Credit card number to include the expiration date and security code
    - A pickup location
    - A drop off location (this information can be prefilled with the pickup location unless the customer modifies it).
  + Select from 3 different purchase packages which offer varying amounts of on-road training time and lessons:
    - Package 1: Six hours in a car with the trainer (3 sessions)
    - Package 2: Eight hours in a car with the trainer (4 sessions) and an in-person lesson involving DMV rules and policies.
    - Package 3: Twelve hours with the trainer (6 sessions), an in-person lesson involving DMV rules and policies, and access to the online class with all content included such as the practice tests.
  + Reset their password automatically if it is forgotten.
  + Modify and cancel their reservations online.
  + Access the web interface, which allows customers to:
    - Participate in online classes
    - Complete practice tests
    - Make a reservation for a two-hour driving lesson, in which the day and time is provided by the user.
  + View a user interface that functions using the following components:
    - An online test progress section that shows tests customers are in progress of completing and ones that have been completed.
      * The format for this section would be as follows: test name, time taken, score, and status.
      * The status of a test would be one of the following: not taken, in progress, failed, or passed.
    - A Driver notes section containing comments the driver left as well as the times concerning driving lessons.
      * The subsections would be as follows: lesson time, start time, end time, and driver comments.
    - An input form where a user or secretary fills in the general information of the user. This information would include first name, last name, address, etc. and would be used for contacting the customer.
    - A link to a page for contacting DriverPass.
    - The logo of DriverPass at the top of the website.
    - A special needs sections concerning the student so any adaptations or concerns can be identified.
    - A photo of the driver and a photo of the student.
  + See the driver a customer is scheduled to take a driving lesson with along with the time of the driving lesson and the vehicle used for the driving lesson.
* When assigned the Owner role in the system, the user should be able to:
  + Disable purchase packages to prevent customers from registering for it.
  + Access every privilege within the System that does not violate ethics.
* When assigned a Secretary role in the system, the user should be able to:
  + Gain the least amount of privilege to a customer’s account to schedule a driving appointment per customer request.
  + Access the input form to fill in the general information of a customer per customer request.
  + Access the call system for answering phone calls to DriverPass.
* When assigned a Driver role in the system, the user should be able to:
  + Provide comments on a specific driving lesson to include the lesson times.
  + View the customer and vehicle assigned to a specific driving lesson.
* All company roles should receive notifications of updates involving DMV rules and policies.

## 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.*

* Secretaries of DriverPass shall have the amount of least privilege needed to schedule a driving appointment for customers or fill out an input form regarding general customer information per customer request.
* Owner of DriverPass shall have access to every privilege within the system to include disabling purchase packages.
* Users of DriverPass shall have their password automatically reset if it is forgotten.
* The IT of DriverPass shall have access to every account for resetting passwords, monitoring activity, printing reports, and restricting access.
* DriverPass shall use Cloud Back-Up and Security services.
* The System shall utilize web-based functionality, meaning Users can view, access, and download their data only when online.
* The System shall be able to run on any computer or mobile device.
* The System shall be able to integrate with the existing information and system of DriverPass.
* The System shall be able to work on any mainstream web browser.
* Learning Materials, Tests, and DriverPass Employees shall be current with DMV rules and guidelines.

* The System shall require all users to validate their login information before receiving access to an account.

#### 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 shall utilize web-based functionality, meaning Users can view, access, and download their data only when online.

* The System shall be able to work on any mainstream web browser.
* The System shall be able to run on any computer or mobile device.
* Interactions between the User and the System shall not exceed a response time of 1 second.
* The System shall update the database whenever a change or progress is made on any account in DriverPass. This includes practice exams, online classes, driver comments on the user’s profile, reservations (to include modification, creation, and cancellation), when the DMV releases more rules or procedures, when an account is created or deleted, User Information, and purchases/cancellations on purchase packages.

#### 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?*

* Because DriverPass’s system is web-based, it shall be able to work on any platform.
* The System shall be functional on any mainstream web browser. This includes:
  + Microsoft Edge
  + Mozilla Firefox
  + Google Chrome
  + Apple Safari
  + NOTE: More web browsers will become functional as scalability occurs.
* The system requires a database that stores all transactions, activities and information concerning users on the system. This includes, but is not limited to driving lesson times, driver notes, customer information, online classes, practice tests, etc. A recommendation will be to utilize a Cloud database due to the web-based functionality of the system as well as the choice to move forward with Cloud Backup and Security.

