# DriverPass Business Requirements Document

## System Components and Design

### Purpose

* The purpose of this project is to develop a comprehensive web-based system for DriverPass that provides students with better preparation for DMV driving tests through online courses, practice tests, and on-the-road training management.
* DriverPass is a new company founded by Liam that aims to address the high failure rate of driving tests at DMV by offering specialized training services.
* The client wants a system that can handle student registration, online class delivery, practice test administration, on-the-road training scheduling, and reporting capabilities accessible through both web and mobile interfaces.

### System Background

* DriverPass aims to solve the widespread problem of high failure rates at DMV driving tests by providing more comprehensive, accessible, and up-to-date driver training than what is currently available in the market.
* As stated by Liam: "I noticed that there is a need for better driver training. So many people fail their driving tests at the DMV." This identified market void forms the foundation for DriverPass's business model.
* The company wants to offer a solution that integrates three learning approaches: (1) self-paced online learning with classes and practice tests, (2) structured in-person lessons on DMV rules and policies, and (3) hands-on practical on-the-road training with professional drivers to comprehensively prepare students.
* The system needs to include several integrated components:
  + User management system with role-based access control for five distinct user types (owner, IT officer, secretary, drivers, and students)
  + Secure online course delivery platform with current DMV content
  + Practice test administration with performance tracking and status updates (not taken, in progress, failed, passed)
  + Appointment scheduling system for on-the-road lessons with conflict prevention and resource allocation (10 cars/drivers)
  + Package management for three different service tiers with the ability to enable/disable offerings
  + Detailed reporting and tracking capabilities with Excel export functionality
  + Secure payment processing system for credit card transactions
  + DMV compliance updates integration with notification system
  + User activity logging for accountability and troubleshooting
  + Cloud-based infrastructure to minimize technical maintenance requirements
  + Mobile-responsive interface based on client's design specifications

### Objectives and Goals

* Develop a secure web-based system accessible via computers and mobile devices that allows users to register accounts with appropriate roles and permissions including restricted access based on user type (owner, IT officer, secretary, drivers, and students).
* Create an online learning platform that delivers driving course content and administers practice tests with comprehensive progress tracking (test name, time taken, score, status) and scoring that simulates actual DMV testing conditions.
* Implement a reservation system that manages all 10 drivers, 10 cars, and student scheduling for on-the-road training sessions with conflict prevention, including the ability to specify pickup and drop-off locations and accommodate the 2-hour lesson format.
* Establish a package management system that allows administrators to enable/disable the three different service tiers (6-hour, 8-hour with lesson, and 12-hour with lesson and online access) without requiring developer intervention, with potential for future package customization.
* Build a comprehensive reporting system that tracks student progress, test results, driver notes, and driving session details with Excel export functionality that allows Liam to work offline with the data.
* Design a user interface according to the client's sketch and specifications with clear navigation, responsive design, and sections for online test progress, student information, driver notes, special needs, and photos.
* Integrate with DMV systems to receive real-time updates on rules, policies, and test questions with notification capabilities so DriverPass training always reflects current DMV requirements.
* Implement secure payment processing for student registrations and package purchases, including storage of credit card information, expiration dates, and security codes with appropriate encryption and security measures.
* Create an automated password reset feature for all users along with appropriate security measures such as account locking after failed login attempts and the ability for the IT officer to block former employee access.
* Provide comprehensive audit logging functionality to track all system changes (who made reservations, cancellations, or modifications) with the ability to generate activity reports to determine responsibility in case of disputes or issues.
* Ensure the system runs in a cloud environment that minimizes technical maintenance requirements for DriverPass staff, handling backup and security concerns automatically so the company can focus on its core business operations.
* Enable secretary and student scheduling through multiple channels (online, phone, in-person) with consistent data capture and appointment management regardless of booking method.

## Requirements

### Nonfunctional Requirements

#### Performance Requirements

* The system shall be web-based and accessible through standard web browsers on both desktop computers and mobile devices to accommodate users accessing the system from various locations and devices.
* The system shall be hosted in a cloud environment to ensure high availability and scalability while minimizing technical maintenance requirements for DriverPass staff, as specifically requested by Ian who stated "We do not want to deal with backup and security; we need that to be taken care of."
* The system shall support concurrent access by multiple users including students taking online tests, secretaries scheduling appointments, drivers accessing schedules, and administrators managing the system without performance degradation.
* The system shall provide real-time updates for appointment scheduling to prevent double-booking of drivers, cars, and time slots across the 10-car, 10-driver fleet.
* The system shall integrate with DMV systems to receive updates on rules, policies, and sample questions, with notifications delivered promptly when new information becomes available to ensure training content remains current.
* The system shall support offline data access for reports and information that can be downloaded and worked on using Excel, as requested by Liam for business analysis purposes.
* The system shall maintain responsive performance during peak usage periods, such as when multiple students are taking practice tests simultaneously or when appointment scheduling is heavy.
* The system shall automatically backup data and maintain security protocols through the cloud infrastructure without requiring manual intervention from DriverPass staff.

