



EDUKE

Academic Performance Prediction System with AI

A web-based AI-powered platform designed to track student performance, enhance communication, and provide predictive insights. By analyzing academic data, Eduke helps teachers and parents support students effectively, ensuring better learning outcomes.

SAIN SABURAJ
MCA 23



EDUKE

ENGAGE, EDUCATE, EVOLVE



Introduction to EDUKE

Eduke is an **AI-powered academic performance prediction and management system** designed to enhance the learning experience for students, teachers, and parents. By analyzing key academic metrics such as attendance, marks, and student behavior, Eduke provides data-driven insights to predict performance trends. The platform incorporates **AI-Based Performance Prediction** to assess student progress, an **Automated Grading System** to streamline quiz and assessment evaluations, and an **Advanced AI Chatbot** for academic guidance and query resolution. Additionally, Eduke features **Auto-Generated Reports** for attendance and performance tracking and an **Adaptive Learning System** that offers personalized study recommendations. With seamless communication between students, teachers, and parents, Eduke aims to revolutionize how educational institutions monitor and improve student success.



Users of EDUKE



ADMIN

Manages the system, adds and oversees classes and teachers, and ensures smooth operation of the platform.



CLASS HEAD

Acts as the primary teacher for a class, manages student records, assigns subjects, and communicates with students and parents.



SUBJECT HEAD

Handles subject-specific activities, including assessments, study materials, and direct communication with students.



STUDENT

Accesses study materials, submits assignments, participates in quizzes, and communicates with teachers for academic guidance.



PARENT

Monitors the student's academic progress, attendance, and performance while staying connected with teachers for updates.



Users of EDUKE

Admin

The Admin is the highest authority in the Eduke system, responsible for managing the platform, ensuring smooth operations, and overseeing all user roles. This role is typically held by the head of an institution, which maintains control over the academic structure.

- **User Management:** Adds, updates, and removes class heads (teachers) to ensure proper faculty distribution.
- **Class Management:** Creates and manages class structures, and maintains an organized curriculum.
- **System Monitoring:** Ensures the platform runs smoothly, resolving technical issues and maintaining security.
- **Data Oversight:** Keeps track of academic records, teacher assignments, and institutional-level analytics.



Users of EDUKE

Class Head

The Class Head is responsible for managing a specific class, overseeing students, and ensuring a structured learning environment. They act as the bridge between students, parents, and subject heads.

- **Student Management:** Adds, updates, and removes student records, ensuring accurate academic data.
- **Academic Oversight:** Adds subjects and subject heads, monitors their progress, and ensures proper curriculum delivery.
- **Study Material Management:** Updates the students with latest news and announcements
- **Communication:** Maintains direct communication with students, parents and subject teachers of the class through Eduke Chat.



Users of EDUKE

Subject Head

The Subject Head specializes in managing subject-related academic activities and ensuring that students receive quality education in their respective subjects.

- **Content Management:** Uploads, study materials for students with important subject wise announcements.
- **Student Support & Communication:** Addresses students, communicate with parents, class head and other subject heads of the class through Eduke Chat.
- **Assessments & Evaluations:** Conducts quizzes, evaluates student performance, and takes attendance, uploads examination marks, etc.
- **Observation & Evaluation:** Provides structured feedback on student performance in the subject, considering classroom participation, test scores, and comprehension levels.



Users of EDUKE

Student

The Student is at the center of the Eduke system, using the platform for learning, performance tracking, and communication with teachers. Eduke helps students to improve their learning experience.

- **Study Resources:** Accesses study materials, assignments, and quizzes to support learning.
- **Communication:** Chats with the class head and subject heads to clarify doubts and receive academic guidance through Eduke Chat.
- **Performance Tracking:** Views marks, attendance records, and progress reports to analyze their strengths and weaknesses.
- **Quizzes & Assignments:** – Participates in assessments and submits assignments through the platform.



Users of EDUKE

Parent

The Parent plays a vital role in monitoring and supporting the student's academic journey. With Eduke, parents can stay informed about their child's progress and maintain communication with teachers.

- **Progress Monitoring:** Regularly tracks student attendance, marks, and feedback to stay updated on their academic performance.
- **Communication with Teachers:** Connects with the class head to discuss student progress and academic guidance through Eduke Chat.
- **Feedback & Support:** Provides insights on the student's learning behavior and collaborates with teachers to ensure better educational support.
- **Observation & Evaluation:** Parents can submit evaluations on their child's study habits, participation, etc. helping teachers understand the student's learning environment at home.



