## 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?*

* Design and implement a system for DriverPass.
* Provide a nice and user-friendly experience for both students and instructors.
* Enable efficient and effective preparation for driving tests.
* Help students pass their driving exams.

### 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?*

* Problem: Many students are inadequately prepared for their driving tests, leading to high failure rates and unconfident drivers.
* Current preparation methods lack accessibility, convenience, and good training materials.
* Solution: Create an online platform offering practice exams and coordinated on-the-road training sessions.
  + Allow students to access realistic practice exams.
  + Enable scheduling of training sessions with qualified instructors.
  + Improve chances of passing the driving test and becoming safer drivers.

### 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?*

* Enable users to create accounts, log in, and manage their profiles.
* Provide a variety of practice exams simulating the actual driving test.
* Allow students to take unlimited exams and receive immediate feedback.
* Implement a system for students to book on-the-road training sessions with instructors.
* Make it easy to find and book available training slots.
* Track students' progress and performance over time.
* Provide detailed reports to monitor improvement and identify areas needing further practice.
* Include features to track who made, canceled, or modified a reservation.
* Design a user-friendly interface for the web.
* Manage and update training materials, exam questions, and other resources.
* Ensure that the content is current, relevant, and accessible to all users.
* Allow for future customization of training packages.
* Implement communication channels for students and instructors to interact.
* Ensure that the tests and practice provided are current with DMV requirements.
* Get notifications whenever there are updates from the DMV.

## 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 web-based and run on both computers and mobile devices.
* The system should load pages as fast as any reliable website.
* The system should be regularly or as needed to reflect changes from the DMV.

#### 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 should be web-based and preferably hosted on a cloud platform to handle scalability, security, and backup.
* The back end requires a database to support 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?*

* Users should be distinguished by their email address or usernames.
* Input fields should be validated and case-sensitive where needed (e.g., passwords).
* The system should alert the admin of any data issues or unauthorized access attempts in real time.

#### 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 roles and permissions should be manageable through an admin interface without changing the code.
* The system should be designed to adapt to updates with minimal downtime.
* IT admin need full access to modify user accounts, reset passwords, and update system settings.

#### 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?*

* Users must log in with a unique username (or email) and password.
* Secure connections (HTTPS) must be used for data exchange between client and server.
* The system should lock an account after 5 unsuccessful login attempts and alert the admin.
* Users should be able to reset their passwords with a secure, automated process.

### 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 allow users to create, update, and delete their profiles.
* The system shall provide a variety of practice exams simulating the DMV driving test.
* The system shall allow students to schedule, modify, and cancel on-the-road training sessions.
* The system shall track and display the progress and performance of students over time.
* The system shall generate and download activity reports for admin users.
* The system shall notify users of any updates from the DMV.
* The system shall manage different user roles and permissions.
* The system shall provide a secure and user-friendly interface.

### 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 interface needs to be intuitive and accessible for students, instructors, and admin users.
* Students need to create accounts, take practice exams, schedule training, and track progress.
* Instructors need to manage schedules, provide feedback, and update training materials.
* Admin users need to manage user accounts, track activity, and update system settings.
* The interface should be accessible from web browsers on both desktop and mobile devices.

### 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 internet access to use the online features of the system.
* Users are familiar with basic web navigation.
* The system will primarily be accessed via web browsers on computers and mobile devices.
* The DMV will provide regular updates on changes in driving test requirements and regulations.

### 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?*

* Data modification offline is not supported to avoid data issues.
* Limited budget and resources may affect the timeline and scope of features.
* Users must have access to compatible devices and stable internet connections.

### 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 computer

Description automatically generated