1. Introduction

1.1 Purpose

The purpose of this document is to specify the detailed functional and non-functional requirements for the JAMC project, an online educational platform designed to support personalized learning for students in Vietnam's high school system. This SRS outlines the system's capabilities, ensuring alignment between development and project goals for stakeholders, developers, and testers.

1.2 Scope

The JAMC project provides a platform that supports personalized learning experiences for students by enabling self-paced modules, interactive Q&A systems, and a credit-based engagement model. This system aims to address inefficiencies in traditional classrooms, such as repetitive lecture delivery and a lack of personalized student support.

1.3 Definitions, Acronyms, and Abbreviations

- **JAMC**: Just A Minor Change project
- **CRUD**: Create, Read, Update, Delete
- **UI**: User Interface
- **MVP**: Minimum Viable Product
- **OAuth**: Open Authorization standard for secure user authentication
- **Q&A**: Questions and Answers subsystem
- **Class**: Real classroom setting where teachers interact with enrolled students.
- **Module**: Packaged learning resources or materials that can be accessed independently, monetizable for students outside of the Class.

2. Overall Description

2.1 Product Perspective

- JAMC is designed as a standalone web-based platform to address inefficiencies in traditional classroom learning by integrating tools for personalized content delivery, interactive Q&A systems, and modular self-paced resources. Built using Next.js and a PostgreSQL database, JAMC leverages cloud services to ensure scalability and performance.

- While independent in its current iteration, future versions may integrate with existing school management systems or third-party learning tools. JAMC aims to enhance both teacher efficiency and student engagement by transitioning repetitive lecture content to video modules, freeing educators to focus on meaningful student interactions.

2.2 Product Features

- **Class Management**: Teachers create and manage real classes, track student progress, and provide feedback.
- **Module Access and Monetization**: Teachers create Modules as self-paced resources accessible to enrolled students and monetizable for others.

- **Q&A System**: Interactive Q&A enables students to ask questions, receive feedback, and engage based on individual needs.
- **Credit Points System**: Students earn credit points and badges for Q&A participation and completion of class and module tasks.

2.3 User Classes and Characteristics

- **Teacher**: Manages Classes and Modules, oversees student progress, and participates in Q&A.
- **Student**: Enrolls in Classes, accesses Modules, participates in Q&A, and earns engagement-based rewards.
- **Admin**: Oversees platform-wide settings, moderates Q&A content, and manages tags and flagged content.

2.4 Operating Environment

- **Frontend/Backend**: Next.js full stack framework
- **Database**: PostgreSQL
- **Deployment**: Cloud-based for scalability and performance

2.5 Design and Implementation Constraints

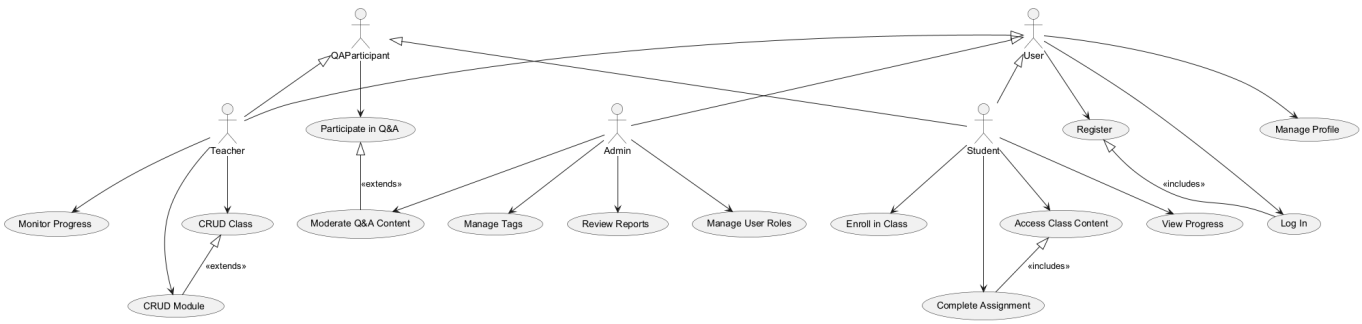
- **Next.js** for frontend/backend integration
- Compliance with **data privacy regulations** (e.g., GDPR) and **Vietnamese education system regulations**.
- Adapts to evolving educational content requirements

2.6 Assumptions and Dependencies

- Users will prefer OAuth for ease of registration; email is also supported.
- Teachers are familiar with digital tools for managing Classes and Modules.
- Platform relies on cloud infrastructure for high availability and scalability.