Requirements of **EDUKE**

Software Requirements

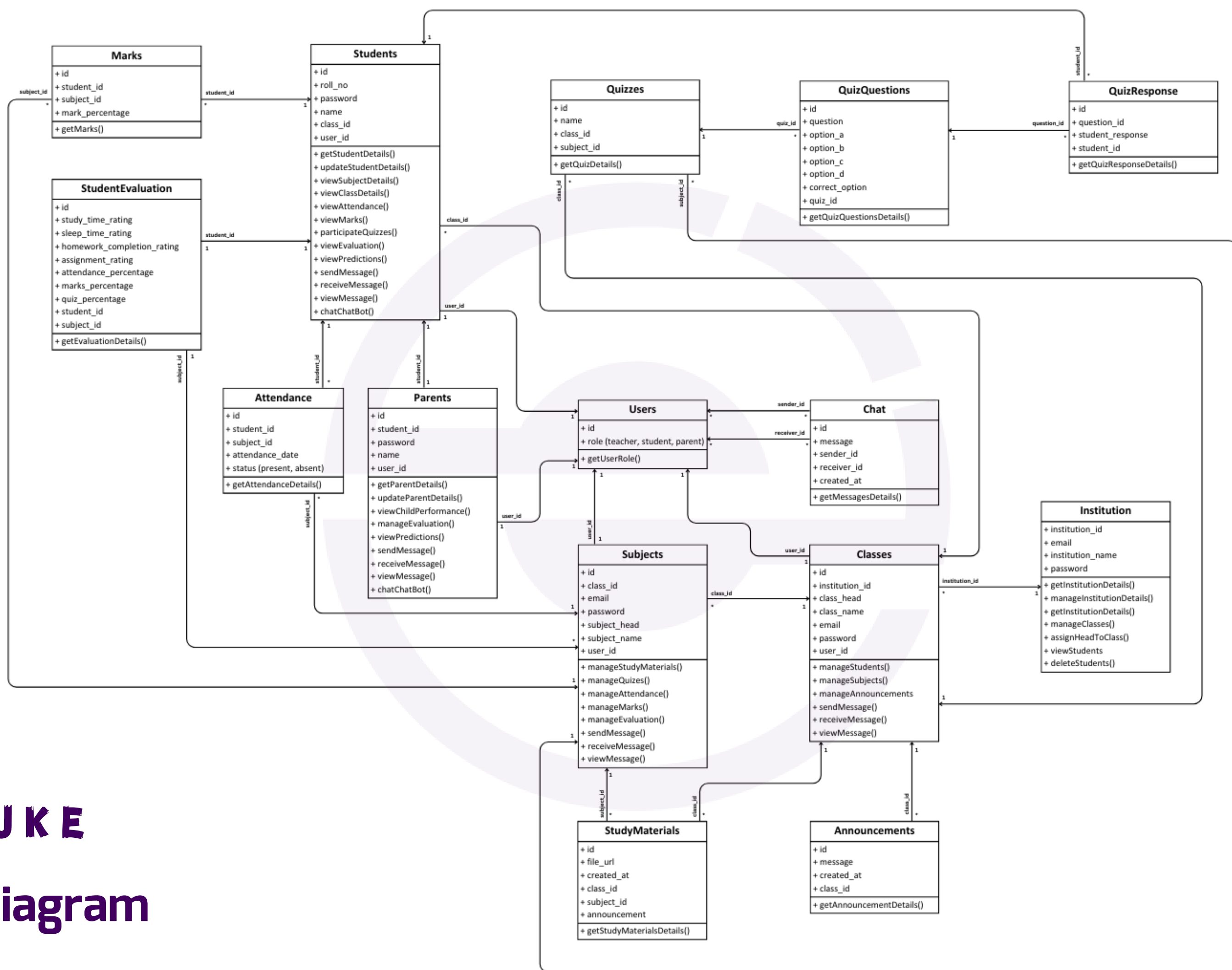
- **Operating System:** Windows 10/11, Linux, macOS
- **Browser:** Google Chrome, Brave, Firefox, Edge
- **Backend:** Python (Django)
- **Database:** MySQL
- **Frontend:** HTML, TailwindCSS, JavaScript
- **Tools Used:** VS Code, Canva



