Southern New Hampshire University

CS 255 Business Requirements Document Template

CS255
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System Components and Design

Purpose

DriverPass is a company that wants to provide a better way for people to prepare for driving tests and learn to drive. After leveraging DriverPass' new solution, the probability of their successfully passing their driving test should be improved. They want to offer online practice tests and on-the-road training for driving students. Additionally, they want the ability to manage the system from the employee and owner side of the system.

System Background

The client is hoping to solve the problem of people failing their driving tests at the DMV. They want an online platform that allows clients to take online driving classes and practice tests as well as schedule and manage on-the-road training sessions. They have also requested the ability to access all customer data and be able to download the data as reports. The system should also implement role-based access control, password resetting, and industry-standard security mechanisms. There also needs to be an automated way for DriverPass to stay up to date with the latest DMV rules, test questions, and policies.

Objectives and Goals

Once complete, the system should be able to handle clients purchasing access to online training content and practice tests. It should also allow customers to schedule on-the-road training sessions with instructors. The employees of DriverPass should be able to monitor and manage all activity surrounding users like test information, driving instructor comments, and lesson activity via the online system. Employees should be able to download reports of all relevant data. All users of the system should be able to register, login, and perform password resets. There should be different features available for a user based on their role and level of access. Each feature of the system should undergo testing to ensure that all required components function as expected.

Requirements

Nonfunctional Requirements

Performance Requirements

The DriverPass software solution will be built as a web-based application. In needs virtual machines, or a cloud-based equivalent, on which the application and database can be deployed and run. The system should respond to requests within a reasonable timeframe. Less than one second for basic requests and less than thirty seconds for report downloads should be a baseline. All software components should be scanned for vulnerabilities and updated monthly as required.

Platform Constraints

The system components, such as the back end and user interface, should be containerized using something like Docker. This will help with portability across environments when the system is being built and deployed. A database needs to be provisioned and designed to handle all the system's functions.

Accuracy and Precision

When a user is registered to the system, they will provide a unique username, password, and email which will be inserted into the database. Upon insertion, the user will be tagged with their respective role and assigned a unique identifier. All inputs will be case sensitive. If there is any server downtime, security concerns, repeated failed login attempts, or system issues, a notification shall be sent to all registered administrators.

Adaptability

There will be an administrative interface which will allow registered admins to make updates to customer information without making changes to the code. All components should leverage containerization technology in order to maintain portability across platforms and environments. An IT admin should have full access to the database, code, and the administrator interface. They should also have access to a development environment to test out changes or updates before pushing them to the main application.

Security

A user login will require a username and password. All connections will only be allowed over HTTPS, and every server will have valid TLS certificates installed. Passwords will not be stored as plain text within the database but will be encrypted using an industry standard hashing algorithm, such as Argon2, to

ensure an extra layer of security. All data within the database will be encrypted at rest. Rate limiting and alerts will be enabled to prevent brute force attacks. There will be a password recovery mechanism based on the registered email in place in the event of a user forgetting their password. The back-end component will implement role-based access control for all operations.

Functional Requirements

- The system shall allow new users to register with different roles.
- The system shall validate credentials when logging in.
- The system shall manage access for all back-end operations using role-based access control.
- The system shall allow users to purchase online classes, practice tests, and on-the-road training sessions.
- The system shall allow the users to cancel and modify appointments.
- The system shall allow employees to create, cancel, and modify on-the-road training appointments for customers.
- The system shall allow administrative users to edit and update customer information.
- The system shall allow administrative users to disable and enable packages.
- The system shall integrate with the DMV and notify the business whenever there are updates to rules, policies, and sample questions.
- The system shall securely store customer information.
- The system shall securely process payments.
- The system shall produce printable and downloadable reports of employee and customer information.

User Interface

- The user interface shall display admin registration, customer registration, customer login, admin login, admin portal, and customer portal views.
- The users will be customers and employees with different levels of access based on roles.
- The user interface shall be available to access via web browsers on PC's and mobile devices.

Assumptions

- The specifics around integrating with the DMV were not addressed. It is assumed that integration is viable.
- The system assumes internet access for all users.
- The system assumes users have basic familiarity with PC's or mobile devices.
- The system assumes users have access to relatively modern PC's or mobile devices.

Limitations

One of the limitations of the system is that there is no location verification or maps integration. When a user provides a pick-up and drop-off location, there is currently no map view for instructors or validations of whether the location is valid. Additionally, there is no outline regarding high availability or disaster recovery. To make the system more robust, these components should be considered. Implementing such precautions does increase costs. In addition, there is no estimate of the number of users of the system. Finally, the total cost of development and maintenance should be estimated and discussed with the business.

Gantt Chart