3. Functional Requirements

3.1 Use Case Diagram



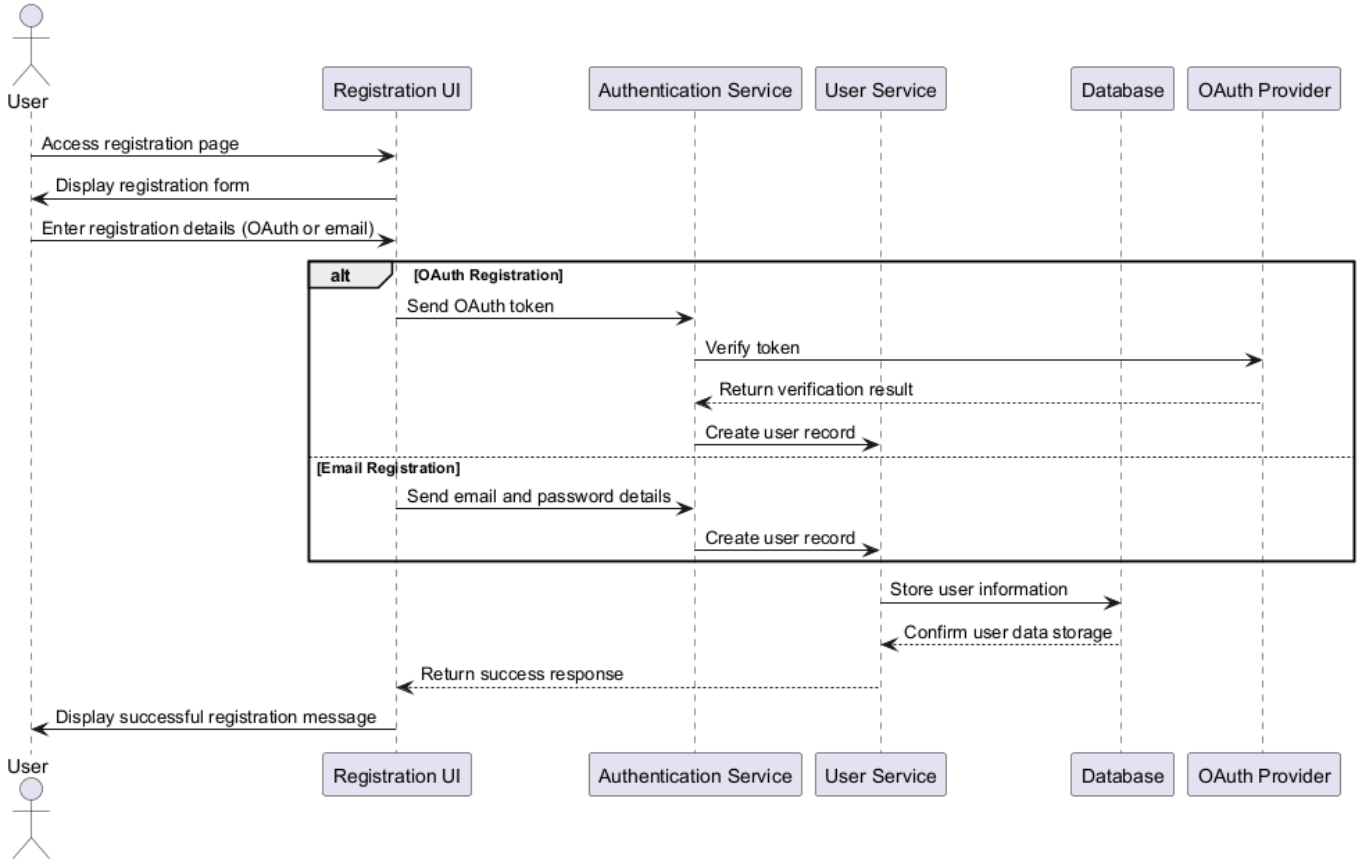
3.2 Core Functionalities

3.2.1 Registration

- **Actors**: Teacher, Student

- **Preconditions**: None
- **Description**: Users register using OAuth or email, with user roles defined during onboarding.
- **Postconditions**: Users have unique profile IDs.
- **Exceptions**: Errors for duplicate emails or OAuth failures.

