# CS 255 Business Requirements Document

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## 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 for this project is DriverPass. The purpose of the project is to take advantage of a void in the market when it comes to training students for driving tests at their local DMV. This is in service of improving drivers license pass rates and to facilitate driver lesson scheduling.

### 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 wants to allow DriverPass employees or customers to be able to make reservations for customers to participate in driving lessons. They should be able to do this online using their account.
* Administration functionality will allow administrators to create reports and administer all user accounts.
* Secretary functionality will allow a secretary user to make reservations for call-in users.
* User accounts will be used for self-service functionality by the end users. They will be able to create reservations and view their current status.

### 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?*

* The system should allow customers to schedule appointments with drivers to complete driving instruction.
* The system should allow employees of DriverPass to make reservations for customers
* In order to accomplish this we must:
  + Create an interface for customers and employees to utilize to perform the needed functions
  + Create a database and schema to store customer, reservation, and application specific information.
  + Code and implement business logic.
  + Create backup and security components.
  + Create the first three plan models for customers to consume.

## 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 should be primarily web-based but allow for reports to be downloaded to another device. There was no explicit discussion about the speed of the system, but since this is a user facing business system, we can assume that speed is an important factor.

#### 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 explicit requirements are that it is a web-based system and that it should run on traditional hardware and on mobile devices. Creating a web-based system will ensure that the application can run on any machine that supports a web browser. Given that the customer specified that data will be stored on user performance, progress, and profile, we will need at least one database of some kind involved in the application. Also, given that this is a web-based application, the most common OS for this would be some flavor of Linux or utilize FaaS or PaaS services.
* Ian mentioned that the application should be backed up automatically, and as such we will need a backup utility and associated storage to provide automated restore points for the application.

#### 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?*

* It is not explicitly stated in the requirements, but I would also want to gather the users e-mail address as part of the sign-up / registration process. E-mail addresses are not case sensitive, so that would not need to be considered as part of that process. Names, Addresses, phone numbers, states, and credit card numbers also don’t need to be case sensitive to differentiate the customer. The one thing we would want to make sure is case sensitive is the password hash that would be stored to allow the customer to login and change their password.
* Given that only one person can own a particular e-mail address, we can use that to identify the customer as a unique index.
* The System should inform the admin of a problem in a few situations:
  + There is a security issue – Something security related is detected to be outside the ranges specified in the configuration.
  + There is a business issue – Something happened and so there are overlapping reservations or some other business-related problem that can be captured using software.
  + There is a financial issue – Something happened with credit card payment or non-payment that needs to notify the admins.
  + DMV Updates – Any new policies, procedures or regulations from the DMV should trigger an alert to the admins.

#### 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?*

* User information should be able to be modified without changing any code. Relevant information about the user such as, Name, Address, Credit Card Information, Phone Number, etc. should be able to be changed in the database through the application itself.
* Platform updates may need additional code to be able to be implemented. Things like adding an additional module will require developmental help. Things like disabling or enabling a package should be doable by the admins of the system.

#### 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 would be required to have a username and a password to login, minimally. The login process should use https or SSL technology to secure the password exchange. To make the process more secure, the login could require 2 factor authentication as well.
* In the event of brute force hacking attempt or if the user legitimately types their password incorrectly more than a predefined threshold of times, the user should be directed to reset their password by utilizing a password reset e-mail to their address on file.
* If the user forgets their password there should be a self-service password reset functionality which utilizes the user's e-mail address on file to generate a password reset link.

### 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 be built using web-based technologies to allow access from any device.
* The system shall allow export of reporting or user data to formats easily consumable by offline devices or hard copy.
* The system shall implement a role-based access control system which grants security features to users based on their given role.
* The system shall track user and admin activity in a log that is easily searchable to allow for auditing of user and admin activity.
* The system shall allow users to enter reservations for driving lessons. These reservations will include:
  + Reservation package ID
  + Day and time of reservation
* The system shall allow for at least three packages to be chosen by a user or administrator along with the relevant metrics for those packages:
  + Hours in a car
  + Boolean for in-person lessons or not.
  + Boolean for allowed to access the online class material.
* The system shall allow a user to access online class materials.
* The system shall interface with the DMV to allow for notifications in the event of DMV policy updates.
* The system shall run on a web-based platform to allow for ease of access from various devices.
* The system shall include backup and security capabilities.
* The system shall have an interface that conforms with the diagram provided by the customer.
* The system shall allow for the display and entry of driver notes for each driving lesson session.

### 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.)?*

* There will be three primary user types for the system.
  + Customer
  + Business User
  + Admin
* Customers will have the most restricted access and so will have a different view than Business Users and Admins. They will primarily need to see:
  + Upcoming driving sessions
  + Driver Photo
  + Student Photo
  + Driver notes from previous sessions.
  + Profile information
* The Business Users will have additional functionality over the customer but will have less than the admins.
  + Everything the Customer interface provides plus the ability to modify records.
* The admins will have the most comprehensive view of the system through the user interface.
  + Everything the Business User interface provides plus the ability to modify system-wide settings like enabling / disabling packages and configuring global settings.

### 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?*

* Some assumptions we’re making are:
  + Students will be required to utilize devices that have relatively modern web browsers. Older web browsers won’t be supported.
  + Internet access is required to access the application / data.
  + The users of the system will be required to have an e-mail account to access the system.

### 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?*

* According to the requirements gathering session, the initial product won’t initially have the ability for non-programmers to add modules to the application.
* While not explicitly stated, the goal is to take advantage of a gap in the market. Given this, time is of the essence and would be a limiting factor for releasing this functionality to the public. From the initial planning meeting internally, it appears as though the customer would like a functioning product by May 9th.
* Budget will always be a limiting factor. The budget for the application is not explicitly stated here but should be considered and additional information should be gathered from the customer to better understand their budget.
* Given that this needs to be a web and cloud-based application the platforms we can use to implement it are limited.

### 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.*

