Southern
New Hampshire
University

# CS 255 System Design Document
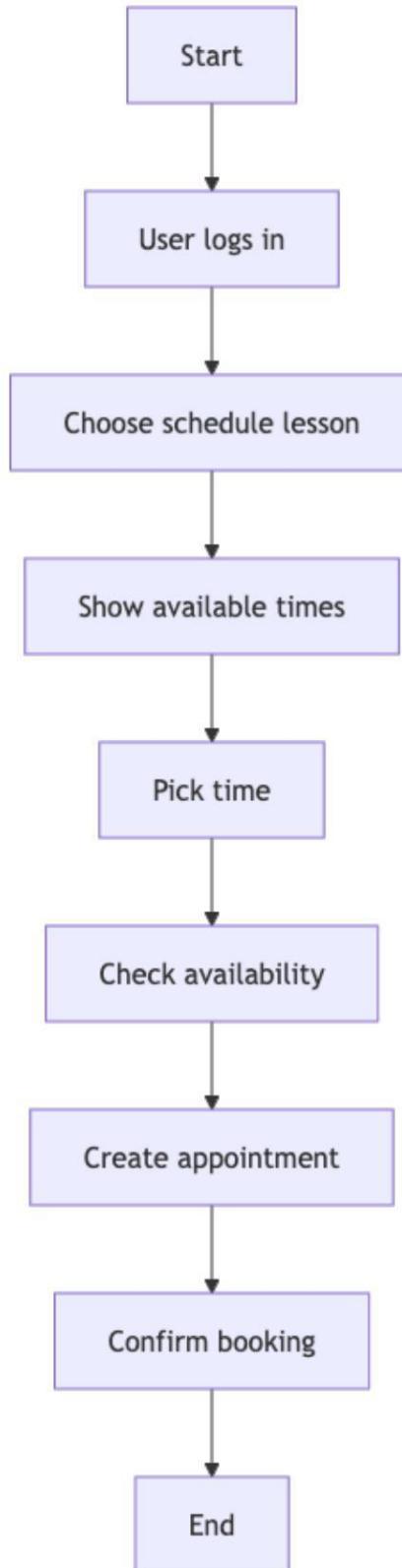
UML Diagrams

UML Use Case Diagram

```
┌──────────────┐
│    Start     │
└──────────────┘
       │
       ▼
┌──────────────┐
│  User logs in │
└──────────────┘
       │
       ▼
┌────────────────────────┐
│ Choose schedule lesson │
└────────────────────────┘
       │
       ▼
┌────────────────────────┐
│  Show available times  │
└────────────────────────┘
       │
       ▼
┌──────────────┐
│   Pick time  │
└──────────────┘