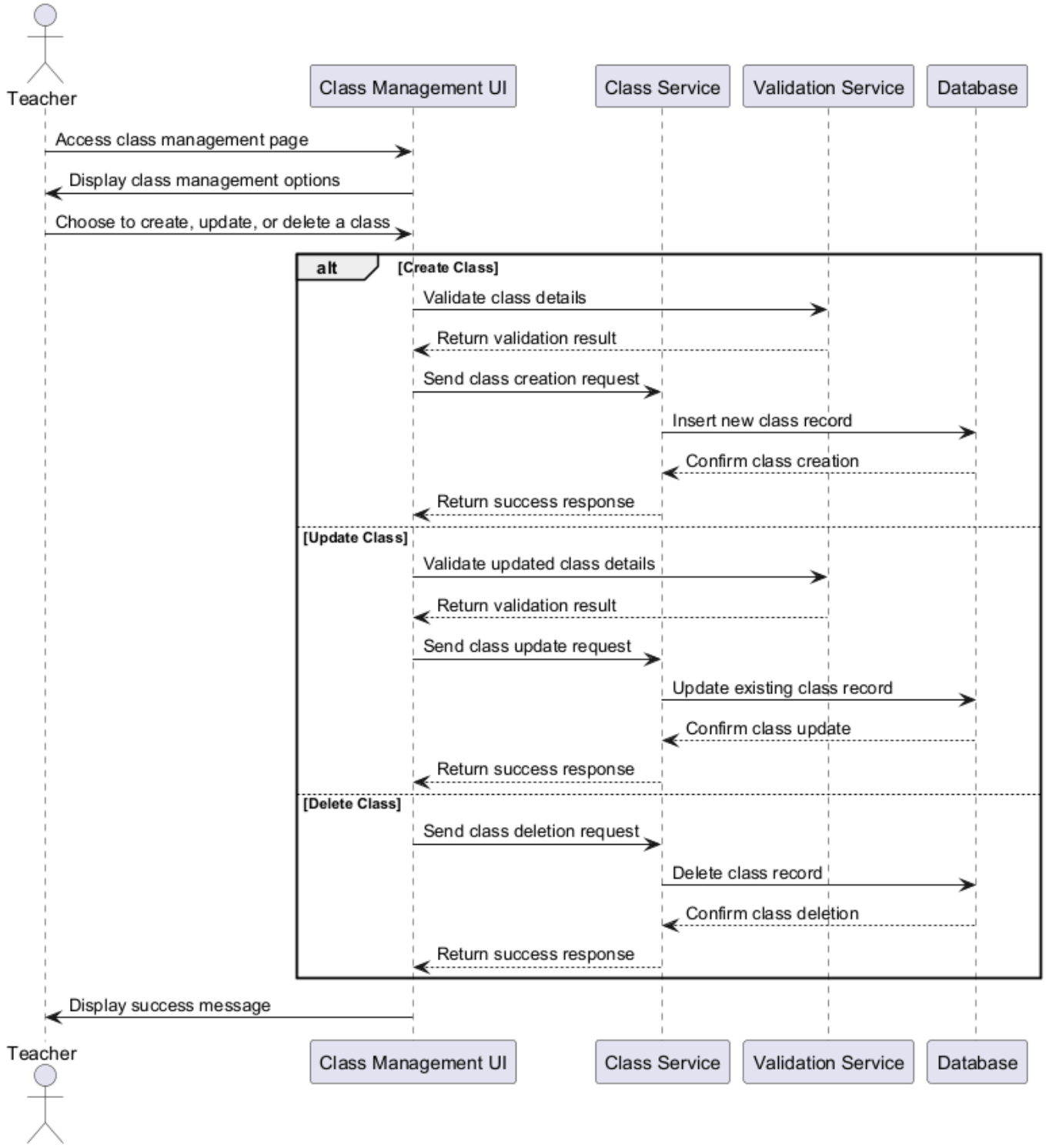
Sequence Diagram



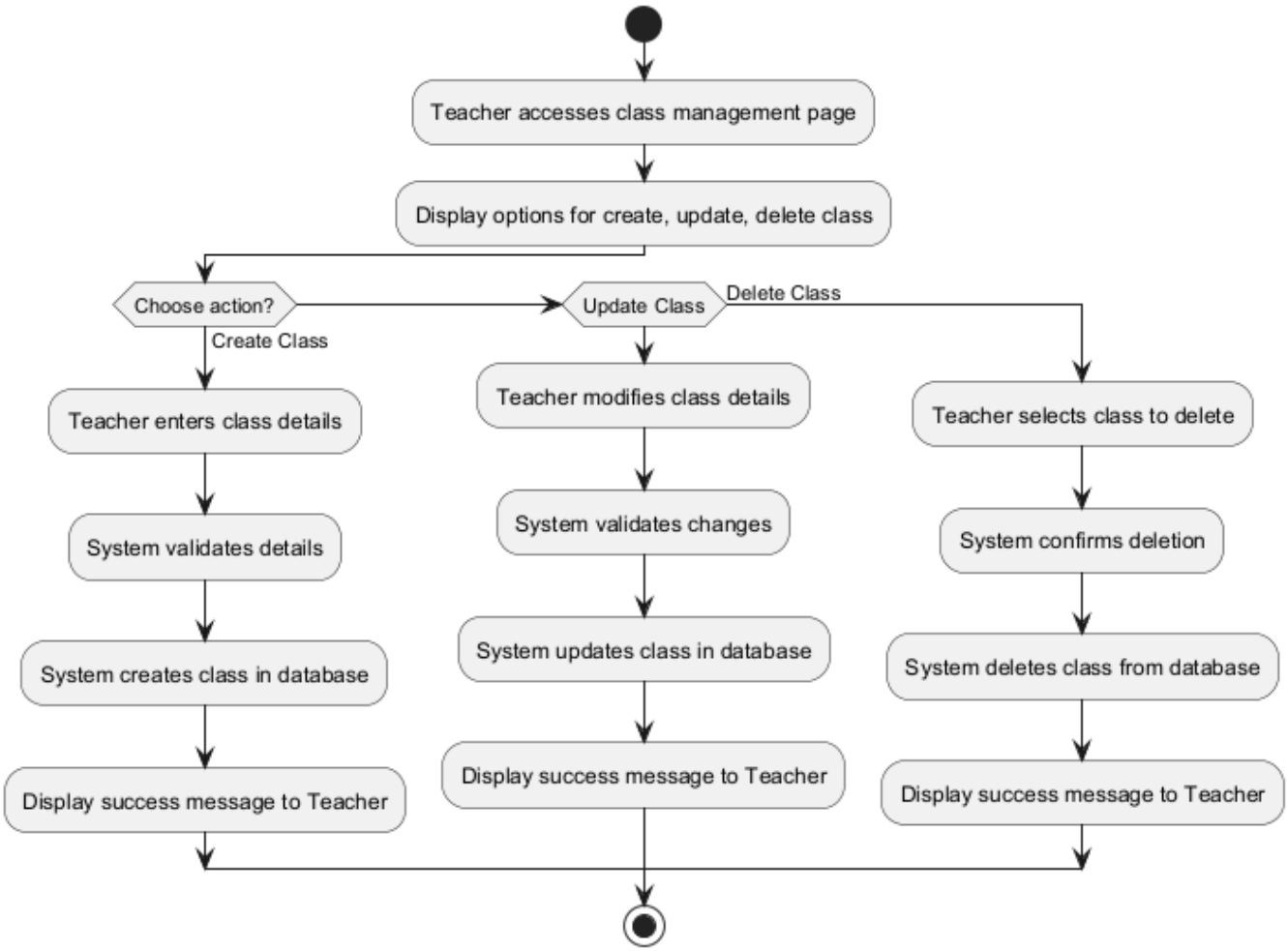
3.2.2 Class Management

- **Actors**: Teacher
- **Preconditions**: Teacher is authenticated.
- **Description**: Teachers create Classes with names, schedules, and objectives. Students enroll based on class codes or invitations.
- **Postconditions**: Class is available for enrollment.
- **Exceptions**: Validation errors for incomplete Class details.

