DriverPass System Design Document

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Course

CS-255 - Systems Analysis and Design

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Overview

DriverPass is an integrated web-based platform that assists students in preparing for their DMV driving exams. The system is designed to offer realistic online practice exams, appointment scheduling with certified instructors, and progress tracking. The platform includes tailored dashboards and features for students, instructors, and managers.

Context

DriverPass addresses a critical need: helping students successfully pass their driving test with better preparation and accessible resources. Many students rely on outdated study guides and lack opportunities to practice in realistic test environments. This system solves that gap by combining educational practice exams with structured lesson scheduling.

Goals

- Enable students to register, take practice exams, and schedule lessons
- Provide instructors with scheduling and student management tools
- Grant managers access to analytics and system reports
- Ensure security through role-based access and encryption
- Optimize for mobile, desktop, and cloud environments

Non-Goals

- Integration with DMV systems
- Payment processing
- Offline access

- Multilingual support in Phase 1

System Architecture

- Frontend: HTML/CSS with responsive mobile-first design
- Backend: RESTful API (Java or Python)
- Database: PostgreSQL or MySQL
- Authentication: Role-based access with bcrypt

Functional Requirements

- Secure login for all user roles
- Practice exam features with feedback
- Lesson scheduling and tracking
- Instructor tools for availability and progress
- Manager dashboard for analytics

Nonfunctional Requirements

- Support for 500+ users
- Cloud-based scalability
- HTTPS security
- 99.9% uptime
- Password hashing

UML and System Diagrams

- Use Case, Domain, Activity (Practice Exam & Scheduling), and Sequence Diagrams were created to visually model system interactions and flows.

Security Considerations

- HTTPS encryption
- Secure password storage
- Role-based access control
- Logging and audit trails

Testability and Monitoring

- Unit and integration tests
- Monitoring (CloudWatch or similar)

- Lockouts and admin alerts for security

Open Questions

- Should students be able to reschedule after confirmation?
- What is the data retention policy?
- Should reports be downloadable in Phase 1?

Roadmap and Milestones

Phase | Task | Date

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Requirements | Requirements doc | June 6, 2025

Design | UML diagrams | June 15, 2025

Finalize | Design doc | June 29, 2025

Conclusion

DriverPass is designed as a secure, scalable, and user-friendly solution for student drivers. This system design document serves as the foundation for implementing and expanding the platform.