# CS 255 Business Requirements Document Template

## System Components and Design

### Purpose

The purpose of this project is to develop a product for our client DriverPass that addresses the need for improved driver training and resources for their customers. DriverPass would like to provide online practice exams and driving training to aid in students’ preparation for driving tests. Clients of DriverPass should be able to make driving reservations with instructors, check their test scores and book training lessons. DriverPass would like a system that provides easy access to critical resources for their customers, as well as internal resources for employees whether they are connected or not.

### System Background

The background of the proposed system is provided to give a detailed overview of DriverPass’s current system to guide development of a solution that addresses their challenges and needs. The details gathered from the interview transcript will assist us in designing the new system to meet DriverPass’s business objectives. DriverPass has identified that high rates of driving test failures are strongly correlated with poor driver training. The proposed system will address this gap by offering training with a multifaceted approach – one that caters to the diverse needs of clients.

The new system will support the following driving training packages:

* **Non package options:** Online classes, practice tests, lesson booking
* **Training packages:**
  + **Package One:** Six hours in a car with a trainer
  + **Package Two**: Eight hours in a car with a trainer and an in-person lesson where we explain the DMV rules and policies.
  + **Package Three:** Twelve hours in a car with a trainer, an in-person lesson where we explain the DMV rules and policies—plus access to our online class with all the content and material. The online class also includes practice tests.

The components needed for this system are:

* + **User Management System:** A user management system for customer and employee accounts.
    - **System administrator user:** Ability to manage the system, disable accounts, reset passwords.
    - **System user:** Varying degrees of system access dependent upon role (Role based access control enforced)
      * **Examples:** System Administrators, Developers, Business Teams
    - **Customer user:** Ability to access their accounts, book trainings, pay bills, reset their own passwords.
  + **Web-Based Platform**: Develop an interactive web-based platform.
  + **Integration with DMV:** DMV integration to ensure real-time updates on rules and regulations.
  + **Reservation Booking:** Reservation booking system allowing clients to schedule, modify, or cancel driving lessons.
  + **Security Measures:** RBAC (role-based access control, data encryption, SSL certificates and logging.
  + **Reservation Tracking Mechanism:** System for tracking reservations, client-to-instructor mapping.
  + **Flexible Updates/Offering Management**: Build flexibility for easy addition/removal of offerings.
  + **Offline Data Access:** Provide offline access to data and reports for employees.
  + **Customer Account Management:** Enable customers to create and manage accounts.

### Objectives and Goals

The objectives in a system analysis will offer a detailed guide to task-driven development of a system. The objectives highlighted below will help define key goals necessary to deliver DriverPass’s system. The goals provide measurable criteria we can use to gauge the success of completed tasks, helping to ensure we deliver each objective.

**Objectives:**

* + **Customer features**:
    - **Goal:** Customers can utilize the following system features upon application launch:
      * Book Driving Instruction
      * Book Reservations
      * Access Driving Resources
      * Online Class Access
      * Take and View Tests
  + **Accessibility and Security**:
    - **Goal**: The system will implement the below objectives and be compliant with all required security standards upon launch:
      * Database for Stateful Data: Establish a robust database structure for managing critical information.
      * Offline data access
      * Role-Based Access Control: Implement a role-based access control system for personalized user roles and permissions.
      * Data Protection Measures:
        + Hashing of Sensitive Data: Apply hashing algorithms to enhance the security of sensitive user data.
        + SSL Certificates: Implement SSL certificates to ensure secure communications.
  + Data caching
    - **Goal:** Application image loading in .25 of a second.
  + DMV Integration
    - **Goal**: Updates from DMV available within the system within 24 hours of publication.
  + LMS – Learning management system to coordinate materials like assessments, learning materials and test scores.
    - **Goal:** Customer satisfaction surveys of 80 percent after 3 months of launch.
  + Application Logging:
    - Error handling, error logging and system logging.
    - Critical system actions logged for audit trail.
      * Logins
      * Password changes
      * User creation/modification/deletion
    - **Goal:** Logs generated and alerting in place to detect irregular patterns.
  + Cloud-Based Web Server:
    - Efficient, cost-effective application hosting
    - System scalability and adaptability for quick adjustment to business need.
    - **Goal:** Average response time of .5 seconds for application requests.
    - **Goal:** System can be scaled smaller or larger on demand with less than 30 minutes system downtime.

