CS 255 Business Requirements Document

System Components and Design

Purpose

The purpose of this system is to create an integrated online and in-person driver training solution for DriverPass. DriverPass is a company aiming to address the high failure rate of DMV driving tests, which often results from inadequate preparation and a lack of practical driving experience. To solve this problem, DriverPass intends to offer a flexible system that allows students to access practice exams, track progress, and schedule driving lessons with certified instructors.

The new system will support multiple user types, including administrators, IT staff, secretaries, instructors, and students. It must support account management, lesson scheduling, test taking, and reporting while ensuring data security and role-based access. The design will ensure users can access the system via beb browsers on both desktop and mobile devices, enhancing convenience and reach. Ultimately, this project seeks to deliver a platform that increases student success rates by providing comprehensive, up-to-date training aligned with DMV requirements.

System Background

The background of the proposed system is rooted in DriverPass's mission to improve student success on DMV exams. The current market lacks comprehensive training tools that combine realistic test preparation with accessible driving lesson scheduling. DriverPass intends to close this gap with a web-based platform that includes online learning modules, test simulations, in-person lesson scheduling, and integrated performance tracking.
Key components include:

- **User account management** for customers, instructors, IT personnel, and administrators.
- **Three-tiered driving packages**, which range from basic driving hours to full-feature training with in-person instruction and online content.
- **A lesson scheduler** that pairs students with drivers, cars, and available time slots.
- **A progress tracking module** to record test scores, lesson completion times, and driver feedback.
- **A secure admin portal** that enables user role management, system performance monitoring, and report generation.
- **An update mechanism** to receive notifications and rule changes from DMV sources to keep content compliant.

Objectives and Goals

The goals in a system analysis are the high-level outcomes the client hopes to achieve, while the objectives are the specific and measurable actions the system must support to meet those goals. The goals and related objectives of the DriverPass system are as follows:

Goals

- Improve the success rate of students taking DMV driving exams by providing comprehensive preparation.
- Offer convenient, user-friendly access to both online training and on-the-road instruction.
- Ensure secure, role-based access to sensitive student and system data.

- Provide administrators and IT staff with tools to monitor and manage system performance and user accounts.

Objectives

- Students will be able to:
  - Create an account and securely log in from any device with internet access.
  - Schedule, cancel, or reschedule driving lessons online using a simple calendar interface.
  - Access DMV-aligned online course materials and practice exams.
  - View and track their progress through a dashboard displaying test scores, lesson completion, and driver feedback.
- Instructors will be able to:
  - View and manage their schedules, including assigned students, cars, and session times.
  - Record feedback for each lesson (e.g., notes on driving skills, completed lesson hours).
- The secretary will be able to:
  - Add student information manually for phone or in-person registrations.
  - Schedule or modify driving lessons on behalf of the student.
- The IT officer will be able to:
  - Reset passwords and manage user access rights.
  - Monitor system performance and troubleshoot issues.
- The system will'
  - Display test names, times taken, scores, and status (e.g., Not Takes, In Progress, Passes, Failed).
  - Connect to DMV databases or receive push notifications to keep training materials and policies up to date.
  - Generate reports for administrative use (e.g., lesson history, system usage, billing summaries).
  - Protect sensitive data through encryption and role-based access restrictions.

Requirements

Nonfunctional Requirements

Performance Requirements

- The system shall operate as a cloud-based web application acessable via modern browsers (Chrome, Firefox, Safari).
- The system shall load core functions (e.g., dashboard, scheduling) within two seconds under standard conditions.
- System updates (e.g., DMV policy changes, bug fixes) shall be supported bi-weekly, with downtime minimized during maintenance windows.

Platform Constraints

- The system shall run on all major operating systems (Windows, macOS, Linux) via a web browser.
- The backend shall use a secure relational database (e.g., MySQL or PostgreSQL) and support RESTful APIs for integration.
- Mobile responsiveness must be ensured on both iOS and Android platforms through adaptive design.

Accuracy and Precision

- The system shall validate all inputs (e.g., phone number format, email format, required fields.
- User roles (e.g., student, instructor, admin) shall be strictly enforced to prevent unauthorized access.
- The system shall maintain detailed logs of actions (e.g., who created, modified, or canceled an appointment).

Adaptability

- The system shall support enabling/disabling training packages via the admin dashboard without code changes.
- The IT admin shall have full access to user accounts, allowing modification or deactivation of accounts when necessary.
- The system architecture shall allow future integration of new modules (e.g., expanded course offerings).

Security

- All user data shall be encrypted in transit using HTTPS and encrypted at rest in the database.
- The system shall enforce secure password requirements (minimum length, complexity).
- After five failed attempts, user accounts shall be temporarily locked and require IT admin to review and unlock.
- Users shall be able to reset their passwords securely via email-based verification.

