

## **CS 255 System Design Document**

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SNHU

CS: 255

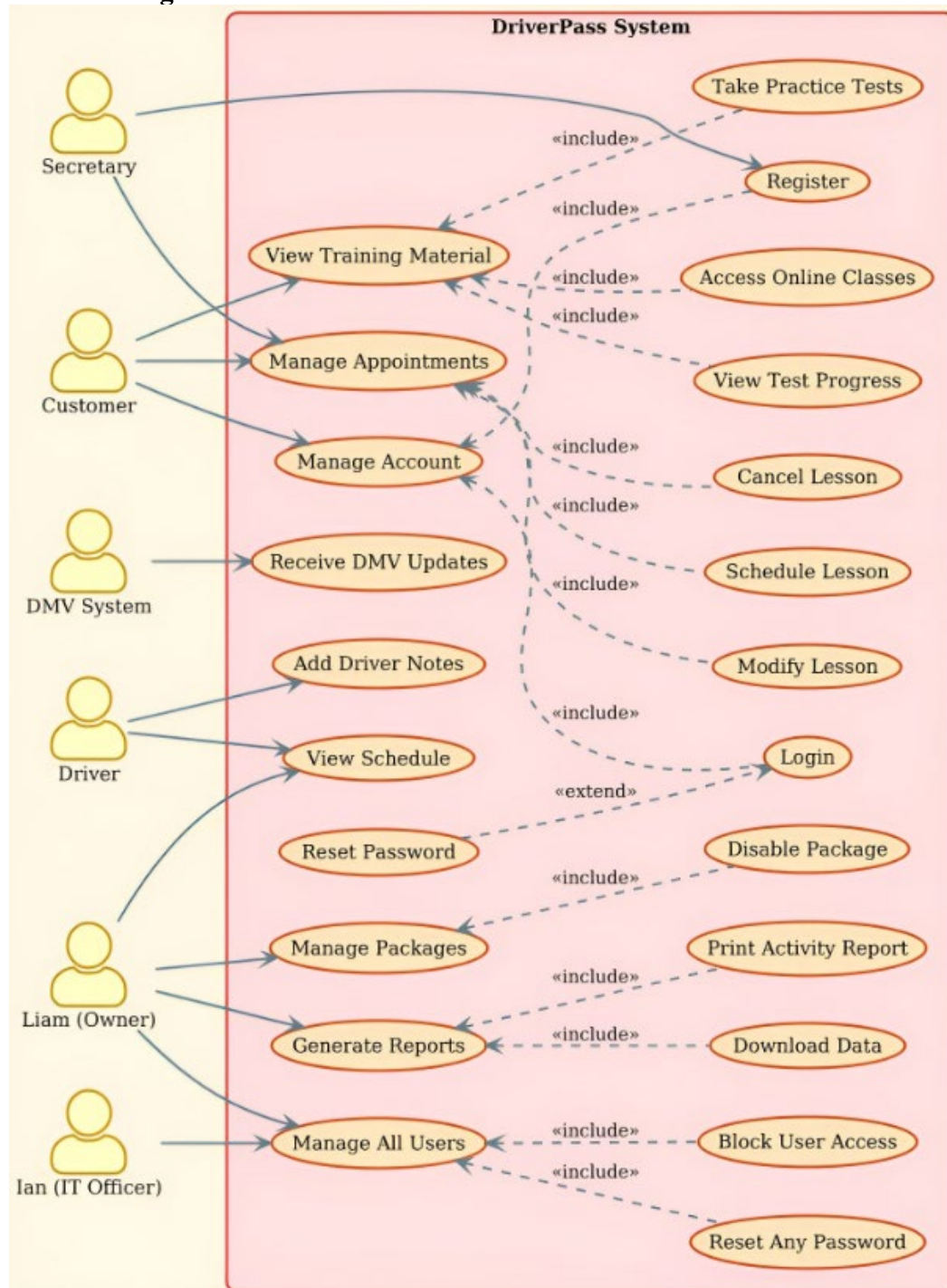
Professor Judy Mason

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## CS 255 System Design Document