Requirements of **EDUKE**

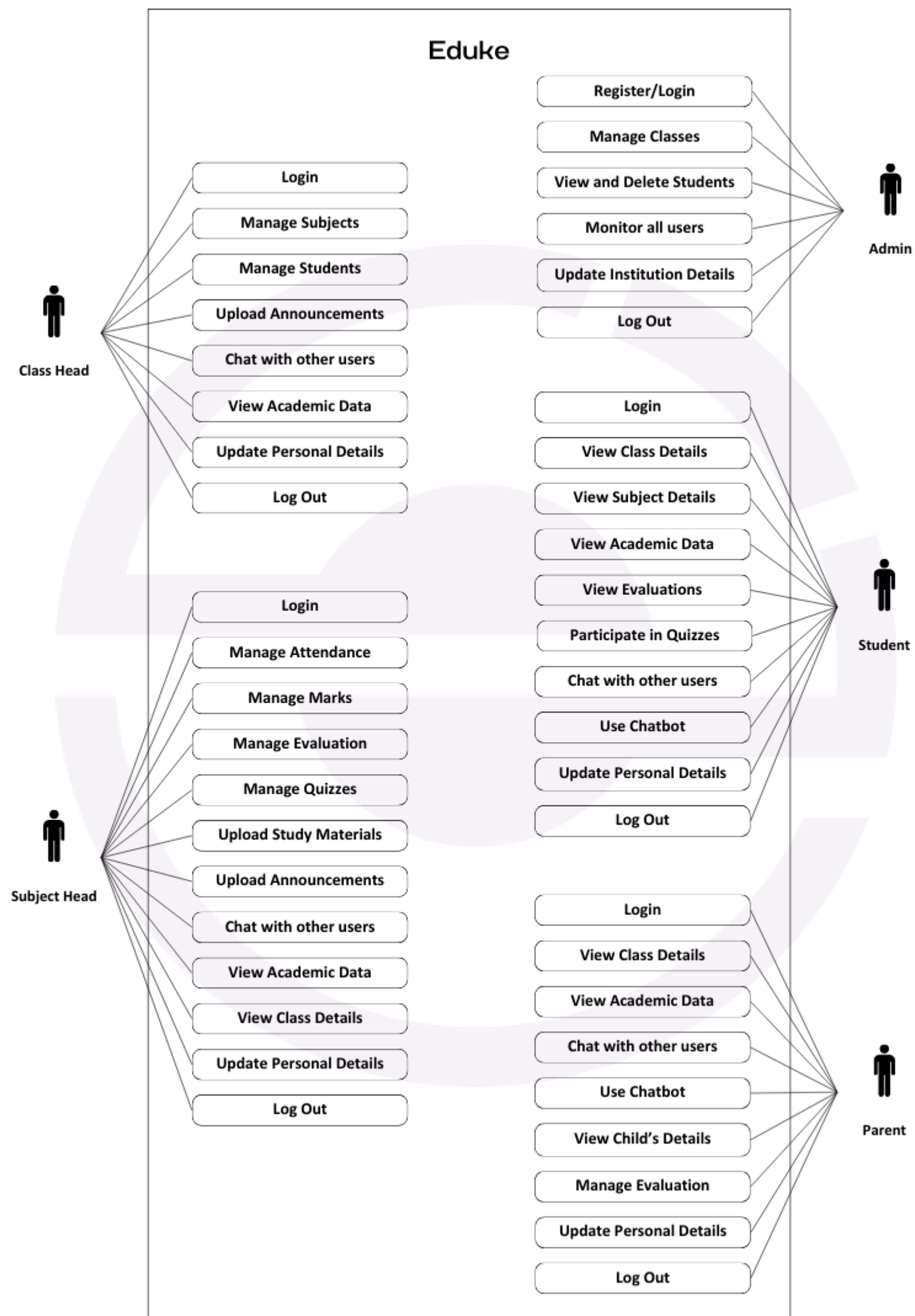
Hardware Requirements

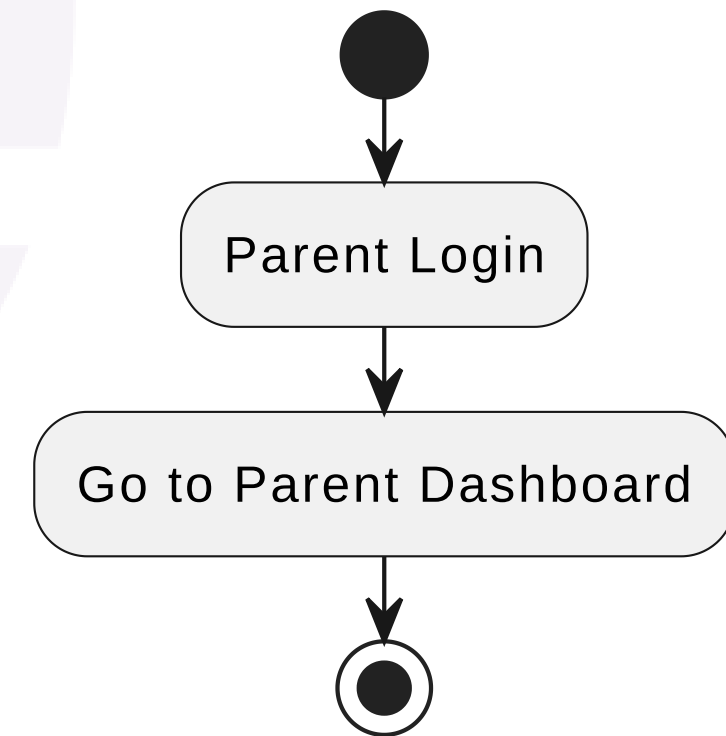
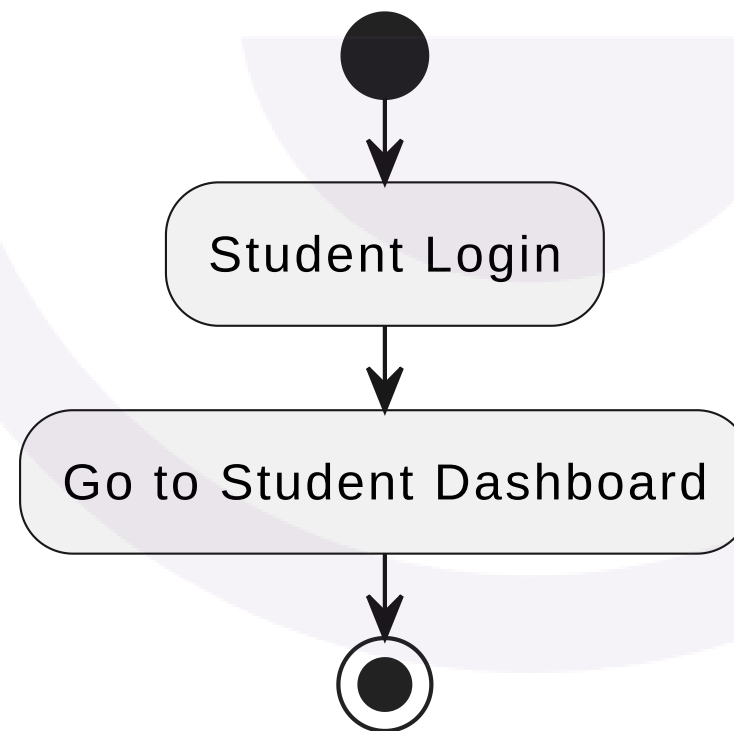
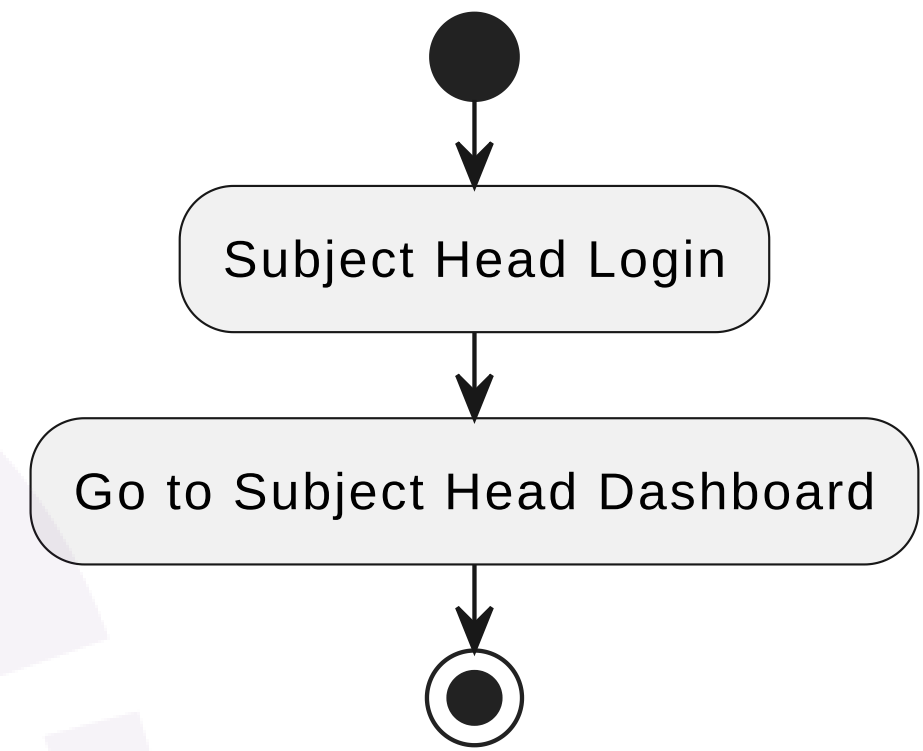