#### Platform Constraints

* The system shall be platform-independent and accessible through standard web browsers on any operating system including Windows, macOS, iOS, Android, and Linux to ensure maximum accessibility for all users regardless of their device preferences.
* The system shall be cloud-based as specifically requested by Ian who stated "The system needs to run off the web, preferably over the cloud" to eliminate the need for DriverPass to manage local server infrastructure.
* The backend shall utilize a robust database management system capable of storing and managing student information, course content, practice test results, appointment schedules, driver assignments, car allocations, payment information, and audit logs with high reliability and data integrity.
* The system shall support mobile-responsive design to function effectively on smartphones and tablets, allowing students to access online classes and practice tests, and enabling staff to manage appointments and view schedules from mobile devices.
* The database shall be capable of handling relational data structures to manage complex relationships between students, packages, appointments, drivers, cars, test results, and user roles while maintaining data consistency.
* The system shall integrate with external payment processing services to securely handle credit card transactions for package purchases and registrations.
* The platform shall support integration capabilities with DMV systems for receiving updates on rules, policies, and sample questions through appropriate APIs or data exchange protocols.
* The system shall be hosted on a cloud infrastructure that provides automatic backup, security management, and scalability without requiring DriverPass to maintain dedicated IT hardware or specialized technical expertise.

#### Accuracy and Precision

* The system shall implement role-based access control to distinguish between five distinct user types: owner (Liam), IT officer (Ian), secretary, drivers, and students, with each role having specific permissions and access levels appropriate to their responsibilities.
* The system shall use unique user credentials (username/email and password combinations) to authenticate and distinguish between individual users, ensuring that each person can only access functions and data appropriate to their assigned role.
* The system shall maintain case-insensitive input for user login credentials and search functions to improve user experience and reduce login failures due to capitalization errors.
* The system shall validate all student registration data including first name, last name, address, phone number, state, pickup/drop-off locations, and payment information to ensure data accuracy and completeness before account creation.
* The system shall automatically notify the IT officer (Ian) when critical system errors occur, failed login attempts exceed security thresholds, or when data integrity issues are detected that require administrative intervention.
* The system shall alert administrators when appointment scheduling conflicts arise, such as double-booking attempts for drivers, cars, or time slots, to prevent operational disruptions.
* The system shall provide real-time notifications to administrators when DMV content updates are available, ensuring training materials and practice tests remain current and accurate.
* The system shall implement data validation rules for all user inputs, including phone number formats, address fields, and payment information, with clear error messages displayed when incorrect data is entered.
* The system shall maintain accurate audit trails of all user activities including reservations made, cancellations, modifications, and system access, with precise timestamps and user identification for accountability purposes as requested by Liam.
* The system shall notify administrators when students fail practice tests multiple times or when driver evaluations indicate potential safety concerns that require management attention.

#### Adaptability

* The system shall provide administrative interfaces that allow the IT officer (Ian) to add, remove, and modify user accounts without requiring code changes or developer intervention, including the ability to reset passwords, block access for terminated employees, and assign appropriate role permissions.
* The system shall enable administrators to enable or disable training packages (Package One, Two, and Three) through configuration settings rather than code modifications, as specifically requested by Liam who stated "I at least want to be able to disable a package if I don't want any more customers to register for it."
* The system shall automatically adapt to browser updates and mobile platform changes through responsive web design and standard web technologies, ensuring continued functionality across evolving device platforms without requiring system redesigns.
* The system shall provide the IT officer with full administrative access including the ability to manage all user accounts, reset forgotten passwords, block terminated employee access, monitor system performance, and access comprehensive audit logs for troubleshooting and accountability.
* The system shall allow administrators to modify business rules such as appointment durations, driver assignments, car allocations, and scheduling parameters through administrative controls without requiring developer assistance.
* The system shall support content management capabilities that allow authorized users to update course materials, practice test questions, and DMV compliance information when updates are received, maintaining current and accurate training content.
* The system shall accommodate future package customization requirements through flexible configuration options, though Liam acknowledged that adding or removing complex modules may require developer assistance in future releases.
* The system shall provide scalable cloud infrastructure that can automatically adapt to increased user loads, additional drivers and vehicles, and expanded course offerings without requiring significant architectural changes.
* The system shall maintain backward compatibility during cloud platform updates and security patches to ensure uninterrupted service while automatically benefiting from infrastructure improvements.