Sequence Diagram



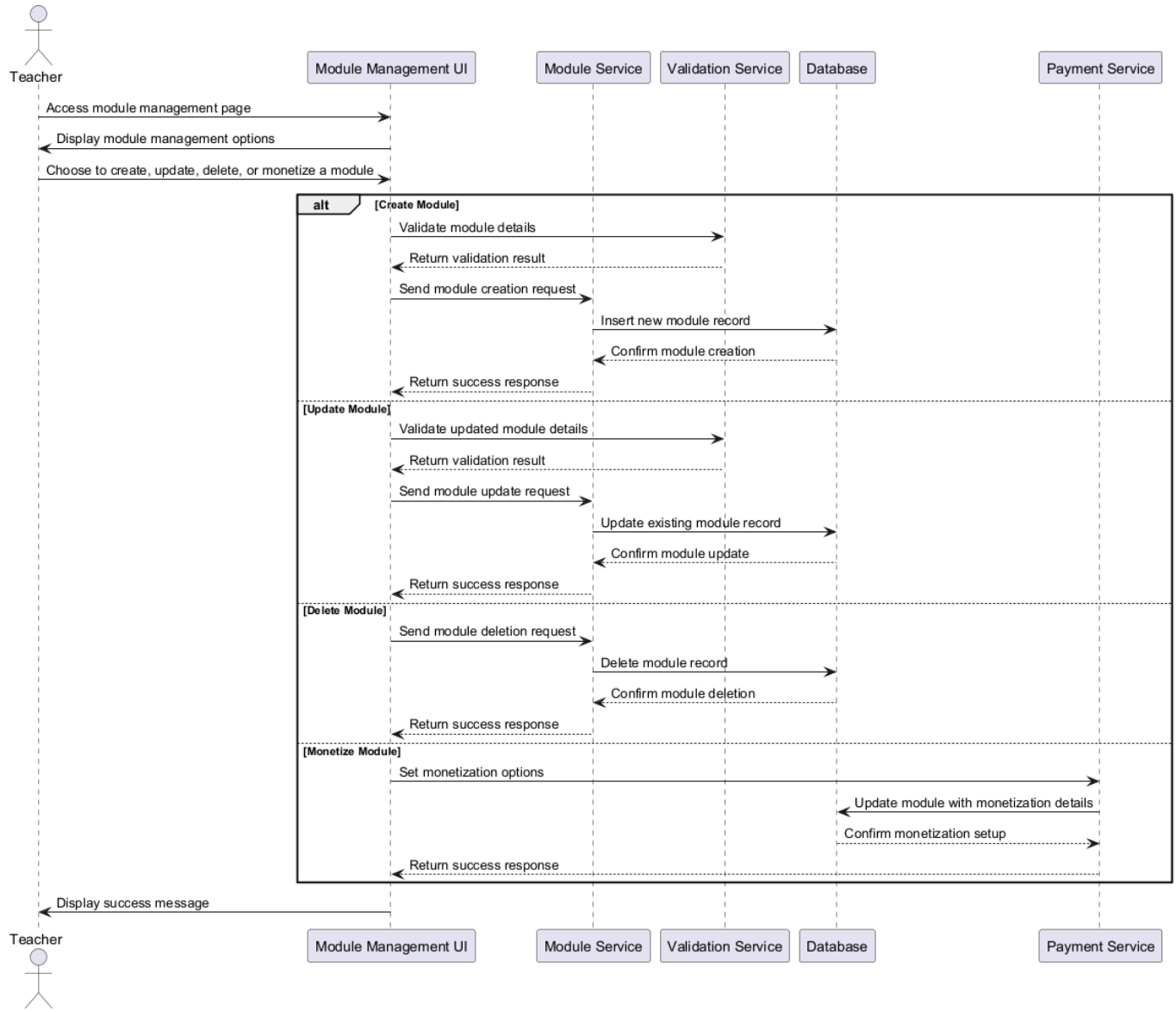
Activity Diagram



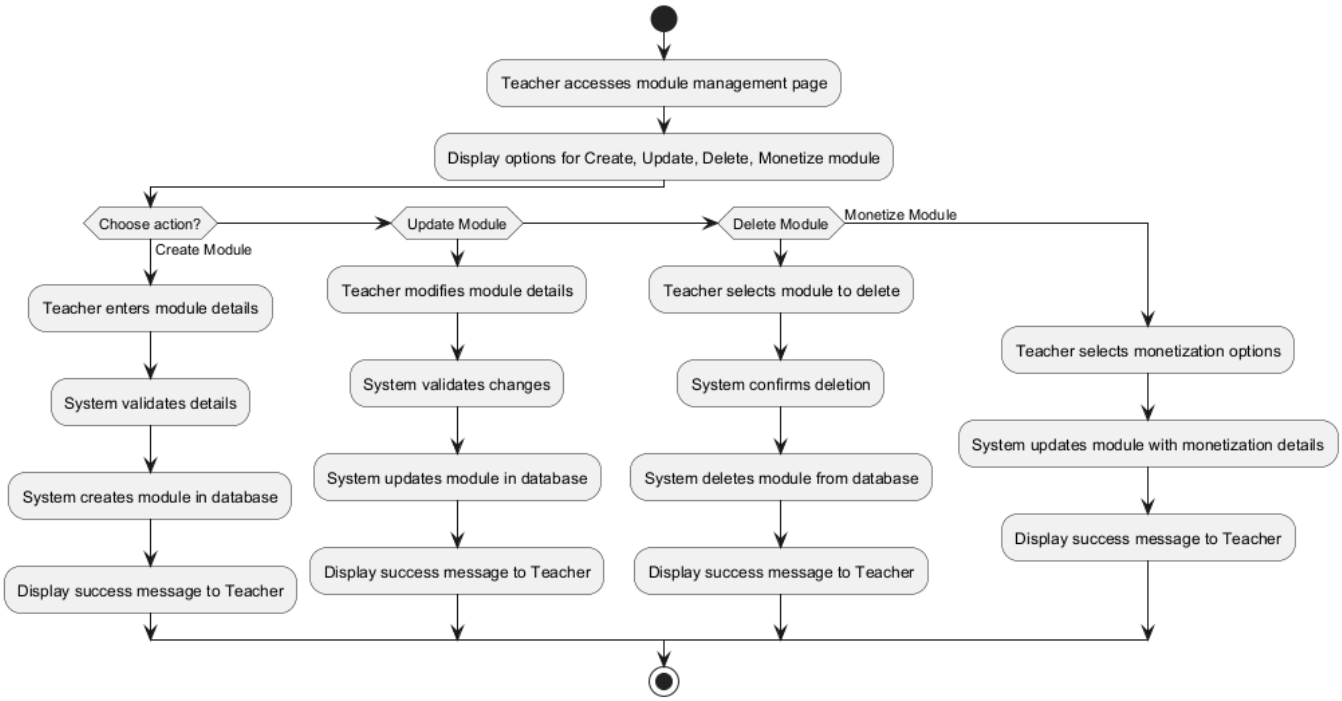
3.2.3 Module Management

- **Actors**: Teacher
- **Preconditions**: Teacher is authenticated.
- **Description**: Teachers create Modules with resources like videos, quizzes, and documents. They can set Modules as free or monetized for students outside the Class.
- **Postconditions**: Modules are accessible for enrolled students and visible for purchase if monetized.
- **Exceptions**: Upload errors or incomplete resource details.

