# CS 255 Business Requirements Document

## 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 the project is to build a system that would provide online training for new drivers
* The client is DriverPass, which is a company with the goal of increasing the DMV driver’s test pass rate for new drivers
* The system would include a reservation system that students can use to make/modify/cancel appointments, purchase training packages, and collect student information
* The system would provide students with online classes and practices tests

### 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 the system to provide a way for new drivers to receive driving training prior to taking a road test at the DMV
* The problem to be fixed is a high fail rate for the road test
* Some components needed are a reservation system, a change tracking system, different packages that can be purchased, a way to contact the business, a way to contact the customer, a printable activity report for review by Liam, and an online interface that contains relevant information for 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?*

* When the system is completed, it should be able to allow a customer to schedule/modify/cancel appointments, communicate with the business, make purchases, view online information, and participate in online classes and tests
* Measurable tasks to be included in system design include:
  + Development of online interface
  + Development of reservation system
  + Development of online class portal
  + Development of online practice test portal
  + Integration of features to the online interface

## 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 compatible on web browsers for Windows, Mac, and Linux, as well as with Apple IOS and Android
  + A mobile application is not included in this release; however, the client may contract us to develop that in the future
* The system should run as fast as any typical website. However, this is highly dependent on the user’s internet connection.
* With an ideal internet connection, we would expect:
  + The homepage only takes 1-3 seconds to load
  + Course materials take no more than 10-20 seconds to load
  + Communications take 1-3 seconds to send and receive
  + Manual updates to the site take effect immediately
* Components within the system should be updated on varying schedules
  + DMV information should be updated daily to ensure the most accurate information
  + Customer information should be updated as soon as necessary
  + The system itself should be updated yearly

#### 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 server will be hosted on Windows, due to the wealth of resources available
* The back end will require a database to store customer data, employee data, and data relevant to the course materials being supplied by the DMV
* Ideally, an API will be built so that the system can communicate directly with the DMV system and get updates to materials automatically
* The web application will be built within the MERN stack, which utilizes Javascript, HTML, CSS, React, Django, Node.js and MongoDB
  + We will reserve the right to swap out any of these technologies should we find that another would work better for this system

#### 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?*

* We will distinguish between users using the emails they associate with their account
  + Customers will use their personal email
  + Employees will use their whatever email they organization deems appropriate
* The input for username/email will not be case-sensitive, as they will already be unique is a non-case-sensitive manner
* The input for password will be case-sensitive, as this will enhance security of the accounts
* The admin should be informed of a problem as the point when the users cannot fix the issue themselves
  + The website loses connection to the server
  + There is an attempted security breach
  + The system is no longer compatible with updates from the platform

#### 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?*

* Users will have the ability to add/remove/modify to the user without changing code
  + The code itself will be created with those capabilities as functions for customers and employees, where any data that may need to be updated can be by whichever party is appropriate
* Since this will be a website/web application, platform updates should not impact it
  + However, if a functionality issue does arise, the client will need to contact us for a potential update to the system
* The IT admin needs access to create/modify/remove employee accounts and grant them permissions up to their own level
* The IT admin will have permissions to make changes to users, update training packages with already existing training packages
  + This will give them the ability to swap between the packages they have us create, however they will not be able to create new packages

#### 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 will be required to log in
  + For additional security, passwords will be required to have 12 digits and include at least one capital letter, one lower case letter, one number, and one symbol (! @ # $ % ^ & \* )
* Connection/data exchange between the client and server will be secured using AES encryption to encrypt any data being sent between client and server
* We will define a brute force attempt as three consecutive failed login attempts and lock the account in that scenario
  + The customer will need to call the client and verify their identity via a code texted or emailed to the phone number or email associated with the account
* In the event of a forgotten password, the customer can call the client and verify their identity, or use the forgotten password feature that will be built into the login page
  + Will send a password reset link to the phone number and/or email associated with the 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 display a home page with the user interface
* The system shall validate user credentials when logging in
* The system shall register new users and allow returning users to log in
* The system shall allow users to schedule/modify/cancel appointments
* The system shall allow users to access online course materials (courseware and practice tests)
* The system shall allow users to communicate (employees to customers)
* The system shall allow customers to purchase training packages
* The system shall communicate with the DMV to update guidelines, policies, and procedures
* The system shall allow users to update the content on a customer’s home page
* The system shall allow customers to reset their passwords if forgotten

### 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 different users for this interface are customers and employees
* The user interface needs to be easy to understand and intuitive to use
* The user interface needs to include:
  + A home page that has the following sections
    - Online test progress
    - Customer information
    - Driver notes
    - Special needs
    - Driver photo
    - Student photo
  + The ability to navigate to the online provided courses
  + The ability to communicate between customers and employees
* All users
  + The user will interact with the user interface with a mouse and keyboard via a website for those on computers
  + The user will interact with the user interface with a touchscreen via the website for those on mobile (this may be expanded to a mobile application in the future)
* Customers need to be able to:
  + Register an account
  + Login
  + Read driver notes
  + Access course materials
  + Upload a student photo
  + Schedule/modify/cancel appointments
  + Update their information
  + Update special needs
* Employees need to be able to:
  + Access customer accounts
  + Schedule/modify/cancel appointments
  + Upload a driver photo
  + Update driver notes
  + Update special needs

### 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?*

* Users will have an email, either personal or an employee email
* Users will have knowledge of how to navigate a webpage, without the need for prompting
* Users will have a stable internet connection whenever using the system
* The system will need to be available all the time, every day of the year
* The client will update their courseware, based on DMV guidelines, independently
* The client may eventually want to expand this system to a mobile 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?*

* The client only has ten cars available, which means they will be limited to ten customers having in-person training at any given time
* Most of the content will need a stable internet connection to utilize, which may limit some customers from being able to use it
* The client does not have a developer in employment to create new training package modules

### 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 screenshot of a project schedule

Description automatically generated