# 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 client, DriverPass, has identified that many people are failing drivers tests at their local DMV and plans on providing training to help them succeed.
* The purpose of the project is to create a system that will facilitate most of the administrative work for DriverPass. It will allow customers to create accounts, access online training and schedule driving lessons.

### 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 problem DriverPass wants to fix is that too many are failing their driver tests at the DMV so the company will provide training, so people are able to pass their tests.
* The system must be able to do the following:
  + Provide an environment for online classes
  + Allow users to take practice tests
  + Provide the ability to download reports in specific formats
    - Must be compatible with Excel
  + Generate user logs in order to identify which users have modified logs
  + Allow customers to schedule driving lessons from their online account.
  + Allow employees to schedule driving lessons for students.
  + Align employees that will provide training and vehicles that will be used with scheduled appointments.
  + Align user accounts with the package they have picked and restrict access to systems based off service tier.
  + Allow packages to be disabled and reenabled.
  + Allow employees to create user accounts with the following information:
    - First name
    - Last name
    - Address
    - Phone number
    - State
    - Credit card number, expiration date, and security code
    - Pick-up and drop-off locations (should be the same location)
  + User password resets
  + Read DMV system to notify company of updates to rules, policies, and sample questions.
  + Home page should display:
    - Online test progress
    - Driver notes (needs the following)
      * Lesson time
      * Start hour
      * End hour
      * Driver comments
    - Users’ information
    - Special needs
    - A photo of driver
    - A photo of student
  + Separate page to fill in student information
  + Separate page for a way to contact company and student
* The system will require the following components:
  + Learning management systems
  + Account management systems
  + Logging system
  + Database management system to store user records
  + Scheduling system
  + Secure access system
  + API to connect to DMV system
  + Cloud service provider for infrastructure.

### 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?*

* Creation of specific user accounts with specified permissions.
* Allow students to register for classes.
* Allow students to access and complete online training.
* Generate company reports so employees can complete offline work as needed.
* Maintain logs of record modifications.
* Allow users and employees to schedule driving lessons and pick specific packages.
* Allow users to cancel and reschedule lessons online.
* Allow administrators to create, update, and remove users’ accounts and privileges.
* Have a home page, a student information form page, and contact page.
* Allow administrators to disable and reenable packages which will determine if users can see them on the client side.
* Allow employees to create initial user accounts.
* Allow users to reset their own passwords.
* Notify the company of DMV updates to rules and policies or sample questions.

## 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 operate as a cloud-hosted web-based application utilizing the client server architecture.
* The system will need to have low-latency performance to ensure course materials are loaded in an acceptable time frame.
* The learning management components will need to implement pre-fetching and caching to ensure the courses are responsive.
* The systems will query the DMV API at least once a day to verify practice questions reflect current policy.
* Scheduling system will utilize web hooks to provide real time syncing between users.

#### 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 front end of the system will be hosted in a web browser making the application cross platform for the user.
* The UI will need a mobile browser configuration to be accessible from all devices.
* The backend will require the selection of a cloud service provider that can host scalable web servers.
* A Relational database will have to be selected to store the training record.
* An object storage service similar to Azure Blob Storage will be needed to hold the multimedia utilized in training course.

#### 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?*

* For this system individual user accounts will be created requiring a unique username.
* The system should utilize an external authentication service such as Microsoft Entra ID in order to ensure a secure authentication process.
* System should utilize email as a unique username, and password should be case sensitive, and bar key symbols utilized in common attacks.
* Accounts will be locked after multiple failed logins attempts and require and admin to unlock the account.
* Admins should be notified if the system is failing to scale, a user’s account has been locked out, or if microservices are failing to connect.

#### 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 system will utilize cloud deployment and utilize microservice architecture ensuring adaptability.
  + Deploying the application to the cloud will allow test servers to be allocated to test new deployments prior to updating services for users.
  + By utilizing microservices the application will be built with each service being its own small application allowing for small changes to be made with little time or financial cost to the client.
* User accounts will not be hard coded into the system; they will be stored as objects with built in methods and fields that are converted to records in a relational database. The object methods will enable CRUD operations so users can be created, read, updated, and deleted without modification to the code.
* The system will utilize the security principle of the least privilege and utilize role-based access control; therefore, admins will be provided with access to the systems they utilize daily. Additional access can be granted upon request to their senior security personnel.

#### 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?*

* To gain access to the system the user will need their username and password. Multi-factor authentication will be implemented as an additional verification that will strengthen the authentication process.
* Data in transit will be encrypted using Transport Layer Security protocol. Sensitive data including users PII at rest will be encrypted.
* Brute force will be mitigated by locking the account after failed login attempts.
* If a user forgets their password they will have to prove their identity through security questions, or a password reset link sent to their known email.

### 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 authenticate users using multi-factor authentication.
* The system shall allow users to update their password if forgotten.
* The system shall allow new users to create an account.
* The system shall allow a user to update their profile.
* The system shall allow a user to register for a class.
* The system shall provide a LMS environment for students to take classes online.
* The system shall create logs of modifications to the system.
* The system shall allow users to schedule a driving lesson.
* The system shall sync appointment availability across the system in real-time.
* The system shall allow users to modify or delete a scheduled driving lesson.
* The system shall allow administrators to perform CRUD operations on accounts.
* The system shall notify administrators when the DMV policies are updated.

### 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.)?*

* Students
  + View online learning materials
  + View/modify personal information
  + View notes from driving lesson
  + Schedule driving lesson
* Secretaries
  + Schedule driving lessons
  + Add/modify student information
* Instructors
  + View scheduled instruction times
  + Add driver notes from periods of instruction
  + View students’ records
* Admins
  + Manage user accounts
  + View logs
  + View updates from DMV

### 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?*

* Administrators have the knowledge to deploy/maintain an application in the cloud.
* Administrators have the knowledge to manage a third party authentication service.
* The DMV will have a public API key for access to their policies.
* Courses have been developed to be self-paced online.
* Users will have a basic understanding of LMS’ and how to navigate webpages.
* System will scale up and down enough to justify the cost of a cloud environment.
* Students will have access to highspeed internet for courses.
* Users will be using commonly used internet browsers.

### 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 require stable internet to function, reducing the accessibility for users with low bandwidth.
* The system will require users to have a modern web browser that supports the current UI frameworks, which could limit accessibility for older devices.
* Integration with DMV systems will depend on their systems availability.
* The size of the IT department may restrict the ability to release new functions if their time is filled just by maintaining the system.
* To stay on budget the system may have to have a cap on the amount of scaling that is allowed which would impact users load time in the LMS.

### 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 calendar with a schedule

AI-generated content may be incorrect.