       │
       ▼
┌────────────────────────┐
│   Check availability   │
└────────────────────────┘
       │
       ▼
┌────────────────────────┐
│   Create appointment   │
└────────────────────────┘
       │
       ▼
┌────────────────────────┐
│    Confirm booking     │
└────────────────────────┘
       │
       ▼
┌──────────────┐
│     End      │
└──────────────┘
```
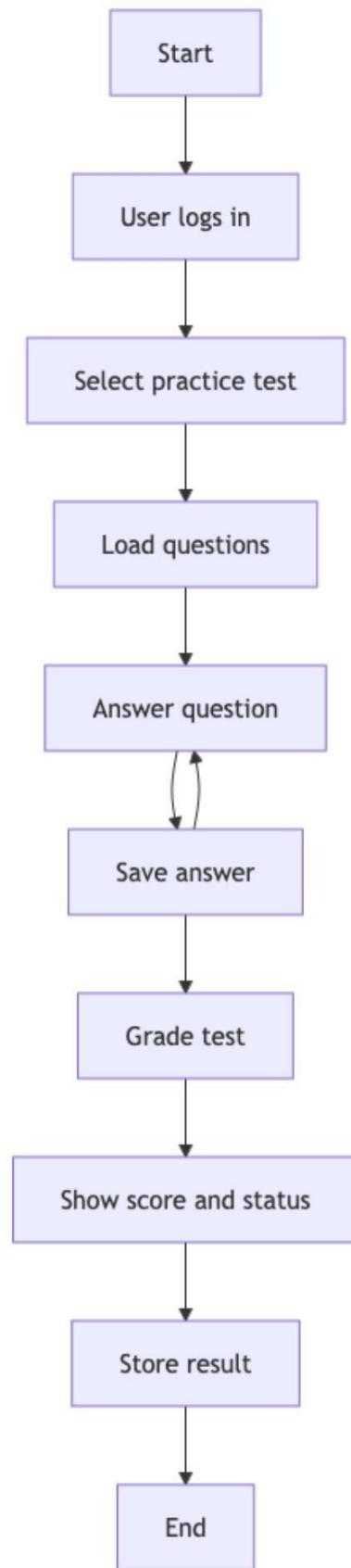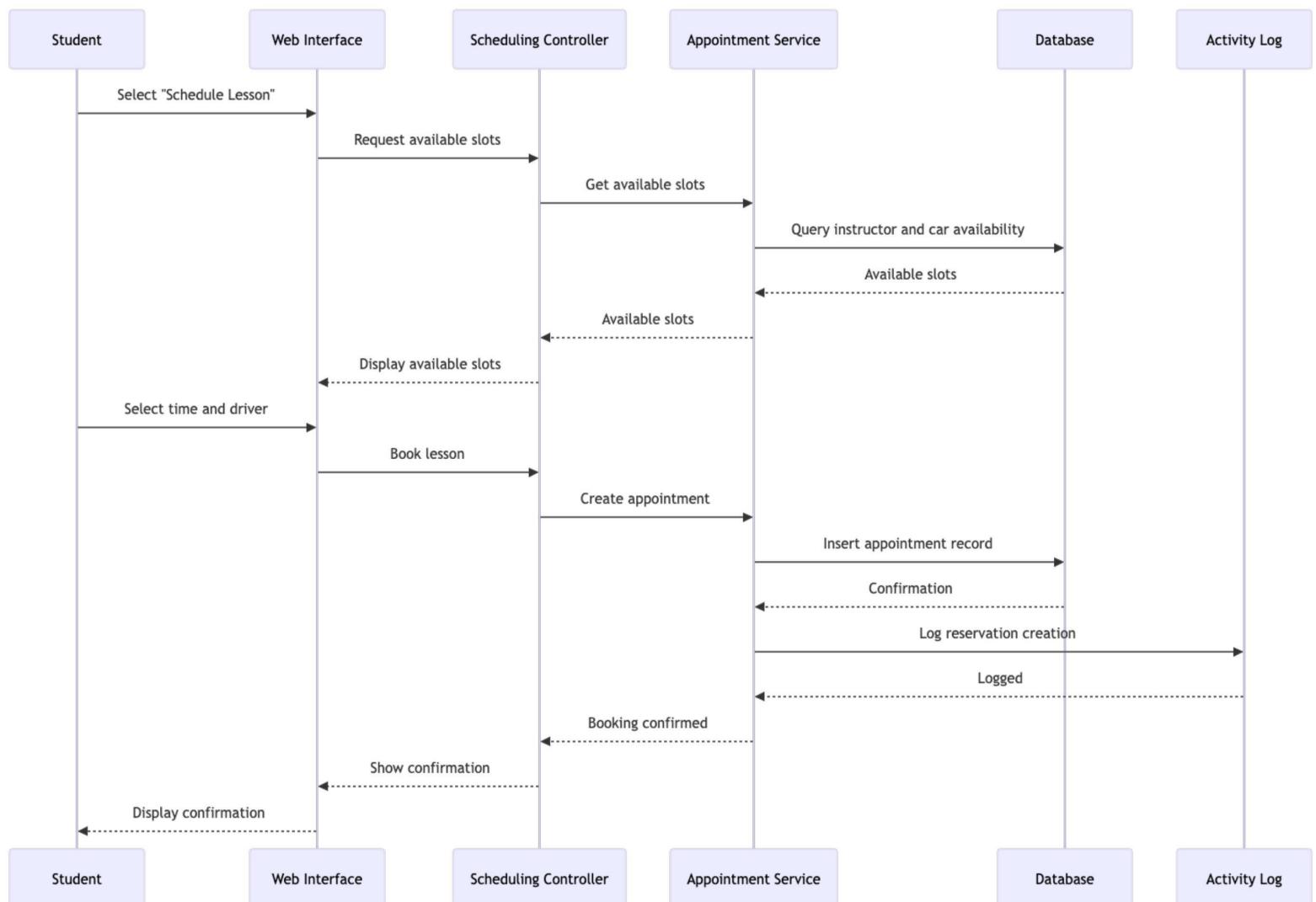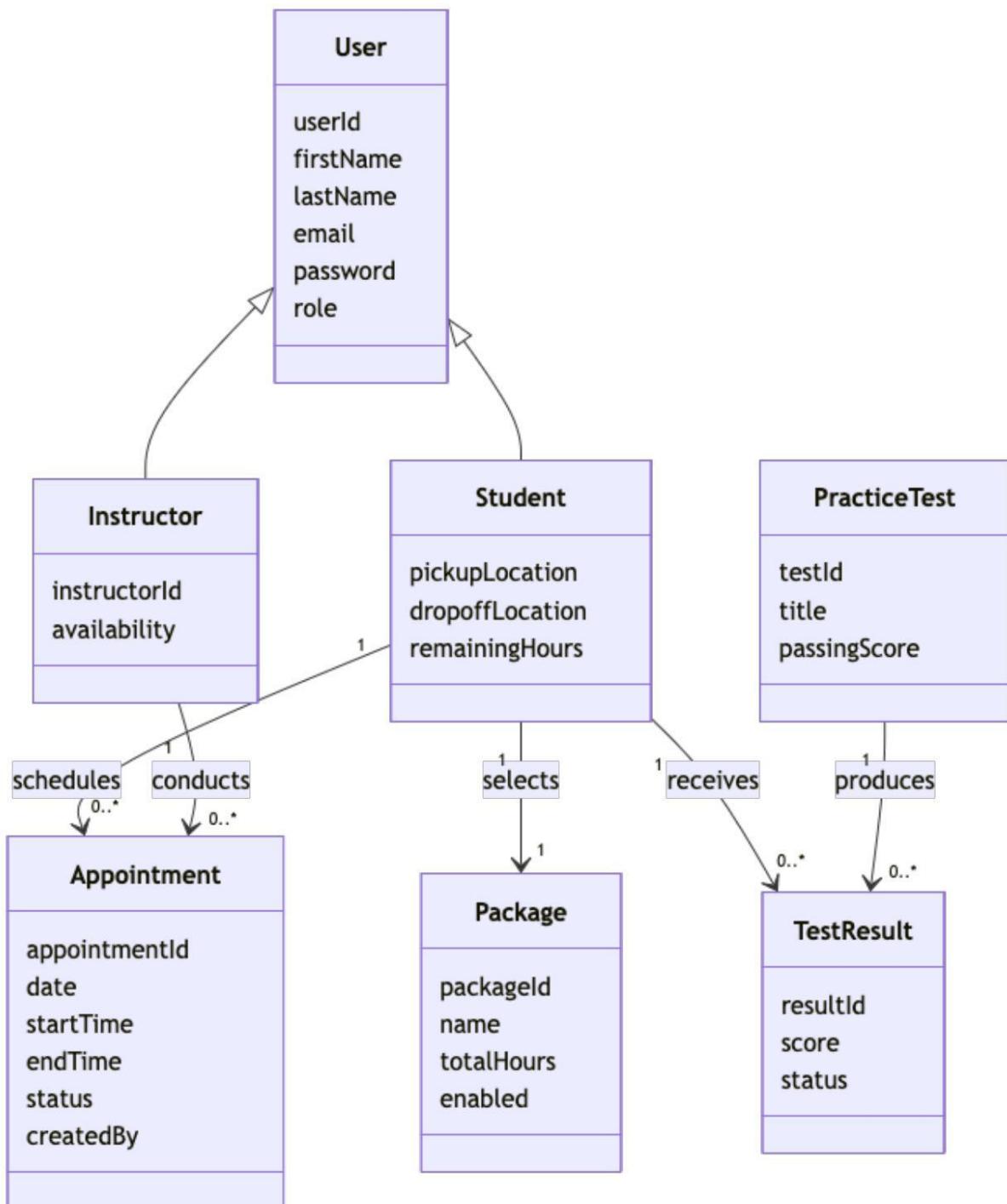
UML Sequence Diagram
Schedule Lesson

