# 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 is a new company whose vision is to provide badly needed training for new drivers in order to help them succeed with their driving tests. They require a system with the following capabilities:

* The system must allow clients to register online, in person, and via the phone.
* Users should be able to download data for offline work. The data should be in useable format (such as an Excel spreadsheet).
* The system must provide multiple levels of security; including basic users, IT workers, and system administrators/owners.
* The system must allow administrators to enable or disable available driving packages to keep up with availability.
* The system must provide secure storage for sensitive user information
* The system must allow administrators to track who is responsible for each registration
* Users need to be able to access and edit their account information, including password reset
* System should be low maintenance, with minimum technical requirements on the user end

### 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?*

DriverPass wishes to create a cloud based system to give their clients easier access to driver training. They have requested a reliable, cloud-based system that will allow clients to access their products, make registrations, and administer their accounts online.

* A third party, cloud-based service is the best choice for this system. We recommend either Amazon or Google, as both providers offer reliable storage together with built-in backups and security features that will largely eliminate the need for the client to maintain the system themselves.
* The system will require a database setup (most likely a SQL database) to track and display user information. This information should be available to authorized users to download in .xls format.
* The system will require multiple interface types, to include:
  + Basic user interface, allowing personal account access, create, view, and cancel registrations (including registration form), and view/download content
  + Secretary interface, allowing access across multiple user profiles. Secretary must be able to create, view, and cancel registrations (including registration form), view and edit user information, and process user transactions.
  + Administrator interface, allowing unlimited access to all systems. Administrator will be able to view and edit user information, enable or disable features, and download information for offline work.
* The system will require multilevel security. This can be accomplished using the REST system and resource/privilege based security.
* The system should require a second validation of credentials (either the initial login, or a second set of admin credentials) any time a change is to be made with administrator privilege.

### 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?*

* Determine cloud system host and purchase necessary storage space.
* Create user registration form resource
* Create login screen w/ password reset link
* Create user interface with the following features:
  + View/edit personal information
  + Create/view/edit registrations
  + View personal progress
  + View driver notes
* Create Secretary interface with access across user accounts, and ability to view registration logs and reset individual account passwords.
* Create administrator interface with unlimited access, as well as the ability to view registration logs and enable/disable features.
* Set up SQL database with the following features:
  + Each entry should list the user’s name and information.
  + Each entry lists the user’s registration forms, including pending, completed, and cancelled sessions.
  + Each registration entry contains an identifier listing the date and time it was created together with the user responsible for its creation. Cancelled sessions record the date and time they were cancelled, as well as the user ID responsible for cancellation.
  + User profiles can be downloaded in .xls format by authorized users
* REST API system with the following levels of user access
  + User: View and edit personal account only
  + Secretary: View and edit all user level accounts
  + Administrator: View and edit all other accounts, view registration logs, and enable and disable system features
* Secondary login displayed any time the user attempts to make an admin level change

## 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 need to exist in the following environments:
  + Web browser
  + Mobile application
* The user-end application should be lightweight to run on older systems (as it will be largely aimed at parents who may not have the latest phones or computers).
* While performance should be streamlined, this application will not be sensitive to delays on the order of fractions of a second. For this reason, HDD storage will be sufficient for the cloud based system, rather than the more expensive SDD space.

#### 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 system *must* support the following platforms\*:
  + Windows for PC
  + Android for mobile
  + iOS for mobile
  + iOS for computer
* \*Support for Linux is not considered critical at this time, as it accounts for less than 3% of the world’s market share (Statcounter.com)

#### 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?*

* Each user will be distinguished by a unique user ID (system side) and by the email used to log in (user end). The system should query the database and inform the user if their desired email is already in use.
* Username input should not be case sensitive. For a system aimed at older users (in this case, parents of driving age children), this type of sensitivity can be frustrating.
* Password input *must* be case sensitive.
* System admins should be alerted to the following circumstances:
  + User flags a registration
  + User creates and then cancels an excessive number of registrations
  + User account is accessed from an unusual location (such as a foreign country)
  + User attempts multiple failed logins, or requests excessive number of password resets
  + Any change is made using admin level privilege.

#### 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?*

* Use of a database system (such as SQL) will permit easy addition/removal of users without the need to modify the system code.
* Most minor platform updates will not require changes to the system. However, the IT administrator will need to stay abreast of any major changes and update the system as needed. Cloud-based services such as Amazon and Google provide backups that allow the system to be updated with little to no interruption of service.
* The IT administrator will need access to all system information, but should not be able to access encrypted user information without the presence of an owner/administrator.

#### 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 user will log into the system using their email and password (applications have largely moved towards email logins, rather than unique usernames as easier for users to keep track of).
* In the event of excessive failed logins, the account should be locked and a notification sent to the user’s account email. If the user has signed up for text or phone alerts, they should be alerted in this way as well. Unlocking the account should require that the user contact customer service to verify their identity and identify the source of the attack.
* Users can request a password reset via a link on the login page (reset sent to account email) or by calling customer service and providing their account information. Multiple reset requests should lock the account and the user should be contacted.
* Data should be locally encrypted using AES before being transferred.

### 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 validate user credentials when logging in
* The system shall display the user interface page upon successful login
* The system shall limit user access based on the privilege assigned their role
* The system shall store user information in a database
* The system shall store completed registration forms linked to each user profile along with their time of creation and the user who created them
* The system shall query the user database to display information upon request by an authorized user
* The system shall send password reset emails upon request
* The system shall send notifications to administrators
* The system shall display the secretary interface upon logging in as a secretary
* The system shall display the Administrator interface upon logging in as an administrator
* The system shall ask for and validate a second set of credentials before any administrator level change is made
* The system shall send a notification to all administrators every time an administrator level change is made

### 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.)?*

* Basic User:
  + Mobile and browser versions
  + Accessed by basic user
  + Requires login using email and password
  + Allows viewing and editing of personal account information, registration management, and downloading of course materials
* Secretary
  + Browser version only
  + Accessed by company secretary level employees
  + Requires login using personal employee ID and password
  + Allows viewing and editing across all user accounts, as well as registration management and password resets
* Administrator
  + Accessed by system administrator only
  + Requires login using personal user ID and password
  + Browser version
    - Allows viewing and editing of all other accounts
    - Allows direct access to user database and registration logs, with option to download
    - Allows enabling and disabling of system features
  + Mobile version (limited features for increased security)
    - Allows viewing of all other accounts (editing restricted)
    - Allows direct access to user database and registration logs, but cannot download.
    - Cannot enable or disable system features

### 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?*

* App users will have internet access and access to a device with an up to date OS.
* DriverPass facility will have computers with internet access
* Users will read and speak English (recommend the eventual addition of Spanish language support)
* Users will have access to a method of online payment such as credit or debit

### 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?*

* System currently supports only English language.
* System will be reliant on secretary role to accurately input phone and in-person registrations in order to avoid conflict
* System will not be accessible on less-used operating systems (this can be expanded later if needed)
* Stable internet connection will be required for users to access online features.
* DriverPass relies on this system to begin their business model, so a quick turnaround is necessary.
* As a startup company, DriverPass will likely not have the resources to hire a large number of personnel, so the system cannot rely on having an army of administrators.
* As previous, the system should not require expensive computer equipment to function (another advantage of a third-party hosted cloud system.
* As a service primarily aimed at low to middle class parents, the user-end application cannot require high end technology to function properly.

### 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.*