Sequence Diagram



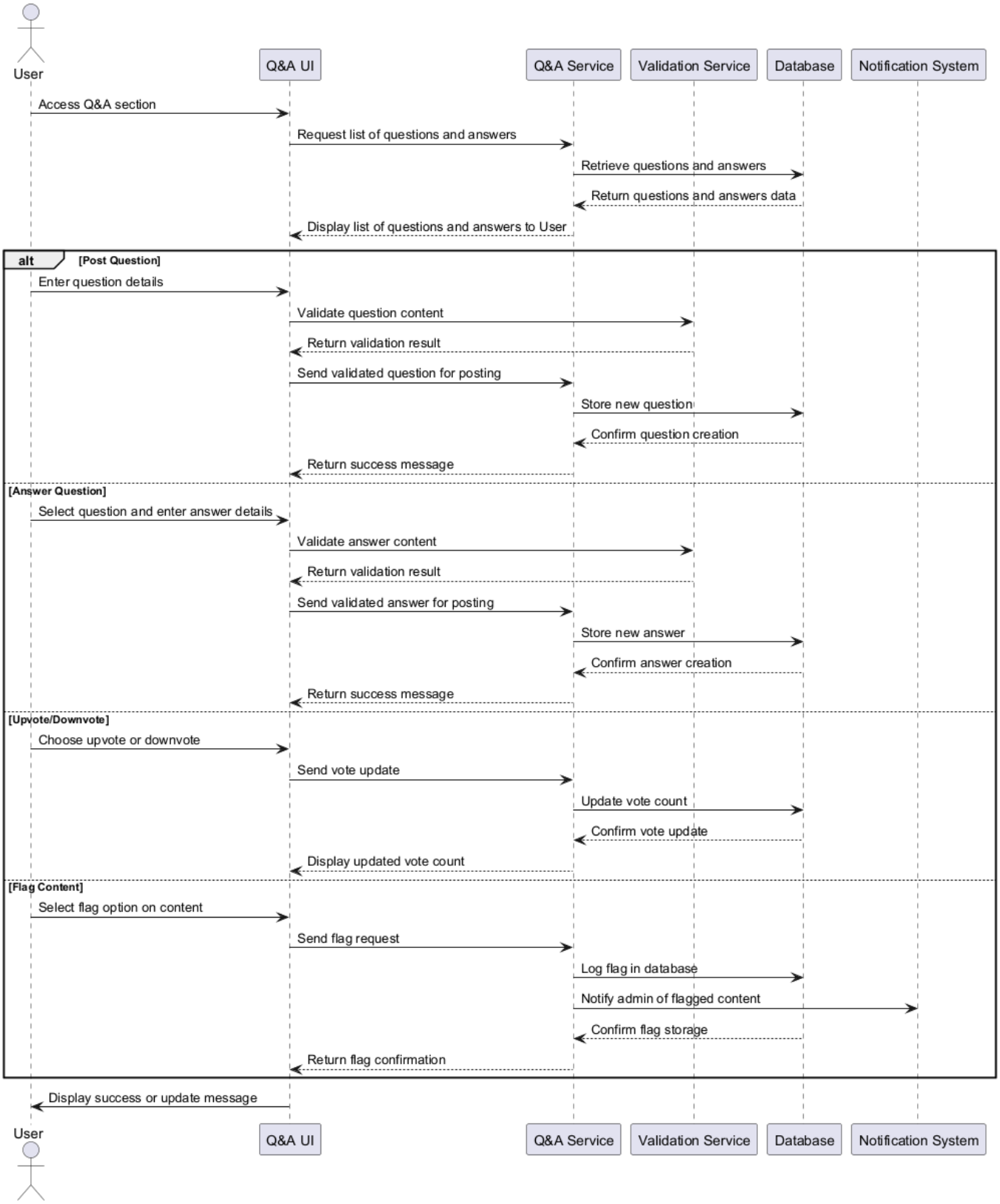
Activity Diagram



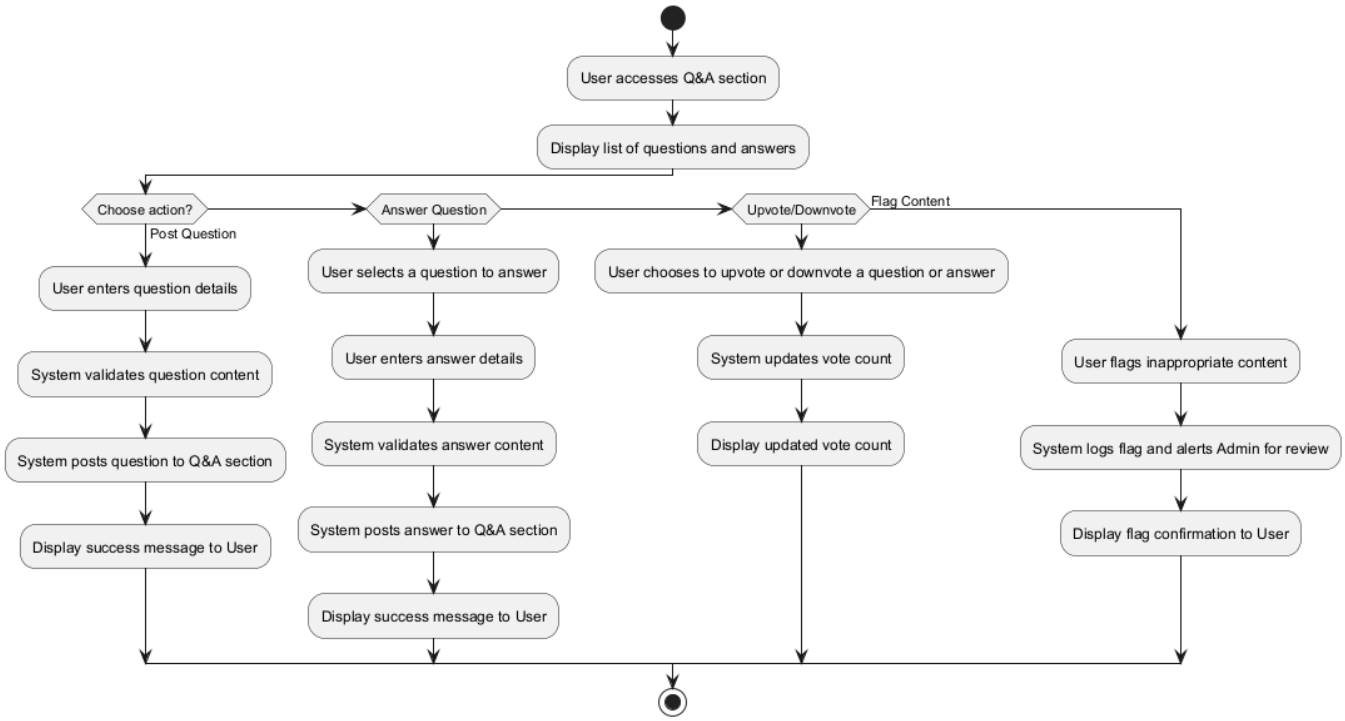
3.2.4 Q&A Participation

- **Actors**: Student, Teacher
- **Preconditions**: Users are authenticated and enrolled in a Class.
- **Description**: Students ask questions in Q&A. Teachers can answer, upvote, or downvote, with visibility controls (public/private).
- **Postconditions**: Q&A is updated with new questions or answers.
- **Exceptions**: Content flagged for moderation.

Sequence Diagram



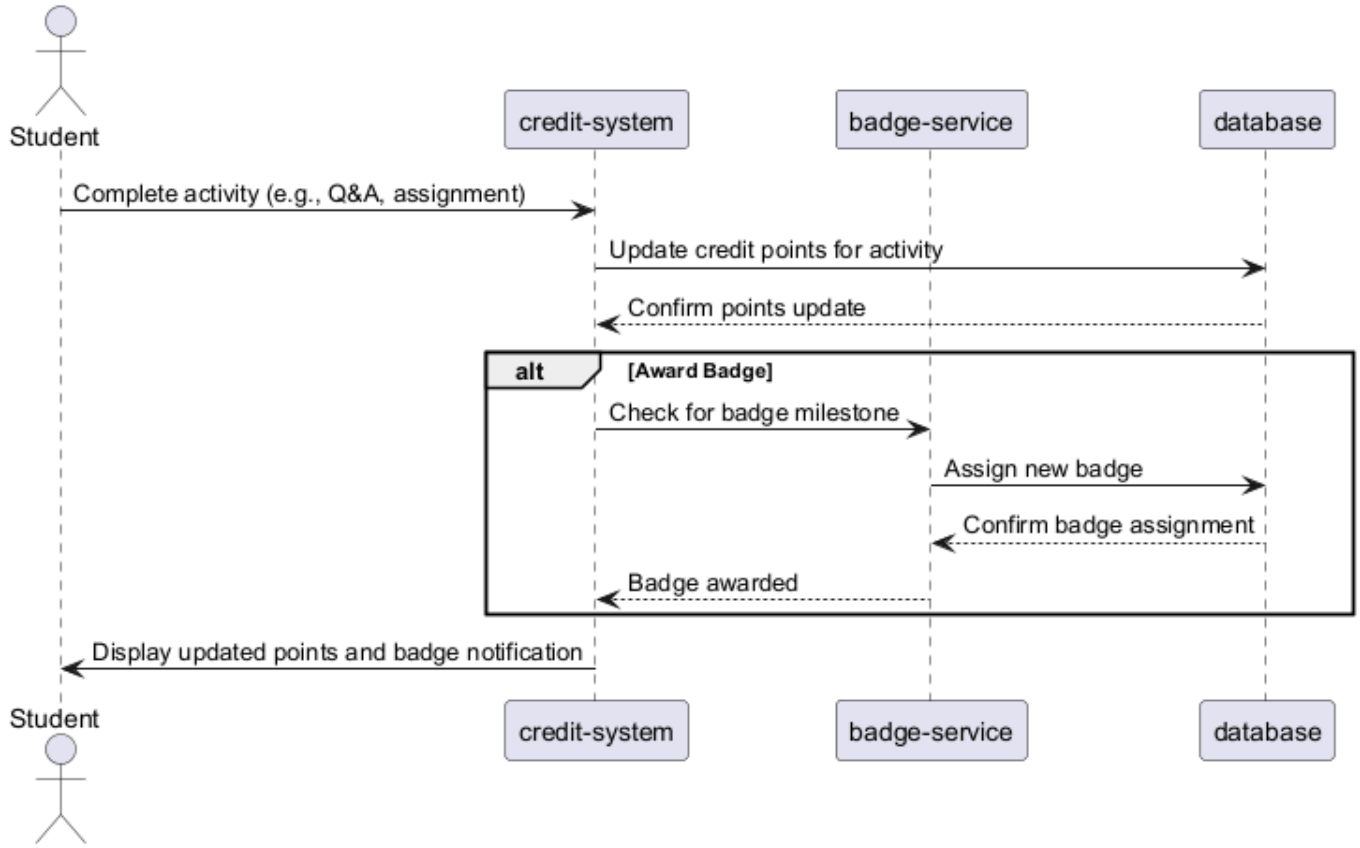
Activity Diagram



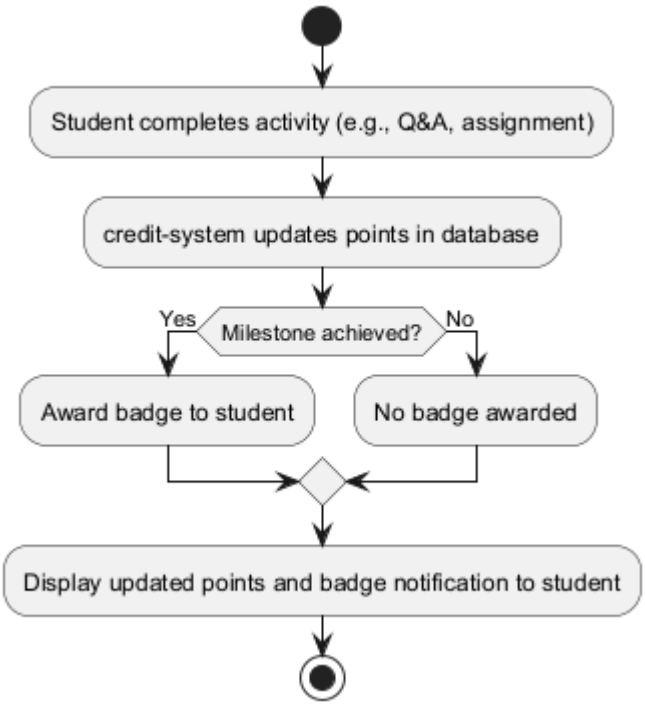
3.2.5 Credit Points and Badge System

- **Actors**: Student
- **Preconditions**: Student is enrolled in a Class or Module.
- **Description**: Students earn credit points for participation in Q&A, completing Modules, and other activities.
- **Postconditions**: Credit points and badges are updated on the student's profile.
- **Exceptions**: Points deducted for downvotes or inappropriate activity.