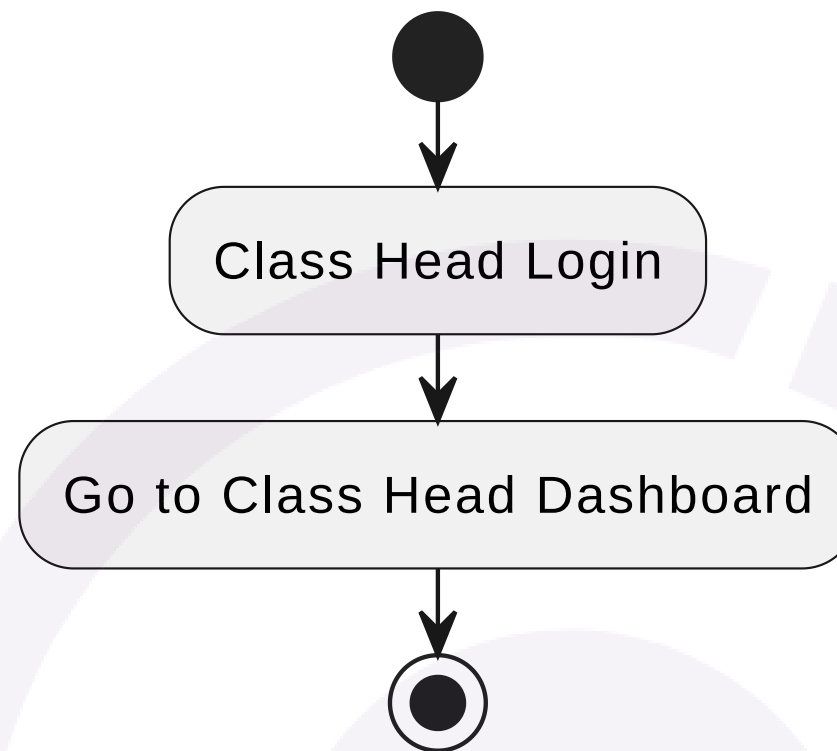
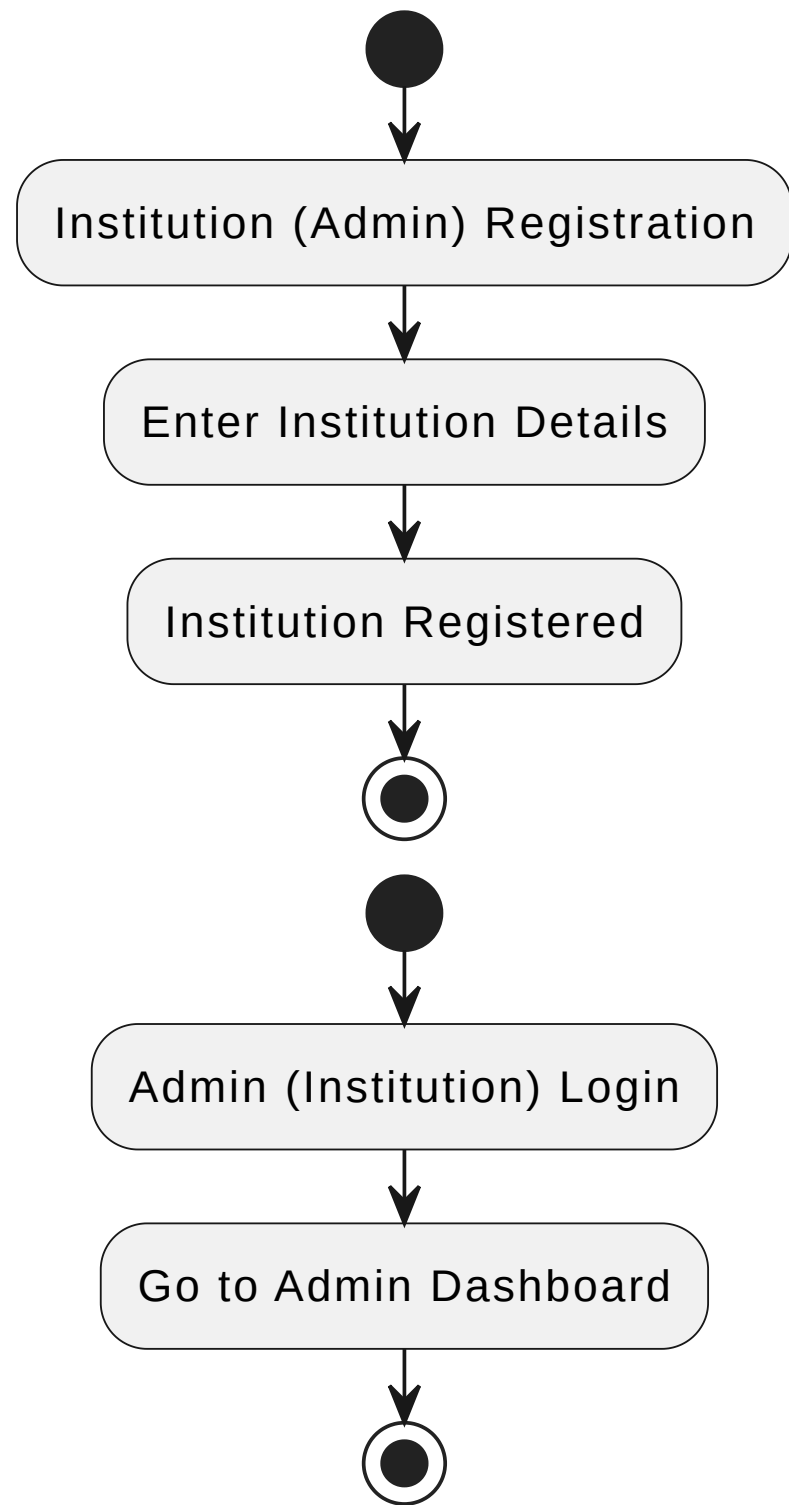
- **Processor:** Intel Core i3 or higher
- **RAM:** 4GB (8GB for smooth performance)
- **Storage:** Minimum 20GB free space
- **Internet:** Stable connection