| Student | Web Interface | Scheduling Controller | Appointment Service | Database | Activity Log |

Student → Web Interface: Select "Schedule Lesson"

Web Interface → Scheduling Controller: Request available slots

Scheduling Controller → Appointment Service: Get available slots

Appointment Service → Database: Query instructor and car availability

Database ⇠ Appointment Service: Available slots

Appointment Service ⇠ Scheduling Controller: Available slots

Scheduling Controller ⇠ Web Interface: Display available slots

Student → Web Interface: Select time and driver

Web Interface → Scheduling Controller: Book lesson

Scheduling Controller → Appointment Service: Create appointment

Appointment Service → Database: Insert appointment record

Database ⇠ Appointment Service: Confirmation

Appointment Service → Activity Log: Log reservation creation

Activity Log ⇠ Appointment Service: Logged

Appointment Service ⇠ Scheduling Controller: Booking confirmed

Scheduling Controller ⇠ Web Interface: Show confirmation

Web Interface ⇠ Student: Display confirmation

4

UML Class Diagram

Technical Requirements

The DriverPass system will be a cloud-based, web-accessible application that allows users to access the system from any device with an internet connection. Hosting the system in the cloud reduces the need for DriverPass to manage server maintenance, security, and backups while providing reliable availability and scalability. Users will access the system through a standard web browser, and system data may only be created or modified while online to prevent data duplication.

The system will use cloud-hosted application and database services to manage user accounts, lesson scheduling, packages, practice tests, and reporting. A relational database will store system data, including appointments, test results, and audit logs. Role-based access control will ensure that students, staff, and administrators can only access information appropriate to their role, while the IT officer will have full administrative access to manage accounts and security.

All system communication will use secure HTTPS connections, and user credentials will be protected using secure authentication methods. The system will track and log scheduling actions, including who creates, modifies, or cancels reservations, and allow reports to be exported for review. The system will also support updates to practice test content from the DMV to ensure training materials remain current.