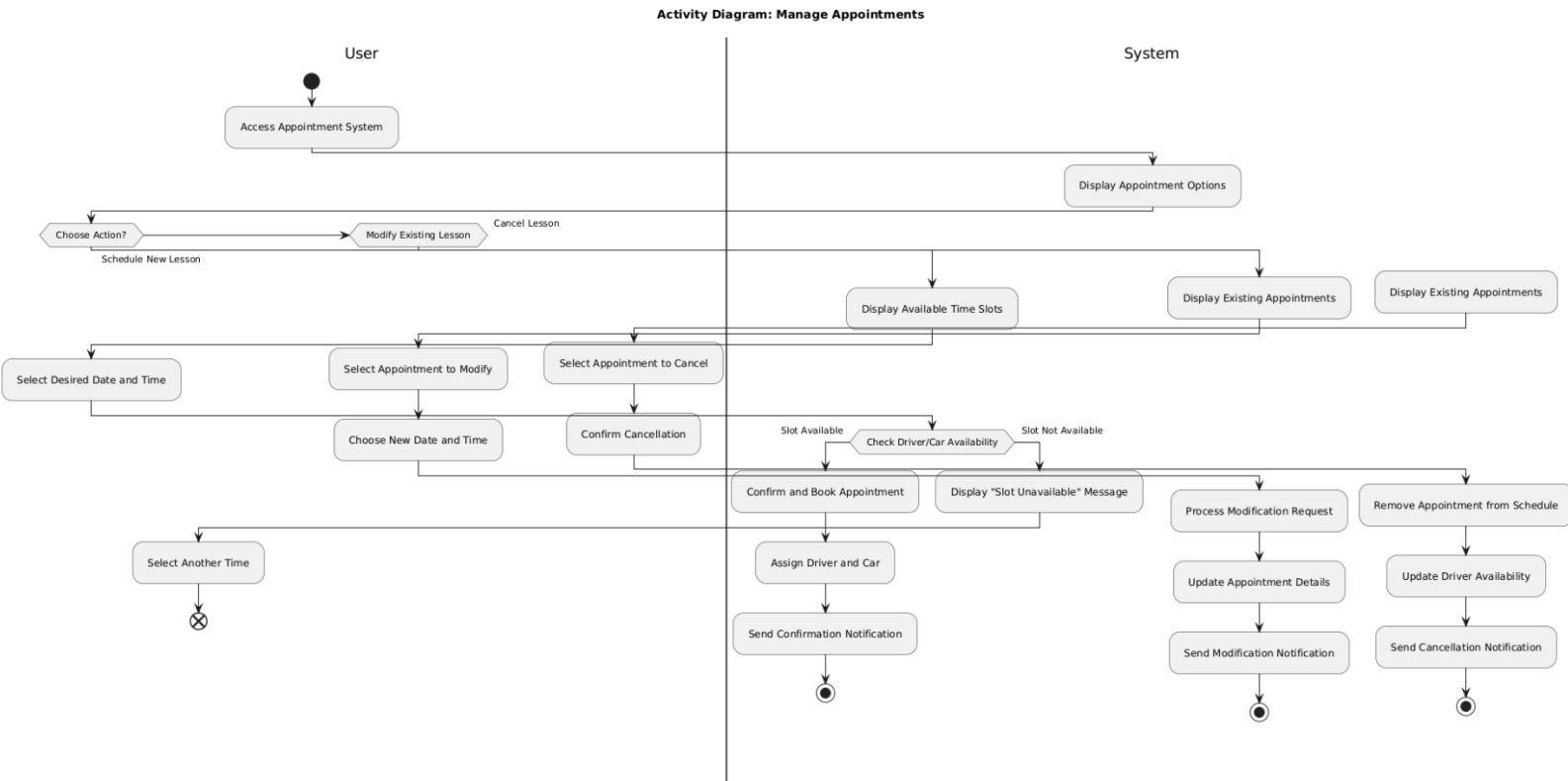
### UML Diagrams

#### UML Use Case Diagram



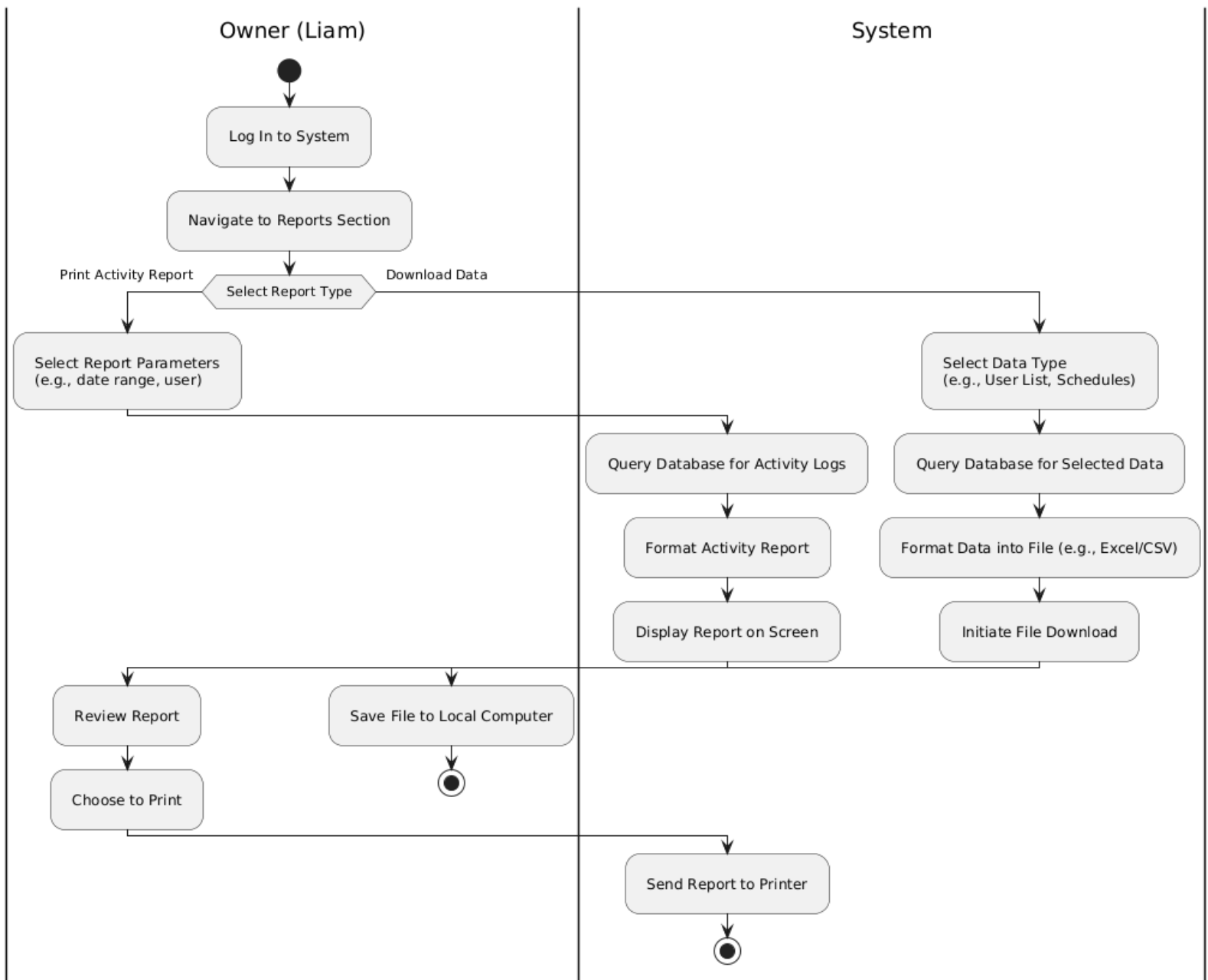
## UML Activity Diagrams

**Diagram 1: Manage Appointments**



**Diagram 2: Generate Reports**

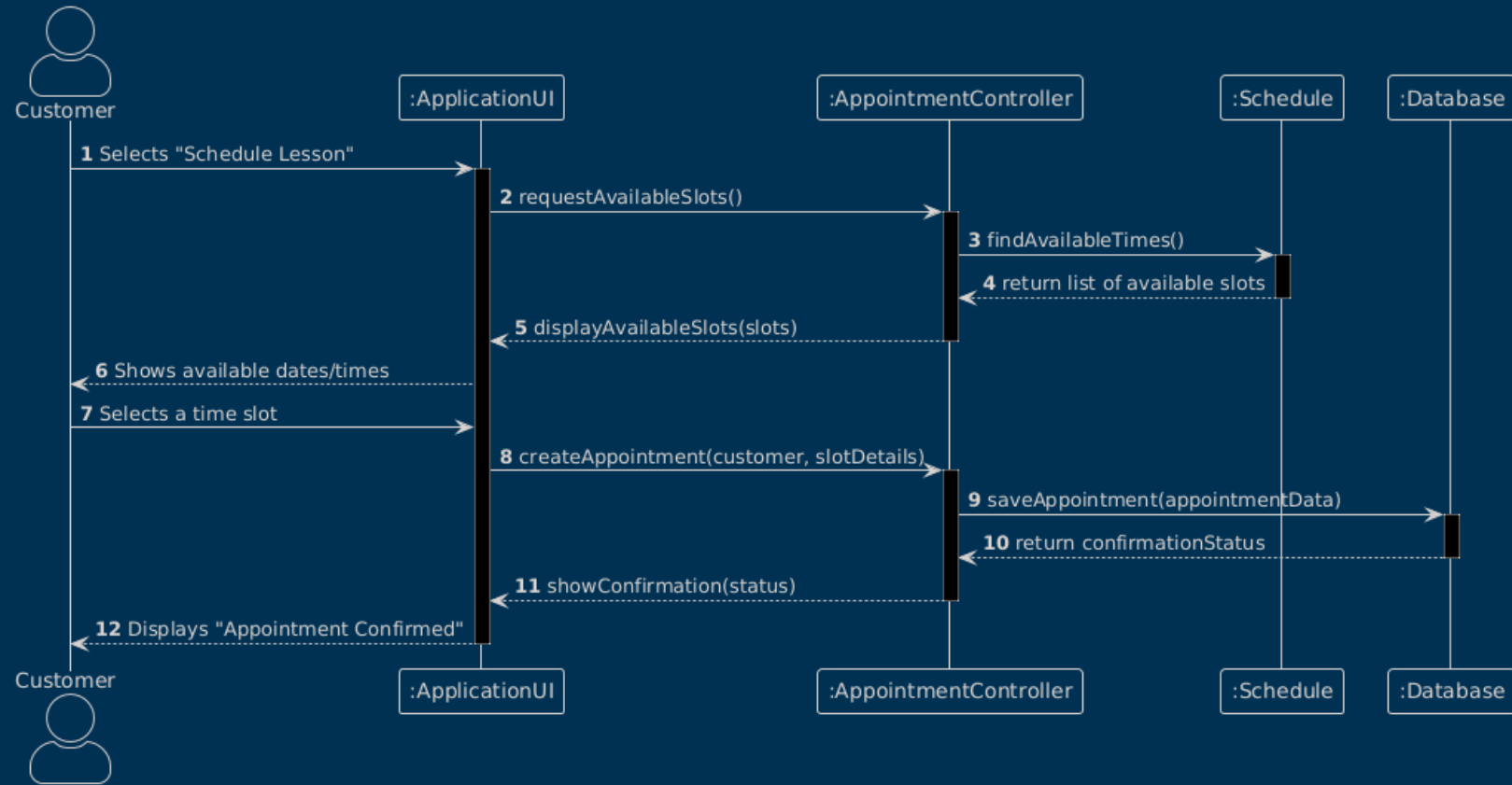
**Activity Diagram: Generate Reports**



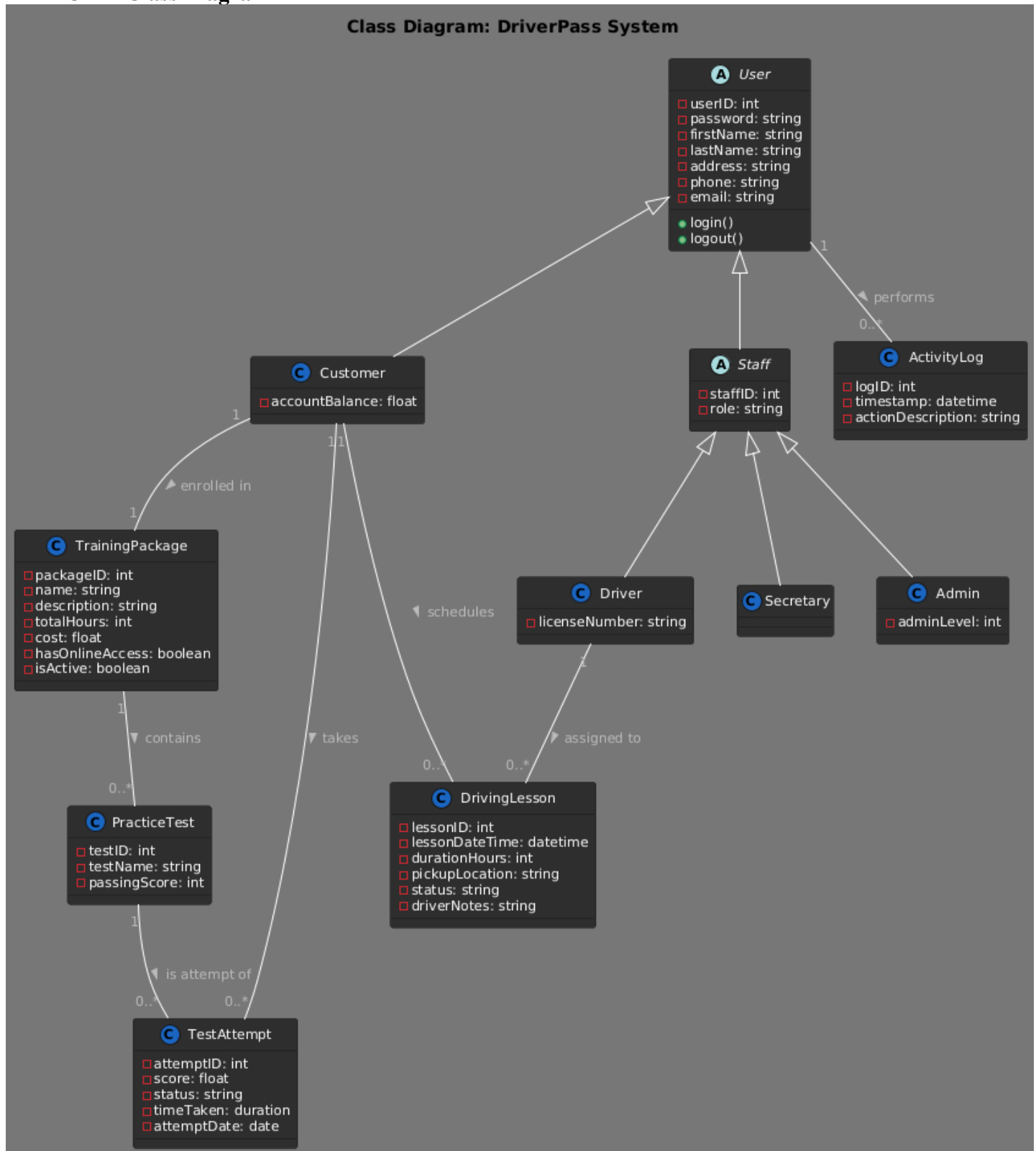
## UML Sequence Diagram

### Schedule a Lesson

#### Sequence Diagram: Schedule a Driving Lesson



## UML Class Diagram



## Technical Requirements

### Needs and Cloud Hosting Infrastructure

- According to the CEO's requests, the system will need components for:
  - User management with different roles for different people (Permission system).
  - Customer registration and profile editing.
  - Training package management (Enabling and disabling packages)
