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CS 255

Project One

# CS 255 Business Requirements Document Template

## System Components and Design

### Purpose

The purpose of this system design is to address a need in the student driver industry.

* **Objective**: Develop a comprehensive system to address the prevalent issue of new drivers failing DMV tests in the region.
* **Founder's Vision**: Laim, the founder of DriverPass, aims to enhance the driver education experience by creating a system that facilitates easy registration for both classroom and on-road instruction.
* **Training Packages**: DriverPass will offer three distinct training packages, each tailored to meet varying needs of prospective drivers.
* **Comprehensive Instruction**: The packages are designed to provide thorough instruction covering both theoretical and practical aspects of driving, ensuring that students are well-prepared for their DMV tests.
* **Registration Facilitation**: The system will enable new students to seamlessly register for DriverPass training programs.
* **Streamlined Payments**: In addition to registration, the system will streamline payment processes, ensuring a hassle-free experience for both clients and the DriverPass team.
* **Revolutionizing Driver Education**: By implementing this system, DriverPass aims to revolutionize the driver education landscape, making it more accessible and efficient for individuals seeking to obtain their driver's licenses.
* **Commitment to Safety**: DriverPass is committed to addressing the specific challenges faced by new drivers and contributing to creating safer roads through effective education and training.

### System Background

* **Issue to Address:**
  + DriverPass aims to address the common problem of individuals failing their driver's tests multiple times before successfully passing.
* **Objective:**
  + The primary goal is to enhance preparedness, enabling people to pass their driver's tests on the initial attempt.
* **Proposed Solutions:**
  + **Online Classes and Practice Tests:**
    - DriverPass intends to provide comprehensive online classes that cover essential information related to driving and road rules.
    - Additionally, practice tests will be offered to assess and reinforce customers' knowledge, preparing them thoroughly for the actual driver's test at DMV's.
  + **On-the-Road Training:**
    - Recognizing the significance of practical experience, DriverPass plans to offer on-the-road training as an optional service.
    - This hands-on training aims to further equip customers with the skills and confidence needed for successful driving test performance.

### Objectives and Goals

**User Account Management:**

* + **Creation of an Account**:
    - Users can create accounts by providing personal information such as name, address, phone number, and credit card details.
    - Additionally, users will specify their preferred pick-up and drop-off locations.
  + **Scheduling Appointments:**
    - Users have the functionality to schedule appointments through the internet.
    - They can choose from various training packages as part of the scheduling process.
  + **Password Reset Access:**
    - A password reset option is available to users who have forgotten their login credentials.
* **Additional System Functions:**
  + **Employee Access:**
    - Specific employees have authorized access to the system for management purposes.
  + **Tracking Matched Users**:
    - The system tracks the pairing of users with specific drivers, along with details such as time and assigned vehicle.
  + **Reservation Tracking:**
    - The system monitors and manages reservations made by users.
  + **Training Package Management:**
    - Users can remove or modify their selected training packages as needed.
  + **DMV Connection:**
    - The system is integrated with the DMV to stay updated with the latest information.
    - Users receive notifications for new updates from the DMV.
  + **Test History and Progress:**
    - Users can view a comprehensive history of tests taken, including test name, time taken, score, and current status.
  + **Driver's Notes:**
    - Users have access to notes provided by drivers, including details such as lesson time, start and end hours, and driver comments**.**

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## Requirements

### Nonfunctional Requirements

#### Performance Requirements

* **Web-Based Cloud Environment:**
  + The system operates within a web-based cloud environment, leveraging the scalability, accessibility, and flexibility offered by cloud infrastructure.
* **Optimized Load Times:**
  + The system is designed to ensure optimal user experience, with an average load time for users targeted at 1-2 seconds.
  + Efforts have been made to prioritize efficient data retrieval and processing to meet this performance benchmark.
* **Load Time Feedback Mechanism:**
  + A responsive feedback mechanism is integrated into the system to alert users when load times exceed 3 seconds.
  + This proactive approach aims to enhance user satisfaction by addressing potential delays and maintaining a seamless user experience.
* **Regular System Updates:**
  + System updates are scheduled to occur monthly or as needed.
  + This approach ensures that the system remains current, incorporating necessary enhancements, security patches, and feature updates to meet evolving requirements and standards.

