## 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: Liam from DriverPass

Develop a system that allows DriverPass customers to receive online and on-the-road driving training. The system must facilitate online classes, practice tests, in-person driving lesson reservations and access to this data for online or offline use.

### System Background

The project aims to fill the gap in the market for efficient, accessible, and integrated driver training system.

* Security features for different user roles and permissions.
* Tracking and logging user activities (reservations, cancellations, modifications).
* Online self-reservation system for in-person driving lessons from the customer or secretary.
* System for managing driving instructors, vehicles, and scheduling.
* Dynamic package offerings with flexibility for client to easily disable/enable.
* Customer data handling (including sensitive information like credit card details).
* Integration with DMV for updates on rules and practice questions.
* Detailed dashboard that compiles online tests, driver notes, and customer information.
* Web-based interface, cloud-hosted with backup and security managed externally.
* Online and offline data access (offline access will be read-only).

### Objectives and Goals

**System Capabilities:**

* + Allow online and offline data access.
  + Secure user role management maintained by client’s IT.
  + Track and log all user activities within the system.
  + Allow customers to make, modify, and cancel reservations online.
  + Manage scheduling for lessons, assigning instructors and vehicles.
  + Offer and manage various training packages.
  + Process and store customer personal and payment information securely.
  + Receive and integrate updates from the DMV.
  + Provide a user-friendly, web-based interface.
  + Include dashboards for tracking test progress and driver notes.

**Measurable Tasks:**

* Develop a security system that assigns and manages different access levels for employees and customers.
  + Ensure system supports accessing data online or offline (read-only)
  + Implement an activity report feature to retrace user actions (reservations, cancellations, modifications) for accountability.
  + Create a section in the dashboard for driver notes, including lesson time, start and end hours, and comments.
  + Develop an accessible online system for customers to schedule, modify, and cancel driving lessons.
  + Create a scheduling module to assign instructors and vehicles to each lesson.
  + Build a flexible package management system where each package provides the buyer with access to a number of online and in-person sessions.
  + Utilize a database to securely handle and store appointment information and sensitive customer data.
  + Establish a protocol for receiving and integrating DMV updates to notify users of any changes.
  + Create dashboards showing test progress, with information like test name, time taken, score, and status (not taken, in progress, failed, passed).
  + Implement a section in the dashboard for driver notes, including lesson time, start and end hours, and comments.
  + Allow users to create an account on the service as well as reset their own account password.

## Requirements

### Nonfunctional Requirements

#### Performance Requirements

* The system should be web-based and needs to be responsive: performing tasks on pages should load within 5 seconds.
* Allow for frequent rollout of updates to comply with DMV policies and regulations.
* Scalable for varying server load.

#### Platform Constraints

* Ensure support for desktop and mobile devices including Windows, MacOS, Android, and iOS.
* Must work in modern web browsers like Internet Explorer/Edge, Chrome, Firefox, and Safari.
* Use-cloud based services like Amazon Web Services for web infrastructure, system backups, and database. Amazon Relational Database Service can be used for user data, reservations, and transactions.

#### Accuracy and Precision

* Enforce case sensitivity for account passwords, with requirements for passwords to be a minimum of 8 characters and include at least one special character.
* Admins should be notified of unauthorized access attempts or errors in system functionality.

#### Adaptability

* Ensure the system is adaptable to changes without requiring code modifications for role/access management.
* Utilize AWS built-in deployment features to minimize downtime during updates to maintain customer needs of online training, scheduling, and support.

#### Security

* SSL/TLS certification for secure data transfer between client and website.
* After 5 failed password attempts, lock the account and notify the account’s email.
* Protection against DDoS attacks and brute force attacks.
* Secure password reset system by using email-verification.

### Functional Requirements

* The system shall be hosted on a cloud-based service like AWS.
* The system shall securely store customer information, including contact details and payment information.
* The system shall validate user credentials when logging in.
  + A username and password are required to login to an account.
* The system shall provide access to online classes and in-person practice tests as part of certain packages.
* The system shall integrate a secure payment gateway for users to pay for packages online.
* The system shall track and report the progress of students in online classes and practice tests, including scores and completion status.
* The system shall provide a mechanism for admins and Owner user to access data online and download reports for offline analysis.
* The system shall automatically perform backups and recoveries of the database.
* The system shall integrate with DMV for receiving updates on driving rules and policies.
* The system shall have defined roles for accounts on the system. Roles: Owner (Liam), Admin (IT), Instructors, Scheduler (Secretary) and Default (customer).
  + Customer role for every new account
  + Admin role for IT maintenance and support
  + Scheduler for appointment management
  + Owner role to manage roles, view user activity, and password resets.
  + Instructor to view upcoming sessions and grading/notes.
* The system shall have online reservation management.
  + Shall allow secretaries and customer accounts to create/manage reservations.
  + The system shall enable the Scheduler role to make, cancel, and modify reservations on behalf of customers.
  + The system shall track and display the availability of drivers and cars for scheduling lessons.
  + The system shall match customers with drivers based on availability of scheduled time.
  + The system shall allow customers to specify pick-up and drop-off locations for driving lessons.

### User Interface

* The system shall provide a responsive web interface that adapts to different screen sizes, including desktops, tablets, and smartphones.
* The system shall display detailed descriptions of each package type available to customers, including the number of hours, type of lessons (in-car, in-person, online class), and price.

The system shall display a dashboard for users, showing relevant information such as upcoming lessons, package details, and test progress:

* Secretaries: The interface shall enable secretaries to schedule, modify, or cancel driving lessons on behalf of customers, access customer information, and manage lesson schedules.
* Owner: Shall have dashboard to manage account roles, view logged user activity on the website, and reset passwords as needed.
* Customers: The interface shall allow customers to register, log in, view, and select lesson packages for purchase, schedule driving lessons, access online classes and practice tests, and view their progress and upcoming schedules.
* Instructors: Shall have access to interface for instructors to view their schedules, student information, and submit feedback/notes on driver.

### Assumptions

* Users can access the internet for online lessons and possess basic operational knowledge of web browsers.
* Users have an email address, phone number, and a valid payment card.

### Limitations

* Customization of lesson packages might be limited in the initial release, based on predefined templates.

### 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 graph with pink and green lines

Description automatically generated