  - An online learning platform with courses and practice tests.
  - A scheduling system for booking, managing, and tracking in person driving lessons, including matching a driver with a student for car rides.
  - Reporting capabilities (Student progress or activity for instance).
  - Secure data management, specifically payment/personal information (Secure cloud integration)
  - Integration of a notification system for DMV updates to alter the courses as the DMV requirements change.
- DriverPass explicitly wants a web-based application hosted in the cloud to minimize their internal IT needs for maintenance, backup, and security. (Need to choose a cloud hosting service that can meet these needs).
  - A third-party cloud hosting service such as AWS, GCP, or Azure would be a solid choice here. This is a client specific choice that they will have to make, largely limited by cost (e.g., AWS Lambda/GCP Functions or the need for a full server will need to be decided on).
  - This system must have a third-party payment gateway for secure transactions from customers in order to process online/credit card transactions.

## Hardware

- There is no server-side hardware required whatsoever, this is offloaded to the cloud provider.
- There will be some client-side hardware, such as Liam's computer, or the Secretary, however users will access the platform via their own computer/device with their own internet connection. This is also an offloaded responsibility.

## Software

- Developers will be needed to make a custom web application. This application should be accessible from both mobile and desktop devices. A large framework will likely need to be chosen (e.g. Spring Framework, Boot, Cloud, Security, etc.).
- There must be a service that can make HTTP request/API calls to the DMV in order to fetch updates to their testing materials/requirements.
- There must be a system capability to generate custom reports for the owner to manage the system, Excel files or Google Sheets would be acceptable. A printable format is necessary.

## Tools

- CASE Tools are required during the design phase to create project plans and design diagrams to represent the system. These are a necessity for developers and system designers to properly build out all functional requirements.
- Standard development tools (version control like git, IDE/text editor, webapp framework, and testing frameworks) are a basic necessity to build the system.
- The chosen cloud provider will offer a suite of tools that will enable site management.