#### Platform Constraints

* **Cross-Browser Compatibility:**
  + The system is designed to run seamlessly on both computer and mobile browsers, ensuring accessibility across various platforms.
  + Supported browsers include Internet Explorer, Google Chrome, Firefox, and Safari, providing users with a versatile and consistent experience.

**Backend Infrastructure:**

* + **Database Integration:**
    - The backend is equipped with a robust database to store and manage user and system information efficiently.
    - This database serves as a secure repository for user accounts, preferences, and other relevant data.
  + **Web Server Functionality:**
    - The backend also incorporates a dedicated web server responsible for processing and managing incoming requests and responses.
    - This server ensures the smooth flow of data, handling user interactions and system functionalities with speed and reliability.

#### Accuracy and Precision

**User Distinction:**

* The system incorporates distinctive login sections for different user roles, ensuring a clear distinction between customers and employees.
  + Customers access a designated login section tailored to their needs.
  + Employees, on the other hand, utilize a separate login portal with functionalities pertinent to their roles.

**Case-Sensitive Passwords:**

* Each user is required to set a password, and the system enforces a case-sensitive approach to enhance security.
  + This ensures that password authentication is sensitive to uppercase and lowercase characters, adding an extra layer of protection to user accounts.

**Administrative Notifications:**

* The system is programmed to provide daily notifications to the admin regarding any potential issues or problems.
  + This proactive reporting mechanism allows administrators to promptly address and resolve issues, contributing to the system's overall reliability and performance.

#### Adaptability

#### **Backend User Modifications:**

* User modifications are executed exclusively in the backend, ensuring that alterations do not necessitate changes to the system's underlying code.
  + This approach streamlines the maintenance process, allowing for efficient updates and enhancements without the need for extensive code modifications.

**Platform-Agnostic Adaptability:**

* The system is designed to seamlessly adapt to updates on various platforms without encountering compatibility issues.
  + This adaptability ensures that the system remains functional and reliable, irrespective of changes in the underlying technology or platform updates.

**IT Admin Access for Maintenance:**

* The IT administrator is granted access to both the database and web server components, facilitating seamless maintenance and modification of the system.
  + This access empowers the IT admin to efficiently address any issues, implement updates, and ensure the continuous optimization of the system's performance and functionality.

#### Security

* **Secure Login Requirements:**
  + Users must provide a password to access the system, ensuring a baseline level of security for user authentication.
* **Two-Factor Authentication (2FA):**
  + The system employs Two-Factor Authentication (2FA) as an additional layer of protection during the login process.
    - This extra security measure enhances the safeguarding of connections and data exchanges, requiring users to verify their identity through a secondary authentication method.
* **Login Attempt Security Measures:**
  + After five consecutive incorrect login attempts, a user will be automatically locked out.
    - This precautionary measure helps prevent unauthorized access and protects user accounts from potential security threats.
* **Password Recovery Mechanism:**
  + - In case a user forgets their password, a "Forgot Password" button is available.
    - This feature triggers a notification to the admin, allowing them to facilitate the password reset process, ensuring secure and authenticated access for the user.

### Functional Requirements

**User Authentication and Account Management:**

* The system will rigorously validate a user's username and password during the login process to ensure secure access.

**User Role Identification:**

* Upon login, the system will intelligently distinguish between customer and admin profiles, directing each to the respective functionalities tailored to their roles.

**Password Reset Functionality:**

* Users will have the capability to reset their password through a designated system feature, enhancing account security and user accessibility.

**Login Attempt Security Measures:**

* The system will allow users five login attempts before automatically blocking access and promptly notifying the administrator for further investigation.

**User Account Creation:**

* The system will facilitate the creation of user accounts, capturing and storing relevant user information securely.

**Online Accessibility:**

* The system will enable users to access its features from any location with an internet connection, ensuring flexibility and convenience.

**Package Selection for Customers:**

* Customers will be presented with a display of available packages to choose from, providing transparency and options for tailored services.