Functional Requirements

Core System Functions

- The system shall allow users to create. Log in to, and manage accounts.
- The system shall validate user credentials at login and enforce role-based permissions.
- The system shall allow students to schedule, reschedule, and cancel driving lessons through the web interface.
- The system shall match students with available instructors, cars, and time slots based on selected packages.
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Instructor and Admin Functions

- The system shall allow instructors to view their schedule, record lesson notes, and mark attendance.
- The system shall allow administrators to generate reports for lessons, student progress, and system usage.
- The system shall allow the IT officer to reset user passwords, manage user roles, and deactivate accounts.

Content and Test Tracking

- The system shall allow students to take online practice exams with real-time feedback and results.
- The system shall display test names, date/time takes, scores, and pass/fail status.
- The system shall provide students with a dashboard showing lesson history, upcoming appointments, and driver feedback.

Compliance and Integration

- The system shall receive DMV updaters for rules, policies, and exam content via a secure integration or manual upload.
- The system shall notify administrators when new DMV content or requirements are available.

User Interface

The DriverPass system will use a responsive web-based interface accessible from both desktop and mobile devices. Each user role will interact with the system differently, and the interface will present tailored features based on those roles.

General Requirements

- The interface shall be designed using a clean, intuitive layout with minimal technical jargon.
- All users will access the system via a secure login page.
- Navigation shall include clearly labeled sections (e.g., Dashboard, Schedule, Tests, Reports).
- The interface will support common screen sizes and browsers (Chrome, Firefox, Safari).

Student Interface

- Students shall have access to a dashboard displaying:
    - Current progress on practice exams (status: Not Takes, In Progress, Failed, Passed).
    - Scheduled lesson dates and times.
    - Completed lessons and driver feedback.
- Students shall be able to:
    - Schedule, reschedule or cancel driving lessons.
    - Take online practice exams and receive instant feedback.
    - View test scores and lesson history.
    - Reset their password via secure email verification.

Instructor Interface

- IT admins shall have full access to all system modules and will be able to:
    - Reset or disable user accounts.
    - Add notes and feedback for each completed lesson.
    - Mark lesson attendance and completion.

Secretary Interface

- Secretaries shall have access to appointment tools to:
    - Create student profiles manually.
    - Schedule and modify lessons on behalf of students.
    - View all instructor availability and driving schedules.

IT Admin Interface

- IT Admins shall have full access to all system modules and will be able to:
    - Reset or disable user accounts.
    - Manage user roles and permissions.
    - Monitor system health, logs, and performance metrics.

Administrator Interface

- Admin users shall have access to reporting tools that allow them to:
    - Generate usage reports (appointments made, lessons completed, test scores).
    - Monitor system-wide performance and user engagement.
    - Enable or disable specific training packages from registration availability.

Assumptions

The following assumptions have been made based on the client interview, technical scope, and project constraints:

- Users will access the system through modern web browsers (e/g/. Chrome, Firefox, Safari) on either desktop or mobile devices.
- All user roles (students, instructors, IT staff, administrators, and secretaries) will be created and assigned during onboarding by the DriverPass team.
- IT administrators will have the training and access needed to reset accounts, monitor system logs, and manage role-based permissions.
- Driving lesson appointments will be manually input by the student or the secretary; no automated scheduling or calendar syncing (e.g., Google Calendar integration) will be included in the initial system.
- DMV rule and policy updates will be provided through a secure feed or manual upload from an external source; real-time syncing may be addressed in a future system upgrade.
- All users will require email addresses for communication, password resets, and account notifications.
- Disabling or enabling training packages will be handled through the admin dashboard by an authorized staff member—modifying or creating entirely new packages will require developer assistance.
- Financial transactions (e.g., payment processing) are assumed to be handled outside the current system scope and are not included in this initial implementation.
- The current scope includes English-only content; multilingual support may be considered in future phases.

Limitations

While the DriverPass system will address the core needs identified by stakeholders, several limitations are acknowledged in the initial release:

- **Technical Limitations**
    - Offline access will be limited to viewing previously downloaded reports or documents; no editing or data entry will be available without an internet connection.
    - Users cannot customize training packages beyond selecting from predefined options. Adding or modifying packages will require intervention by a developer.
    - The system will not include automated payment processing or financial record integration during this phase.

- Integration with DMV systems will be limited to manual upload or push-based updates. Real-time syncing and advanced compliance automation are out of scope for the initial release.

- **Functional Limitations**
  - Students will not be able to select individual instructors or cars—assignments will be based on system availability and administrative oversight.
  - The system will not support mobile app installation; access will be through responsive web design only.
  - Reports will be limited to predefined templates; custom reporting features may be considered for future enhancements.

- **Project Limitations**
  - The development team is working within a fixed timeline and budget, restricting scope expansion during this phase.
  - System scalability has been planned, but performance testing for large-scale multi-state rollout is not included in the current implementation.
  - Only English will be supported at launch; multilingual support is out of scope for this version.

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Gantt Chart