## Requirements

### Nonfunctional Requirements

**Availability and Reliability:**

* The system should aim for 99% uptime, ensuring availability to users.
* Regular backup procedures should be in place to prevent data loss and ensure system reliability.
  + Outsourced to cloud company\*

**Usability:**

* The user interface should be intuitive and user-friendly.
* The UI should be customizable.
* Accessibility standards should be adhered to to ensure users with diverse needs are accommodated.

**Data Protection and Privacy:**

* The system should comply with data protection regulations to ensure user privacy.
* Encryption mechanisms are in place to secure sensitive user data during all phases of handling.

**Auditability:**

* The system should keep an audit trail, logging critical system actions and issues.
* Audit logs will be stored and organized for easy access and review.

#### Performance Requirements

* The system needs to run in a web-based environment, providing cross-platform availability.
* Response time for user interactions should be under 1.5 seconds for a seamless experience.
* The system will undergo weekly updates for routine maintenance to ensure a stepped approach to patching and firmware. Larger updates and hardware lifecycle management will happen on a quarterly basis to allow for longer outage windows.
* The system should be compatible with all popular web browsers.

#### Platform Constraints

* The system will run on a Linux system within a cloud architecture, providing a client-server architecture.
* A database will be required in this architecture to store stateful data like customer information, test scores and transactions.
* The system will need a component to integrate DMV updates

#### Accuracy and Precision

* User distinction will be enabled by associated roles with users and by creating a different Class to handle user creation/adjustments for customers and system users. The process flow for handling users will also be separate.
* Input is case-sensitive when it matters, such as entering usernames, passwords, proper names. Input will not be case sensitive for things like a user search’s.
* The system should notify the admin immediately under the following conditions:
  + User attempts to take an action not attributed to their role.
  + Action taken many times within a short period of time.
  + When the system is having issues critical to system functionality.

#### Adaptability

* Changes to user roles and permissions will be possible without modifying the source code by having dynamic classes that handle user functionality. The “User” class will enable an authorized user to create, remove or modify users within the system.
* The system will adapt to platform updates through:
  + Rigorous testing in a development environment
  + Weekly maintenance for smaller updates
  + Quarterly maintenance for larger updates
* Admins require full system access for system maintenance, updates, and issue resolution.

#### Security

* User login requires a combination of a unique username and a secure password.
  + Password requirements will require a mix of upper and lowercase, length and special character requirements.
* HTTPS will be required for data exchange and the application web-server will be secured with SSL certificates.
* After three failed login attempts, the account will be locked for a temporary amount of time.
* Users will be allowed to reset their emails using a verified link sent to their preferred email address.

### Functional Requirements

* The system shall validate user credentials when logging in.
* The system shall allow users to create or modify their accounts.
* The system shall implement role-based access control to manage user permissions.
* The system shall encrypt sensitive data using hashing algorithms.
* The system shall use SSL certificates to ensure client-serve secure communication.
* The system shall implement data caching for optimized performance.
* The system shall provide access to the database data, even when offline.
* The system shall allow package offerings to be added, deleted, or modified in real time.

### User Interface

* The system shall cater to the following users: administrators, customers, employees.
* The system shall allow customers temporarily to efficiently access resources, make driving reservations, take tests and book driving instructions.
* The system shall give employees access to user management features, logs, and system administration tools.
* The system shall allow administrators the full functionality of the system.
* The system shall allow employees to manipulate packages on demand.
* The system shall provide an interface that is accessible through web browsers and mobile devices.

### Assumptions

* Reliable internet connectivity for both customers and employees.
* Users have devices that support modern web browsers and meet minimum system requirements, and that users know how to use it to access the application.
* Weekly maintenance will always adhere to a defined outage window.
* DMV will update regulations on the source we are adhering to in real time.

### Limitations

* Offline data access will be read only, updating data will not be available while the database is offline.
* Browser compatibility beyond commonly used browsers not tested nor supported.
* Weekly system downtime for maintenance activities like OS and firmware patching and code deploys.
* DMV integrations rely on DMV sources being available.

### Gantt Chart

A colorful chart with multiple colored squares

Description automatically generated with medium confidence