## 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 this project is to build a web system for a company called DriverPass.
* The system will enable customers to take online classes and schedule appointments for on-the-road training.
* The system must track any changes made by the user or the DMV, and it must be flexible enough to be modified in case a driving package needs to be updated or removed.
* The system should be secure as it will handle sensitive user information.

### 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 new experience for users learning how to drive. Users will be able to access online classes, practice tests, and on-the-road training by scheduling reservations in the system.
* The system must allow users to make reservations for driving lessons. The system must be able to display various driving packages that users can select from.
* The system must include a database to store customer and reservation information. There must be a user and admin interface so they can troubleshoot any issues.

### 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?*

* Provide online classes and practice tests to users.
* Offer on-the-road lessons.
* Allow the administrators to access data regardless of whether they are connected to the internet.
* Include security roles so Liam can modify employee access.
* Track the activities of customers and changes in the DMV rules.
* Allow users to schedule and modify reservations.
* Allow Liam to disable driving lesson packages.
* Collect customer information such as full name, address, phone number, state, credit card information, and location.
* Offer pickup and drop-off services.
* Implementation of system-generated reports

## 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 be a web based application/environment.
* The system should have a fast response rate to provide information quicky and smoothly to users.
* The system should regularly be updated when new DMV laws occur to ensure the content it correct.

#### 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?*

* Since the application will be web based it should be compatible with all Operating systems. The system will store customer data so a backend database will be required.

#### 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 able to create a user ID which will distinguish who is signed in.
* There will a input case sensitive to the password field to allow complex password to be used.
* The system should send out an alert to the admins to inform them of any issue that could arise. This will allow the team to respond quickly without disrupting other users’ experiences.

#### 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?*

* To allow the ability to add, remove, modify users a function can be in the code to allow admins or new users to create a account.
* The IT team should have the highest permissions on the system in order to troubleshoot, maintenance, and handle any account questions or errors.

#### 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?*

* In order for a user to log in they will need to enter their unique username and unique password on the login page. The site will use SSL to ensure the credentials cannot be intercepted.
* To secure the passwords the system will use a encryption algorithm to ensure the username and password are not plain text in the database.
* In cases of brute force attempts the system will include a security measures that only allows users to enter the password incorrect three times. One the user reaches three attempts the account will be locked and they will have to resent their password via a link to sent to the email on the account.
* If a user forgets their password they can utilize the reset password function that sends them a email with a link to update it.

### Functional Requirements

* The system will validate the users’ credentials when logging into the application.
* The system will allow users to create a new account.
* The system will allow users to manage their account.
* The system will allow users to search for available driving instructors on the site.
* The system will allow users to cancel or reschedule driving lessons.
* The system will allow users to make payments using their preferred payment source.
* The system will maintain records of all users and their driving history.
* The system will allow users to rate their instructors.
* The system will generate reports on driving performance.
* The system will allow administrators to manage users accounts, lessons, schedules.
* The system will be user friendly and accessible on all devices.

### 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 needs of the interface are as follows:

* The interface should be intuitive and easy to navigate ensuring a positive user experience.
* The interface should adapt and function well across different devices and screen sizes.
* The interface should be minimal to allow users to perform the functions they need to without having to open various pages.

The different users of the application are:

* The students who will be using the the application to search and schedule driving lessons with driving instructors.
* The driving instructor will use the application to log and rate the performance of the student.
* The admins of the application will handle backend features such as generating reports, statistics, and customer support.

The students must be able to search for driving lessons based on their current location and availability. They must also be able to manage their lessons, view and manage their notifications. Students will need to be able to manage their payment methods on the interface and be able to edit their account settings.

The instructors must be able to view their driving lessons schedule and be able to update it if they are not able to complete the task. They should be able to view the student account information and be able to communicate with them on the application.

The administrators should be able to register and deactivate accounts. They should be able to handle administrative tasks such as generating reports. The interface should allow admins to monitor the system performance to ensure the site reliability.

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?*

* We do not know if the payments will be handled in-house or by a third-party payment processor. The assumption is they will be doing it in house as they mentioned storing credit card information.
* We do not know if the driving lessons will be based on a select number of locations.
* We do not know how they would like us to deliver the notifications. We can assume a text message to a mobile phone and a email message will be sent to students.

Assumptions regarding the users and technology:

* We assume the users are technically inclined to use a digital platform to schedule driving lessons.
* We assume that the users will have access to internet as it is a web-based application.
* We assume the users have a device that can display the web application contents.

### 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 design does not account for scalability which would be needed in the event there are large numbers of users using the application at the same time.
* The design does not offer offline functionality to users as they would not be able to open the web application without internet access.
* The design does not include functionality of customization to users learning paths.
* If they’re a limited number of resources regarding hardware and computing resources the application perform will be impacted.
* Time constraints can lead to a rushed system that can create unexpected behaviors.

### Gantt Chart

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