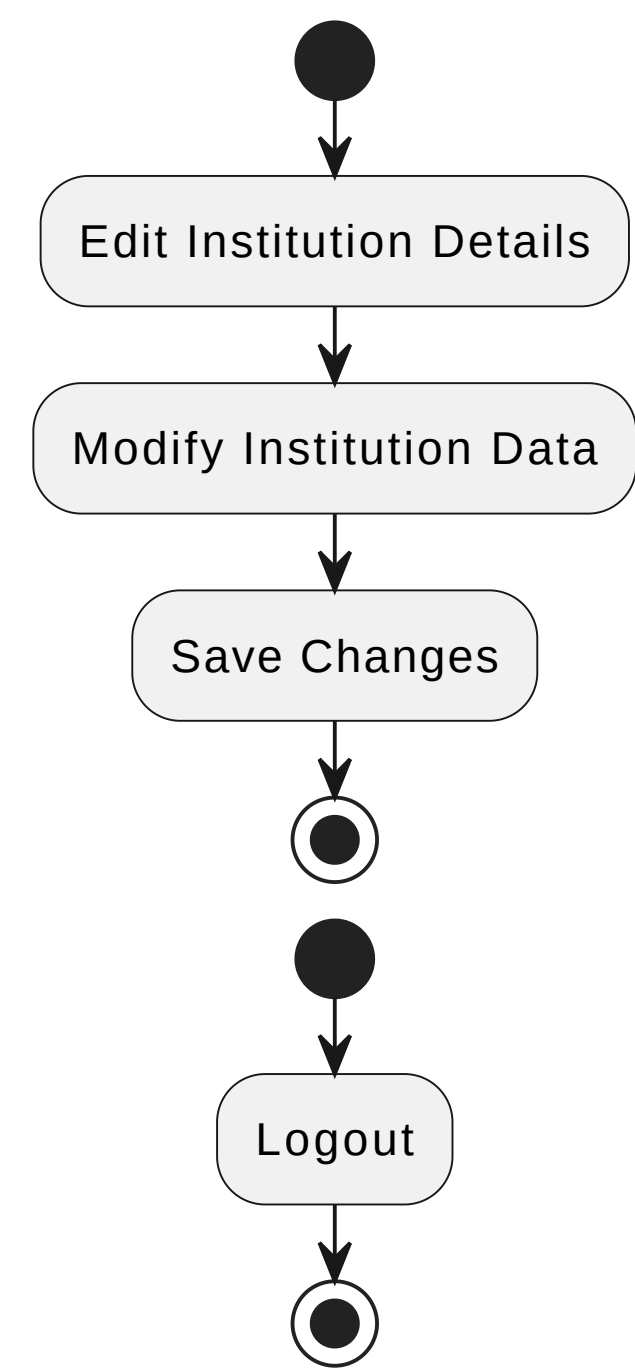
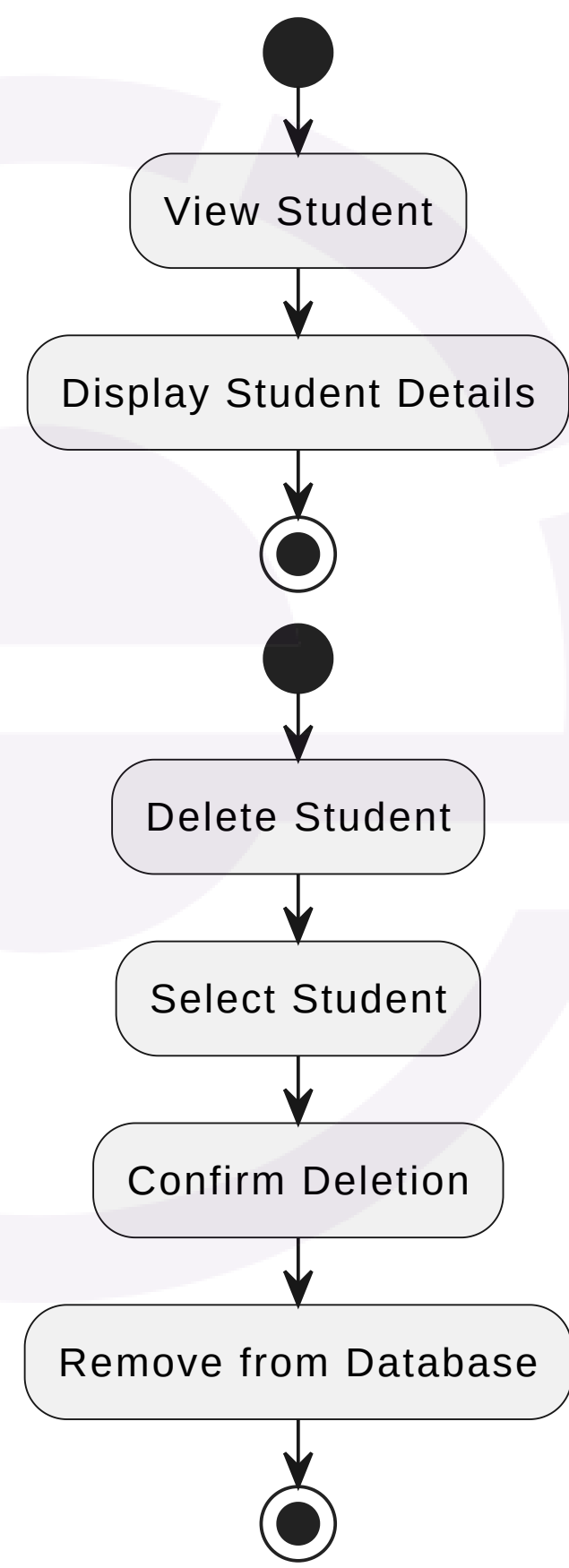
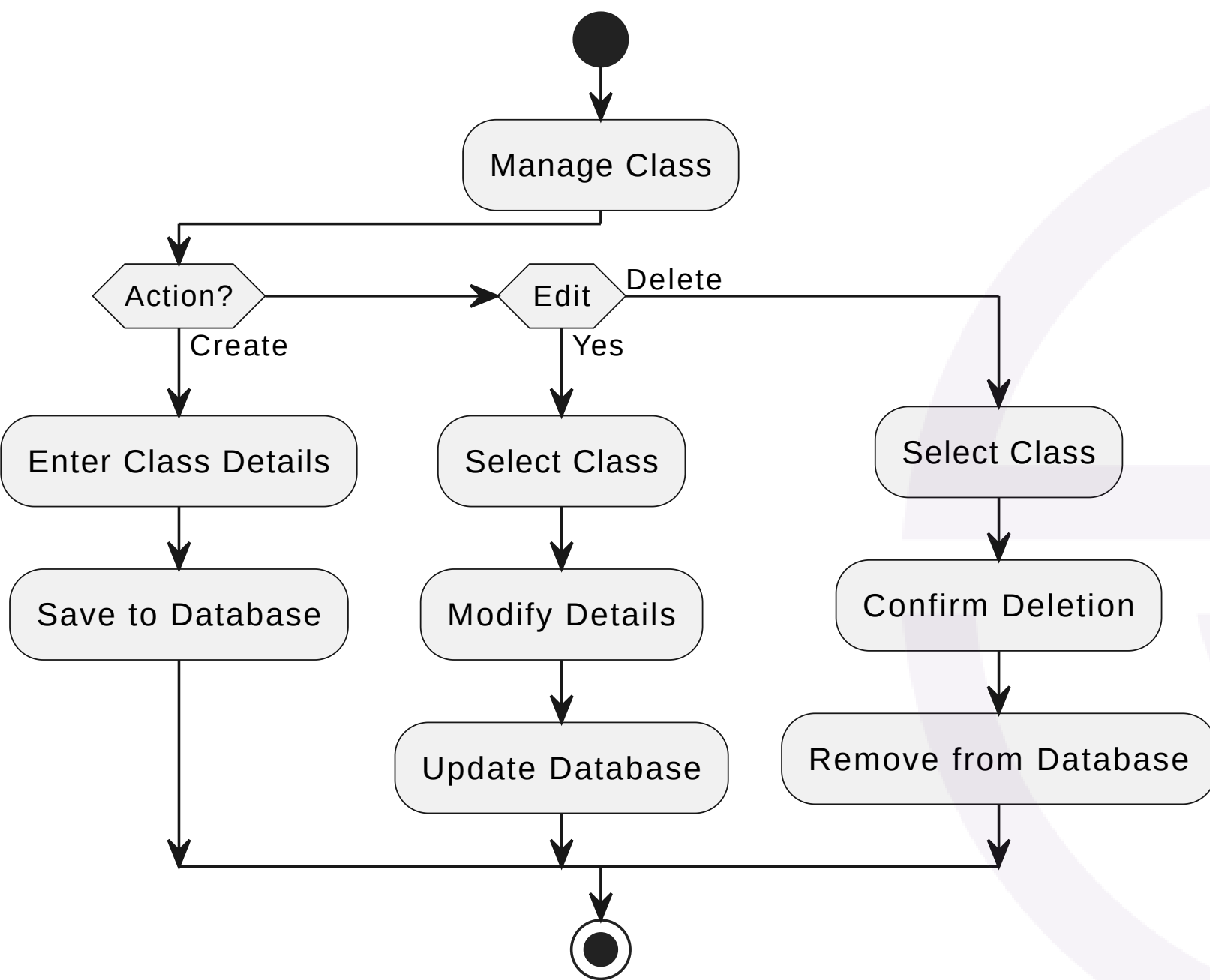