#### Security

* The system shall require users to authenticate with unique credentials including username/email and secure password combinations, with different access levels granted based on assigned user roles (owner, IT officer, secretary, drivers, students).
* The system shall implement HTTPS encryption for all data transmission between client browsers and servers to secure sensitive information including student personal data, payment details, and login credentials during data exchange.
* The system shall encrypt and securely store all sensitive data including credit card numbers, expiration dates, security codes, and personal information in compliance with payment card industry standards and data protection regulations.
* The system shall implement account lockout mechanisms after a predetermined number of failed login attempts to prevent brute force attacks, with automatic notifications sent to the IT officer (Ian) when suspicious login activity is detected.
* The system shall provide an automated password reset feature that allows users to reset forgotten passwords through secure email verification, as specifically mentioned by Ian who stated "If the customer forgets their password, we need them to be able to automatically reset it."
* The system shall grant the IT officer full administrative privileges to reset any user passwords, block access for terminated employees, and manage security settings across all user accounts as requested by Ian who needs "full access over all accounts."
* The system shall maintain secure session management with automatic logout after periods of inactivity and session encryption to prevent unauthorized access to user accounts.
* The system shall implement role-based access controls ensuring that users can only access functions and data appropriate to their assigned roles, preventing unauthorized access to sensitive administrative functions or student information.
* The system shall maintain comprehensive security audit logs tracking all login attempts, password changes, account modifications, and administrative actions for security monitoring and compliance purposes.
* The system shall leverage cloud-based security infrastructure to automatically receive security updates, patches, and protection against emerging threats without requiring manual intervention from DriverPass staff.

### Functional Requirements

* The system shall validate user credentials when logging in and grant role-based access to appropriate system functions based on user type (owner, IT officer, secretary, drivers, students).
* The system shall allow students to register for accounts by providing personal information including first name, last name, address, phone number, state, pickup location, drop-off location, and payment details (credit card number, expiration date, security code).
* The system shall enable students to select from three available training packages: Package One (6 hours driving), Package Two (8 hours driving plus in-person lesson), and Package Three (12 hours driving, in-person lesson, and online class access).
* The system shall provide online course delivery with current DMV content including rules, policies, and educational materials accessible to students who have purchased packages that include online access.
* The system shall administer practice tests with multiple question formats, track test progress, record scores, and maintain status indicators (not taken, in progress, failed, passed) for each student's testing history.
* The system shall allow students, secretaries, and administrators to schedule 2-hour driving lesson appointments by selecting available dates, times, drivers, and cars from the 10-driver, 10-car fleet.
* The system shall prevent scheduling conflicts by checking driver availability, car allocation, and time slot conflicts in real-time during the appointment booking process.
* The system shall enable users to cancel and modify existing appointments through online interfaces or by contacting the secretary, with all changes properly tracked and logged.
* The system shall maintain detailed records of driving lessons including start time, end time, assigned driver, vehicle used, and driver comments/evaluations for each student session.
* The system shall generate comprehensive reports showing student progress, test results, appointment history, and driver evaluations that can be exported to Excel format for offline analysis.
* The system shall track all system activities including who made reservations, cancellations, or modifications, providing complete audit trails for accountability and dispute resolution.
* The system shall integrate with DMV systems to receive updates on rules, policies, and sample questions, automatically notifying administrators when new content is available.
* The system shall process secure payment transactions for package purchases and store encrypted payment information in compliance with security standards.
* The system shall allow administrators to enable or disable training packages without requiring code changes, providing operational flexibility for business decisions.
* The system shall provide password reset functionality allowing users to automatically reset forgotten passwords through secure email verification processes.
* The system shall enable the IT officer to manage all user accounts including resetting passwords, blocking terminated employee access, and maintaining system security.
* The system shall display student information, online test progress, driver notes, and special needs according to the interface design specifications provided by the client.

### User Interface

* The system shall provide a web-based interface accessible through standard browsers on desktop computers, laptops, tablets, and mobile devices to accommodate users accessing the system from various locations and devices.
* The system shall implement a responsive design that automatically adapts to different screen sizes and orientations, ensuring optimal usability across all device types from smartphones to desktop computers.
* The system shall provide role-based interface customization where each user type (owner, IT officer, secretary, drivers, students) sees only the functions and information relevant to their responsibilities and access level.
* The system shall display the student dashboard according to Liam's specifications including sections for online test progress (showing test name, time taken, score, and status), student information (first name, last name, address, city, state, zip, phone, email), driver notes with lesson details, special needs section, and areas for driver and student photos.
* The system shall provide students with interfaces to register accounts, select training packages, access online courses and practice tests, schedule driving appointments, view their progress, and manage their account information.
* The system shall offer secretaries interfaces to assist with student registration, schedule appointments via phone or in-person requests, manage the appointment calendar, and access student information for customer service purposes.
* The system shall provide drivers with mobile-friendly interfaces to view their schedules, access student information for assigned lessons, input lesson notes and evaluations, and update appointment status.
* The system shall give administrators (owner and IT officer) comprehensive dashboard interfaces showing system reports, user management tools, package configuration options, appointment oversight, and audit trail access.
* The system shall include input forms for student registration capturing all required information fields with proper validation and error messaging to ensure data accuracy and completeness.
* The system shall provide appointment scheduling interfaces with calendar views showing available time slots, driver assignments, car allocations, and conflict prevention mechanisms.
* The system shall display progress tracking interfaces showing detailed test results in a tabular format with columns for lesson time, start hour, end hour, and driver comments as specified in the client's design requirements.
* The system shall implement intuitive navigation with clear menu structures, consistent design elements, and user-friendly workflows that minimize training requirements for all user types.
* The system shall provide contact forms and communication interfaces allowing students and staff to easily reach each other and DriverPass administration when needed.