Sequence Diagram



Activity Diagram

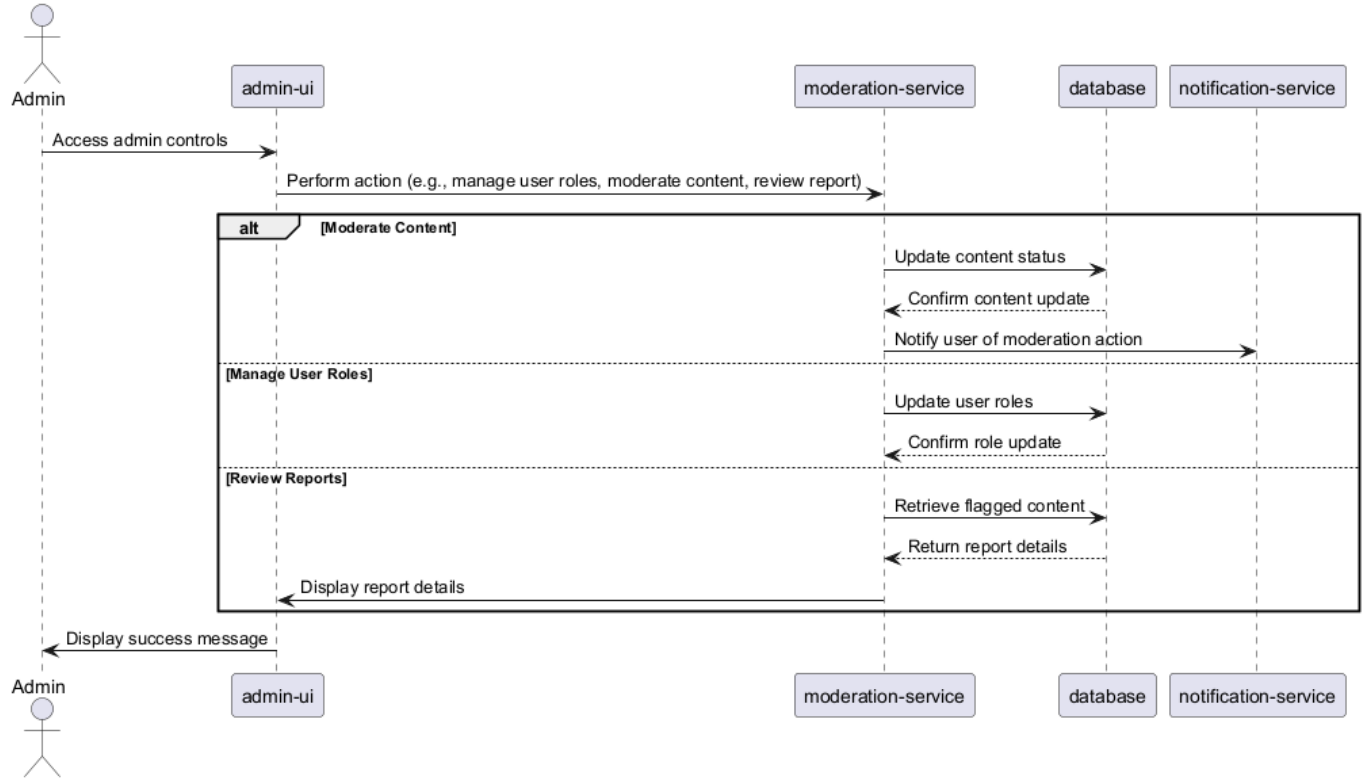


3.2.6 Admin Controls

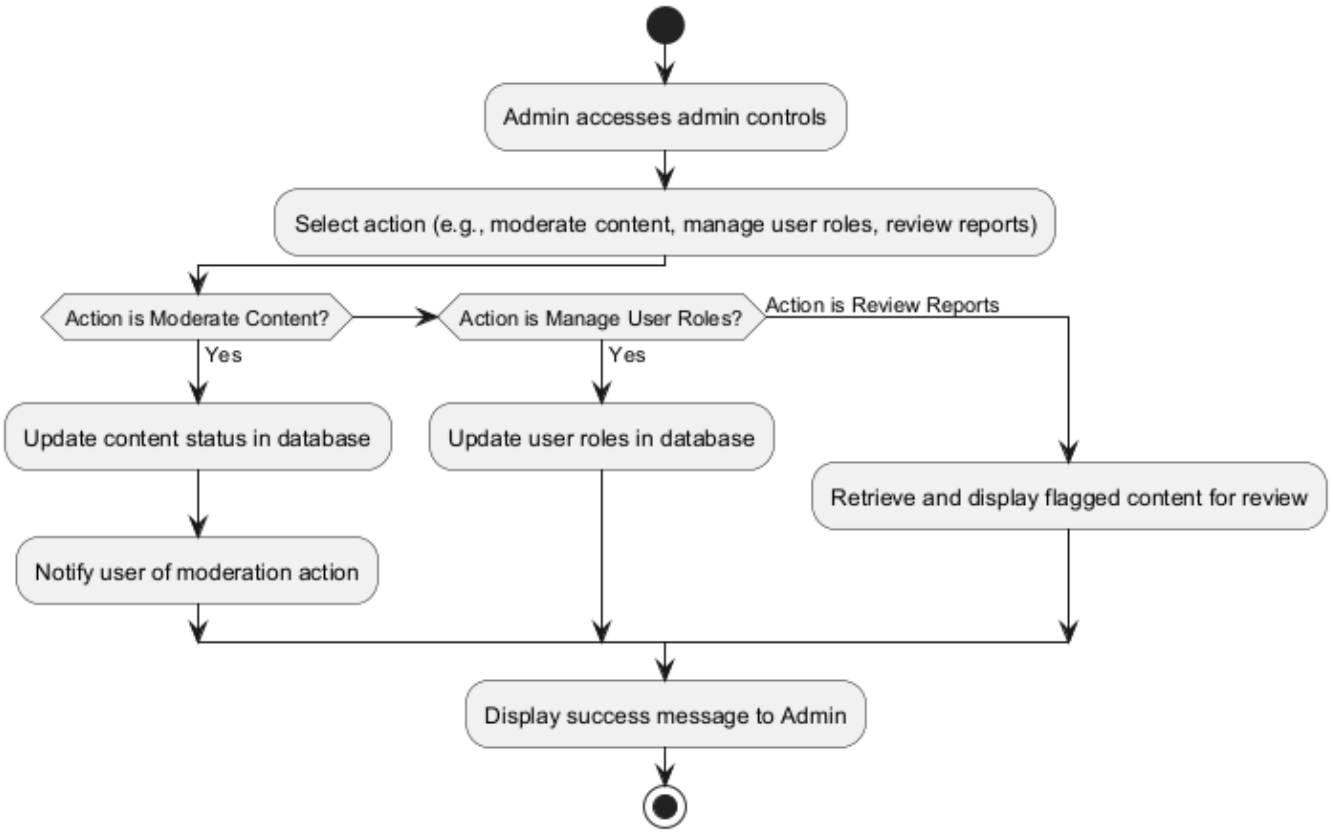
- **Actors**: Admin
- **Preconditions**: Admin is authenticated.
- **Description**: Admins manage platform-wide settings, moderate flagged Q&A content, and control tag creation.