Use Case Diagram

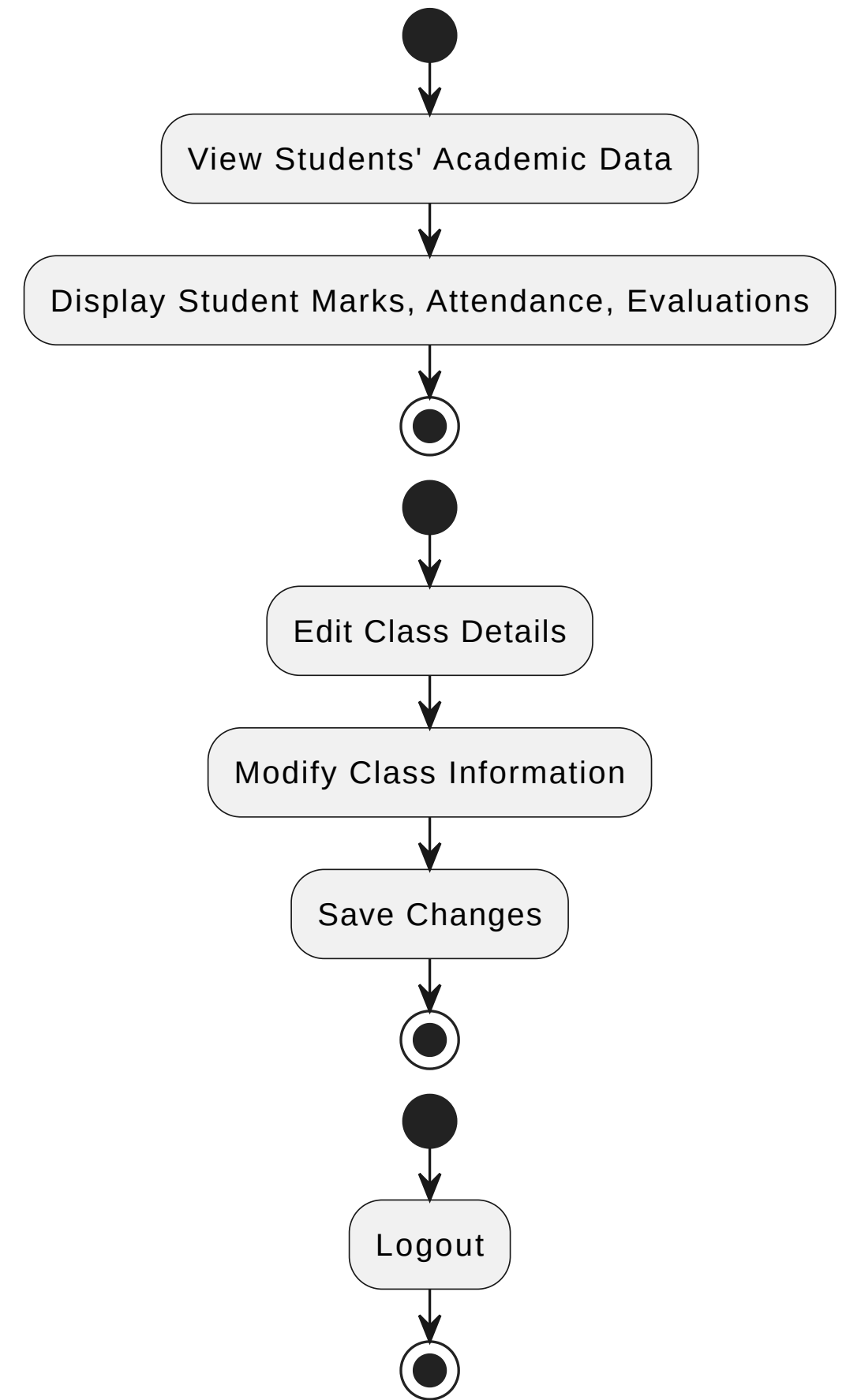