#### 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?*

* Users will be defined by their roles. This will give them the access of least privilege regarding their specific role. Users who do not match a specific role will not be granted that role’s privileges.
* Users will be able to log into the system through an authentic username and password.
* Input for both usernames and passwords will be case sensitive for security.
* Passwords will contain the following characteristics:
  + Are at least 12 characters long.
  + Are a mixture of uppercase and lowercase letters.
  + Includes at least 1 of the special characters.
  + Cannot be found in the dictionary such as common words.
  + Does not contain personal information regarding the user.
* Admins of DriverPass will be alerted regarding a user’s account when:
  + The limit of incorrect account logins has been reached.
  + An account is accessed from a foreign device (one the user does not usually log in with).
  + An account has been accessed obsessively within a 24-hour period.
  + An account is created or deleted.
  + Suspicious activity occurs on the account, like a complete change to the general information of the user.

#### 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?*

* Changes to a user can be done without changing code. Information regarding each instance of a user will be stored within the database. This will be done using an object-oriented approach in which objects will be structured to contain the necessary information, attributes, privacy, and operations for each user role. Instances will be created from these structures and stored into the proper data structure which will then be stored within the database. When a customer or employee create an account and fill out the necessary information, these details will be sent to the database. Likewise, if a user decides to remove their own account, or an IT role decides to remove the account, this account’s entry on the database will be removed. Finally, if a user chooses to modify their information, the system will update and overwrite their existing information in the database.
* As a platform updates, DriverPass must ensure functionality still exists for their web-based system. Therefore, the system will undergo scheduled major and minor releases along with patches to fix bugs or problems that may occur when operating systems or web browsers are updated. It can couple this with backwards compatibility along with the previously mentioned Cloud Features to ensure information is not breached or deleted and users can maintain or increase their value from before the update of a browser or operating system.
* When assigned an IT role in the system, the user should be able to:
  + Access every account for resetting passwords and restricting access.
  + Track which user of the system made a reservation for a driving lesson, who canceled a reservation, and who modified a reservation last.
  + Print a report involving an account’s activity.
  + Delete, add, or update information regarding accounts.

#### 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?*

* A username and password are required for a user to log in under their usual device (a device they have logged into the system with multiple times over a period or have authenticated). For a foreign device, logins will also require a code to be input on the system’s website that was sent to the involved user’s listed email address.
* Passwords will contain the following characteristics:
  + Are at least 12 characters long.
  + Are a mixture of uppercase and lowercase letters.
  + Includes at least 1 of the special characters.
  + Cannot be found in the dictionary such as common words.
  + Does not contain personal information regarding the user.
* A limit discussed by the software team and client will be set regarding how many unsuccessful attempts to an account are made before admins of DriverPass are notified and steps are taken to ensure a security breach is not going to occur such as locking the account. This will prove useful for “brute force” hackers who guess passwords either through hypothesized guesses or through a brute force algorithm.
* To ensure a connection between the client and server is secure, its link can be encrypted using a technique known as Secure Sockets Layer (SSL). It can create private and public keys where private information is hashed and encrypted to where outside viewers of the information are unable to see the confidential information in plain or readable text.
* When a user forgets their password, they must supply a username and email address that match the account within the database. If they match, a password reset link will be sent to the user’s email address to reset an account’s password automatically.
* When a user forgets their username, they must supply the email address that matches the account within the database. If there is a match, the username will be sent to the user’s email address automatically.