- **Postconditions**: Platform quality is maintained with consistent moderation.
- **Exceptions**: Permissions errors or flagged content remains unresolved.

Sequence Diagram



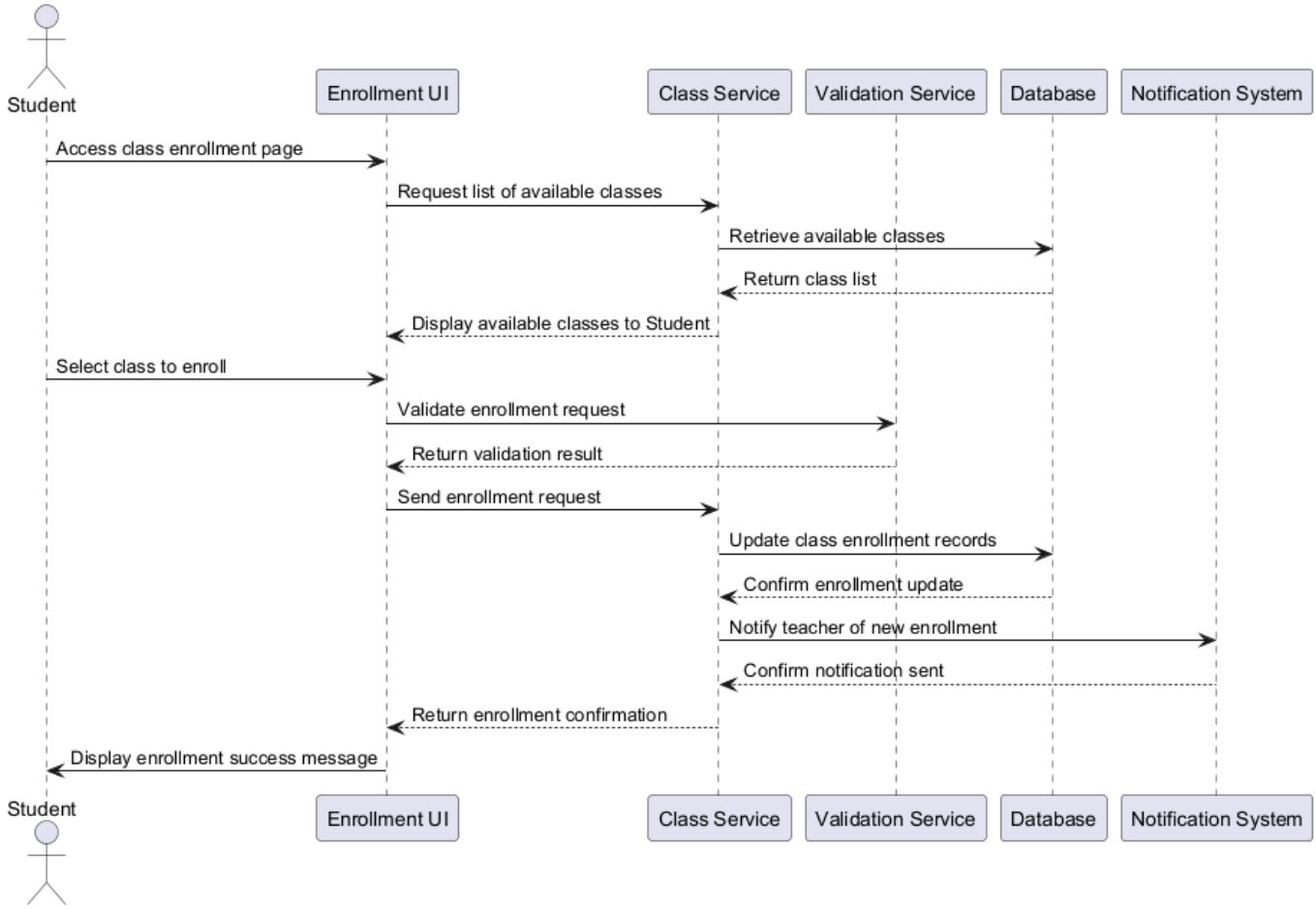
Activity Diagram



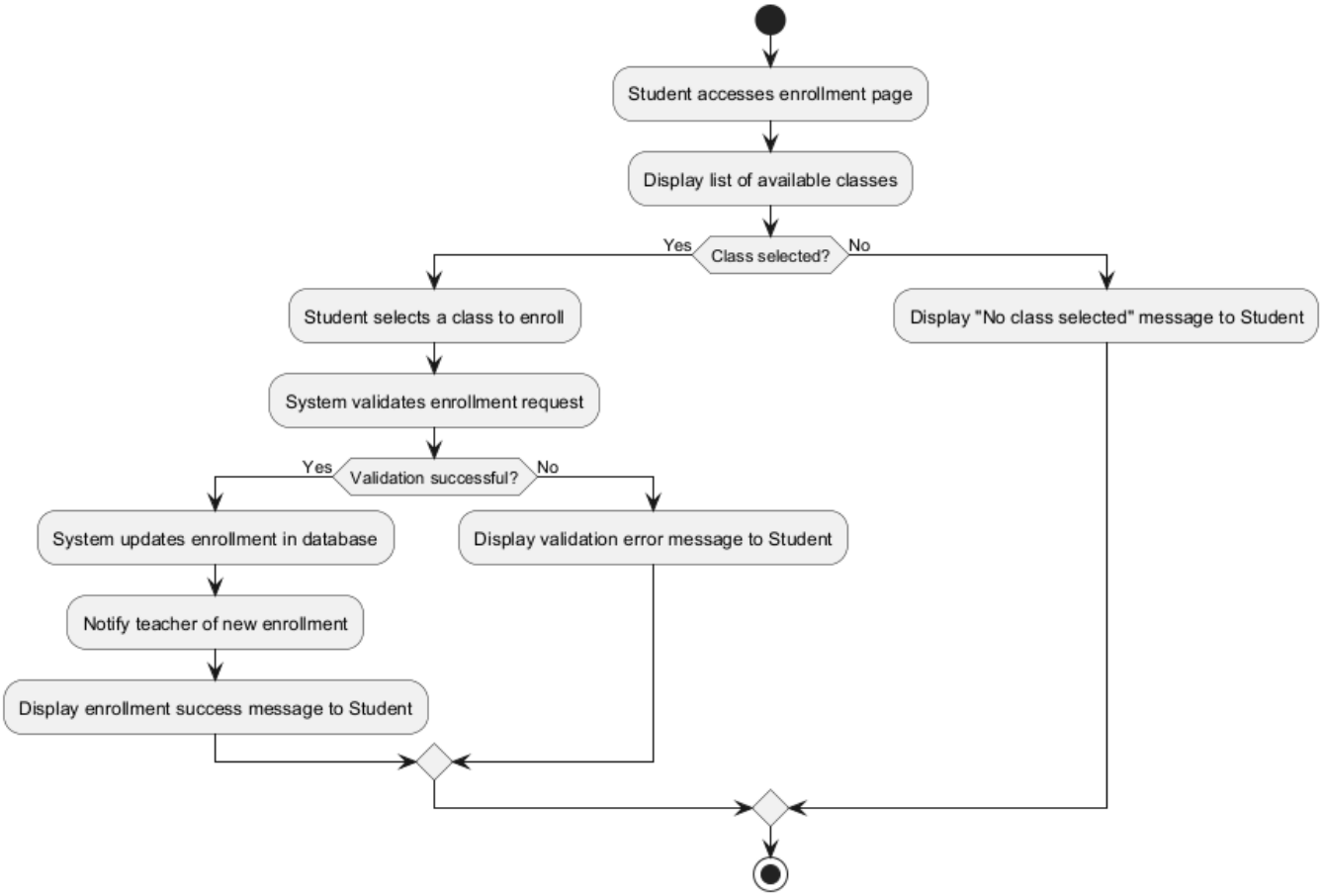
3.2.7 Class Enrollment

- **Actors**: Student, Teacher
- **Preconditions**: Student is registered and logged in.
- **Description**: Students enroll in available classes created by teachers. The system verifies the enrollment request, updates the student's enrollment status in the database, and notifies the teacher of the new enrollment.
- **Postconditions**: Student is added to the selected class, and the teacher receives a notification of the enrollment.
- **Exceptions**: Validation fails if the student does not meet the enrollment criteria or if the class is full.

Sequence Diagram



Activity Diagram



4. Non-Functional Requirements

4.1 Performance

- Ensure smooth concurrent access with minimal latency, especially during school hours.

4.2 Security

- OAuth preferred for authentication.
- TLS encryption for sensitive data transfers.