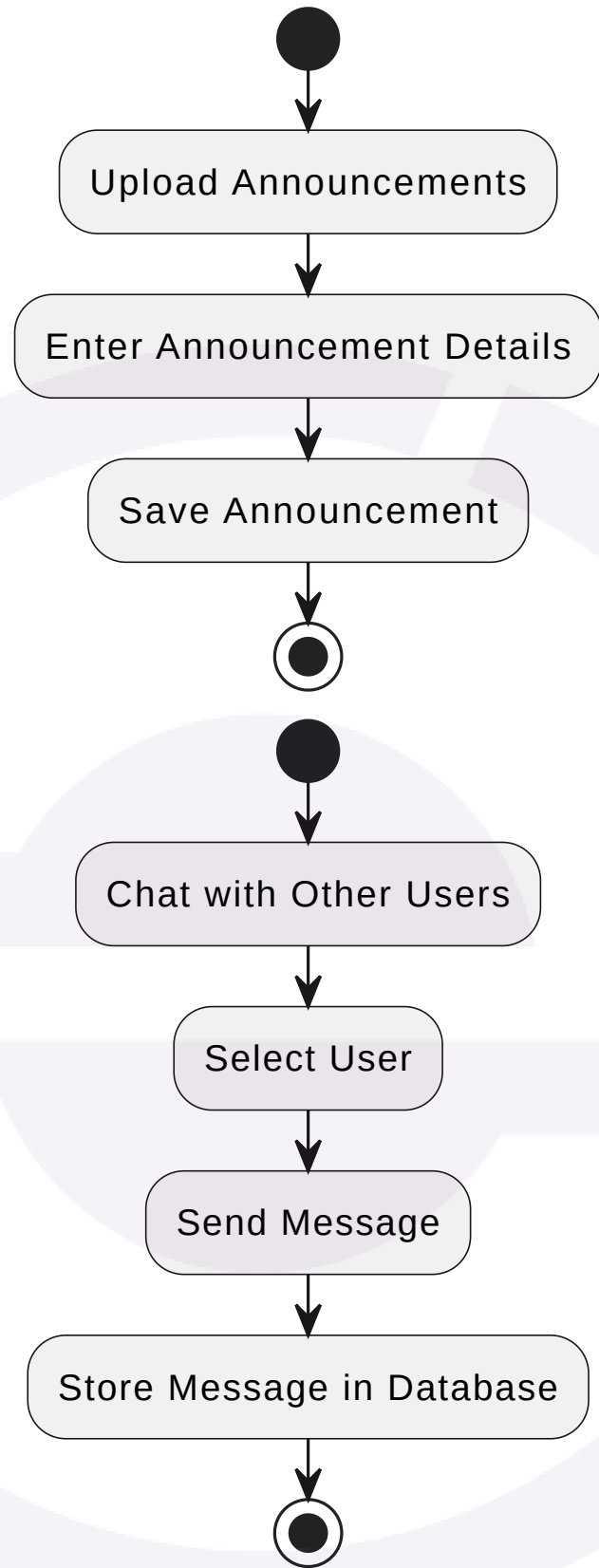
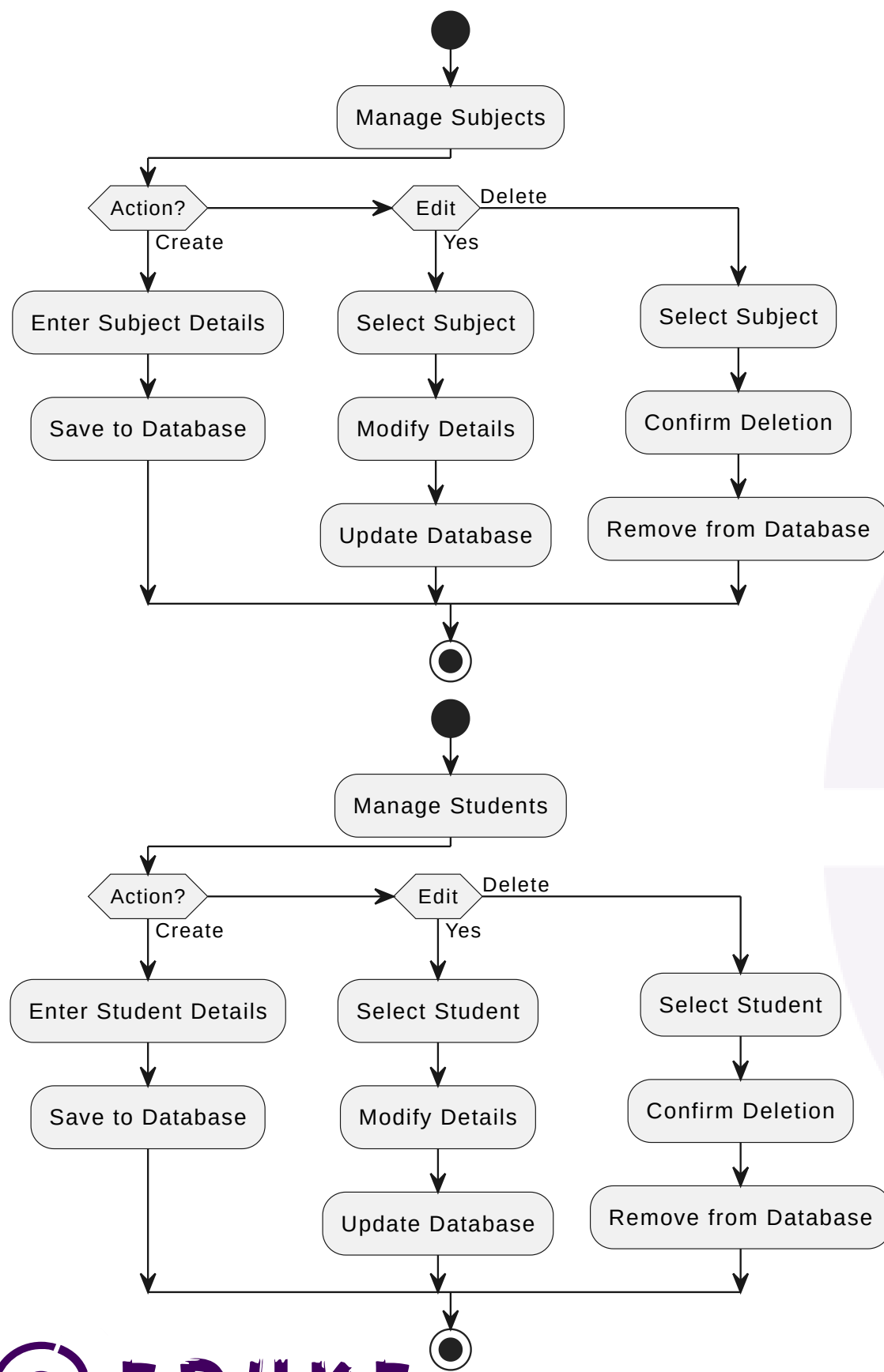