### 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.”*

* When a customer user attempts to make a reservation, they shall be given the option to do so online or through scheduling with the secretary.
* When a customer user attempts to make a reservation, no matter what method they choose to set it up, they shall include the following information on an input form:
  + First name
  + Last name
  + Address
  + Contact number
  + State of residency
  + Credit card number to include the expiration date and security code
  + A pickup location
  + A drop off location (this information can be prefilled with the pickup location unless the customer modifies it).
* When a customer cannot make a scheduled reservation, they shall have the option to modify the time of the reservation or cancel it online.
* A customer shall have the option to select from 3 different purchase packages that offer varying amounts of on-road training and lessons.
* A customer shall be able to view their online test progress to include ones they have completed, ones that are in progress, and ones that have not yet been taken.
* A customer shall be able to view driver comments left on their profile regarding driving lessons.
* A driver shall be able to leave driver comments on a customer’s profile if they were both involved in the same driving lesson.
* A customer shall have the option to list any special needs they may need for online lessons and driving reservations.
* When a customer has reserved a driving lesson, they shall be able to see the time the lessons is scheduled for, the car used in the lesson, and the driver assigned to the lesson.
* The Owner shall have the option to disable purchase packages to prevent customers from registering for it.
* The Secretary shall answer phone calls and provide support in respect to their role.
* When a driver is assigned to a driving lesson, they shall be able to view the customer, vehicle and time of the lesson.
* When the DMV releases updates to their rules and guidelines, DriverPass shall receive a notification regarding the updates.
* An IT officer shall print activity reports at their own discretion.
* A customer shall have the option to participate in online DriverPass learning content depending on the purchase package selected for their account.

### 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 User Interface shall have the following components:
  + An online test progress section that shows tests customers are in progress of completing and ones that have been completed.
    - The format for this section would be as follows: test name, time taken, score, and status.
    - The status of a test would be one of the following: not taken, in progress, failed, or passed.
  + A Driver notes section containing comments the driver left as well as the times concerning driving lessons.
    - The subsections would be as follows: lesson time, start time, end time, and driver comments.
    - The customer will be able to view these comments as they are submitted into the system.
  + An input form where a user or secretary fills in the general information of the user. This information would include first name, last name, address, etc. and would be used for contacting the customer.
  + A link to a page for contacting DriverPass.
  + The logo of DriverPass at the top of the website.
  + A special needs sections concerning the student so any adaptations or concerns can be identified.
  + A photo of the driver and a photo of the student.
  + See the driver a customer is scheduled to take a driving lesson with along with the time of the driving lesson and the vehicle used for the driving lesson.
* Customers must be able to:
  + View test progress
  + View driver comments
  + Fill out an input form concerning their general information
  + Navigate the links to different sections of the interface
  + List special needs concerning online classes or driving
  + View a reservation to include the time, driver, and vehicle associated with it.
  + Upload or take a photo.
  + Access DMV rules and guidelines
* The Owner and IT officer must be able to:
  + Monitor the data contained within the interface of other users.
  + Print a report regarding information in the user interface.
* The Secretary must be able to:
  + Access a customer’s side of the user interface to fill out general information and create reservations per customer request.
* The Driver must be able to:
  + Leave comments that can accessed on the customer’s interface.
  + View a reservation to include the time, student, and vehicle involving the reservation.
* Being that the system is web-based, both mobile devices and computers should be able to access it through a mainstream browser.
  + The mobile side of the system will use imprecise tapping, a large viewer of the screen, and less graphics for navigation.
  + The computer side of the system will use precise clicking, a smaller view of the screen, and more graphics for navigation.

### 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 most, if not all DriverPass’s customers have access to a computer or mobile device.
* It is assumed that most, if not all DriverPass’s customers have online accessibility.
* It is assumed that most, if not all DriverPass’s customers use mainstream browsers.
* The System shall grant online access to all Users 24 hours a day, 365 days a year except when the system is being repaired/maintained.
* It is assumed that the DMV releases updates to their rules and guidelines periodically, and that DriverPass will have access to this update information.
* It is assumed that most, if not all customers of DriverPass’s system will be people preparing to take their driving exam.
* It is assumed DriverPass is focused on people preparing solely for a class c license.
* Because the major population is projected to be people preparing for their driving test, it is assumed the website’s majority population will be made up of people not exceeding the age of 21 as most state laws require a person to be 16 ½ before receiving a license.

### 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 system will not allow users to modify, create, or delete data offline.
* The system will not allow accessibility to customers without a mobile device or computer.
* The system may not allow accessibility to customers using a browser that is not mainstream.
* Budgets will determine the number of secretaries, drivers, and other DriverPass employees available to the system.
* There will be approximately 4 months total for the DriverPass system to be operational and accessible.
* Because DriverPass is putting preference on Cloud Services, they will most likely pay more annually for this than they would on an on-premises solution.

### 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.*

Waterfall chart

Description automatically generated with low confidence