### Assumptions

* We assume that all users have access to reliable internet connections sufficient to support web-based applications, online course content delivery, and real-time appointment scheduling functionality.
* We assume that users possess basic computer literacy skills and familiarity with web browsers, online forms, and standard web navigation to effectively use the system without extensive training.
* We assume that students and staff have access to devices (computers, tablets, or smartphones) with modern web browsers that support current web standards and security protocols.
* We assume that DriverPass will establish formal agreements and technical integration protocols with DMV systems to enable automatic updates of rules, policies, and sample questions, though specific integration methods were not detailed in the interview.
* We assume that the cloud hosting provider will maintain industry-standard security certifications, backup procedures, and disaster recovery capabilities to meet DriverPass's requirement for minimal technical maintenance.
* We assume that payment processing integration will comply with PCI DSS standards and other financial regulations, though specific payment gateway providers and compliance details were not specified in the client requirements.
* We assume that the 10 cars and 10 drivers mentioned represent the current fleet size, and that the system will be designed to scale if DriverPass expands their vehicle and instructor capacity in the future.
* We assume that pickup and drop-off locations will be within a reasonable geographic service area that DriverPass will define, though specific coverage boundaries were not established during the interview.
* We assume that driving lessons will follow standard 2-hour formats as specified, and that any variations or special scheduling requirements will be accommodated through administrative configuration rather than system redesign.
* We assume that "current DMV requirements" will vary by state and that the system will be initially configured for the state where DriverPass operates, with potential for multi-state expansion requiring additional configuration.
* We assume that Excel export functionality will use standard file formats compatible with common spreadsheet applications, allowing Liam to perform offline data analysis as requested.
* We assume that driver evaluations and comments will follow professional standards and that DriverPass will provide guidelines for appropriate documentation to maintain consistent service quality.

### Limitations

* The system's offline functionality is limited to read-only access of downloaded reports and data in Excel format, as full offline system operation would require complex data synchronization that could lead to data conflicts and redundancy issues as noted by Sam during the interview.
* Package customization capabilities are limited to enabling/disabling existing packages through administrative controls, while adding or removing complex modules will require developer intervention and cannot be performed by non-technical staff as acknowledged during the client discussion.
* DMV integration functionality is dependent on the availability and compatibility of external DMV systems, which may have varying technical standards, update frequencies, and data formats that could limit the scope and reliability of automatic content updates.
* The system's scalability is constrained by the current business model of 10 cars and 10 drivers, though the architecture can accommodate growth, physical fleet expansion would require additional business resources beyond the software system's scope.
* Geographic service limitations exist based on reasonable driving distances for pickup and drop-off locations, which may restrict DriverPass's market coverage area and require operational decisions about service boundaries.
* The project timeline constraints may limit the initial feature set, potentially requiring certain advanced functionalities like comprehensive reporting analytics or sophisticated mobile applications to be implemented in future development phases.
* Budget limitations may restrict the level of third-party integrations, advanced security features, or premium cloud hosting services that could enhance system performance and capabilities beyond basic functional requirements.
* Technology limitations include dependency on stable internet connectivity for full system functionality, which may impact users in areas with poor network coverage or unreliable internet service.
* The system cannot accommodate complex scheduling scenarios beyond the standard 2-hour lesson format without additional development, limiting flexibility for specialized training programs or varying lesson durations.
* Data migration limitations exist if DriverPass has existing customer or operational data that needs to be transferred to the new system, which may require additional development time and resources not accounted for in the current project scope.
* User training and adoption limitations may impact system effectiveness, as the success of the platform depends on all user types effectively utilizing the web-based interfaces and following proper procedures for appointment management and data entry.
* Regulatory compliance limitations may emerge if DMV requirements change significantly or if multi-state expansion introduces varying compliance standards that require system modifications beyond the current design scope.

### Gantt Chart

*A screenshot of a project schedule

AI-generated content may be incorrect.*