**Package Purchase Functionality:**

* Customers can seamlessly select and purchase a chosen package, streamlining the transaction process.

**Package Management by Admin:**

* Admins will have the authority to disable packages that have reached full capacity, maintaining control over service availability.

**User-Driver Matching Tracking:**

* The system will systematically track which user is matched with a specific driver, capturing details such as time and assigned vehicle.

**Integration with DMV:**

* The system will establish a connection with the DMV to stay updated with the latest information, ensuring compliance with regulatory standards.

**User Information and Progress Display:**

* Users, admins, and instructors will have access to a comprehensive display showcasing customer information, test progress, and current status.

**Drivers' Notes and Lesson Details:**

* The system will exhibit detailed notes from drivers, along with lesson times, start and end hours, fostering effective communication and progress tracking.

**Visual Display of Users:**

* Photos of both the driver and student will be visually displayed, providing a more personalized and identifiable user experience.

**Access to Online Learning Tools:**

* Customers will be granted access to a suite of online learning tools, enhancing their preparedness and knowledge acquisition for driving tests

### User Interface

* **User Interface Interaction:**
  + Users will engage with the interface seamlessly through online browsers, whether accessed from computers or various devices.
* **Diverse User Roles:**
  + The system accommodates different user roles, distinguishing between customers and employees/administration, each with tailored access and functionalities.
* **Customer Interface Features:**
  + Customers will have access to a range of features, including:
    - Login/Register Page: Secure access initiation or account creation.
    - Home Page: Centralized navigation hub for users.
    - Test Progress and Score: Real-time tracking of test performance.
    - Pass/Fail Status: Immediate feedback on test outcomes.
    - User Information Management: Ability to view and update personal details.
    - Driver Notes and Lesson Details: Access to driver comments, lesson dates, and times.
    - Package Information: Details about selected service packages.
    - Online Learning Tools: Resources for enhancing driving knowledge.
    - Contact Information Page: A designated space for communication and support.
* **Administrator Interface Features:**
  + Admins will have access to administrative functionalities, such as:
    - Information of Registered Customers: Comprehensive data on registered users.
    - Package Selection Details: Insights into packages selected and by whom.
    - Package Management: Capability to remove full packages from the system.
    - User-Driver Matching Details: Information on matched customers and drivers, including dates and times.
    - Password Reset Authorization: Ability to facilitate password resets for users, ensuring secure access management.

### Assumptions

* **Continuous Online Accessibility:**
  + All users, including both customers and administrators, enjoy uninterrupted 24/7 online access to the system, fostering flexibility and availability.
* **User-Friendly Navigation:**
  + The website is designed to ensure that all users possess a clear understanding of its navigation, promoting an intuitive and user-friendly experience.
* **Admin Proficiency:**
  + Administrators possess the requisite skills to adeptly navigate and access all functions of the website, ensuring comprehensive control and management.
* **Customer Punctuality and Attendance:**
  + Customers are expected to adhere to their chosen lesson package schedules, displaying punctuality and attending each lesson as committed.
* **Driver Reliability:**
  + Drivers are committed to being consistently available and attending every scheduled driving lesson, contributing to the reliability and effectiveness of the training program.

### Limitations

* **Fleet Maintenance for DriverPass:**
  + DriverPass manages a fleet of 10 cars, each requiring regular maintenance to ensure optimal functionality and usage.
* **Potential Internet Connection Issues:**
  + The system acknowledges the possibility of internet connection issues that may occasionally arise, potentially causing delays in the timely updating of information.
* **Package Availability Constraint:**
  + Due to the limited number of cars available, there is a constraint on the number of customers who can purchase packages concurrently.
* **Technology Disparities among Users:**
  + Some users may not have the most updated technology on their end, necessitating the system to accommodate various technology specifications for an inclusive user experience.
* **Budgetary and Time Constraints:**
  + The development of DriverPass is focused on meeting all outlined requirements within predefined budgetary constraints and a specified timeframe.
* **User Vehicle Familiarity:**
  + Acknowledging that customers may only have experience with certain types of vehicles, DriverPass aims to tailor its training program to accommodate diverse user experiences and preferences.

### Gantt Chart