- Role-based access control (RBAC) across API endpoints.

4.3 Usability

- User-friendly interface with accessibility support for various digital literacy levels.

4.4 Reliability

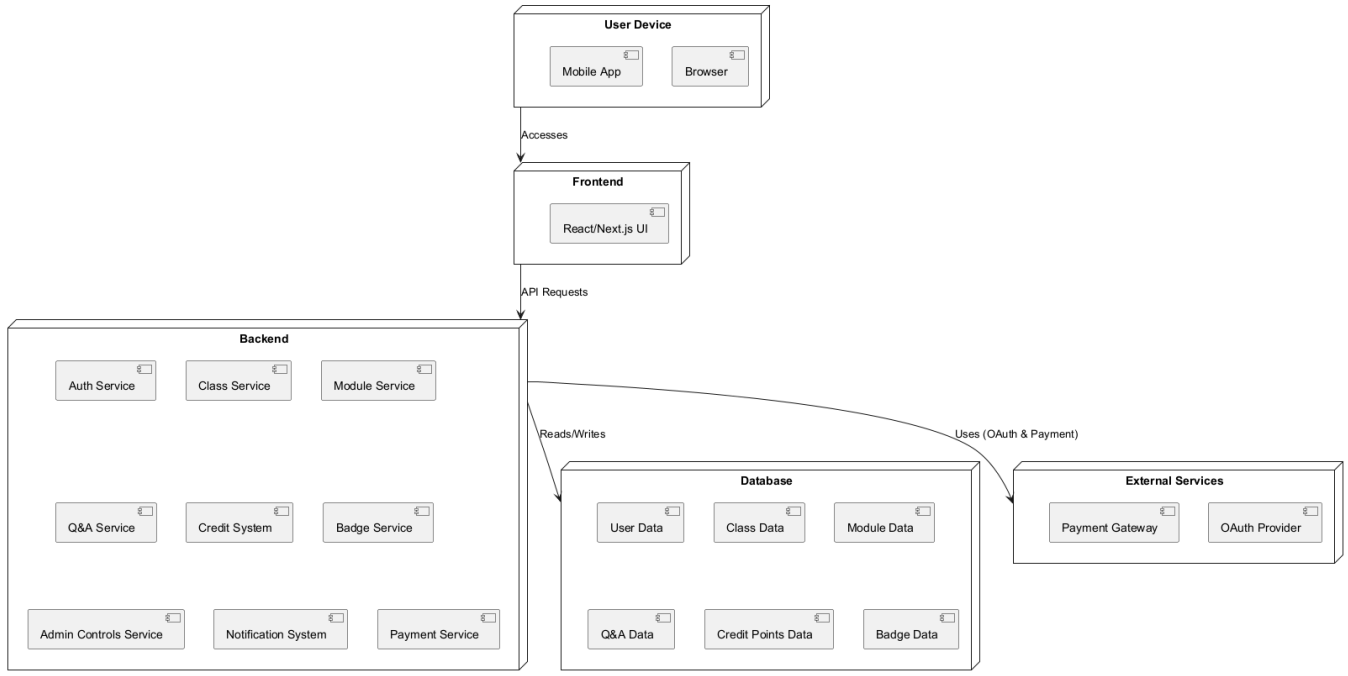
- High availability (99.5% uptime) with regular data backups.

4.5 Supportability

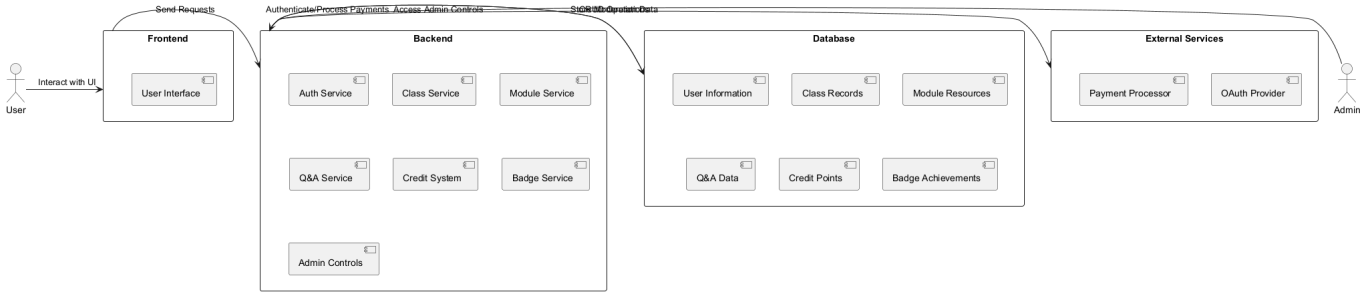
- Optimized for major browsers and mobile devices, with maintainable codebase.

5. System Diagrams

5.1 System Architecture Diagram



5.2 Data Flow Diagram (DFD)



6. Other Requirements

6.1 Data Privacy & Localization

- Compliance with Vietnamese data protection laws and GDPR.
- Dual-language support (Vietnamese, English).

6.2 User Incentives

- **Credit Points**: Rewarded for engagement in Q&A and Module completion.
- **Badges**: Awarded for milestones in participation and achievements.

7. Appendices

7.1 Glossary

- **OAuth**: Authentication using third-party accounts.
- **Q&A**: Subsystem for question and answer interactions.
- **Class**: Real classroom setting where students interact with teachers.
- **Module**: Packaged learning materials accessible to students outside a class setting.