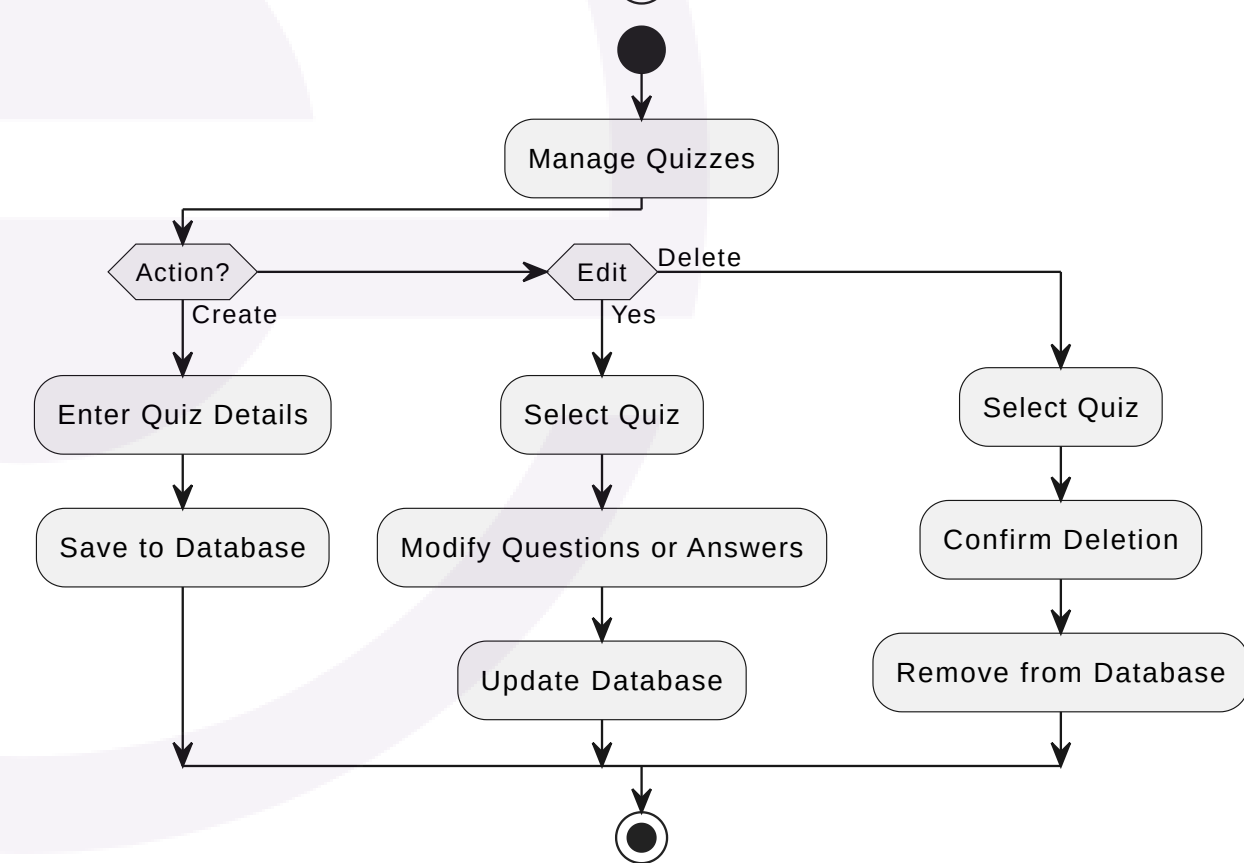
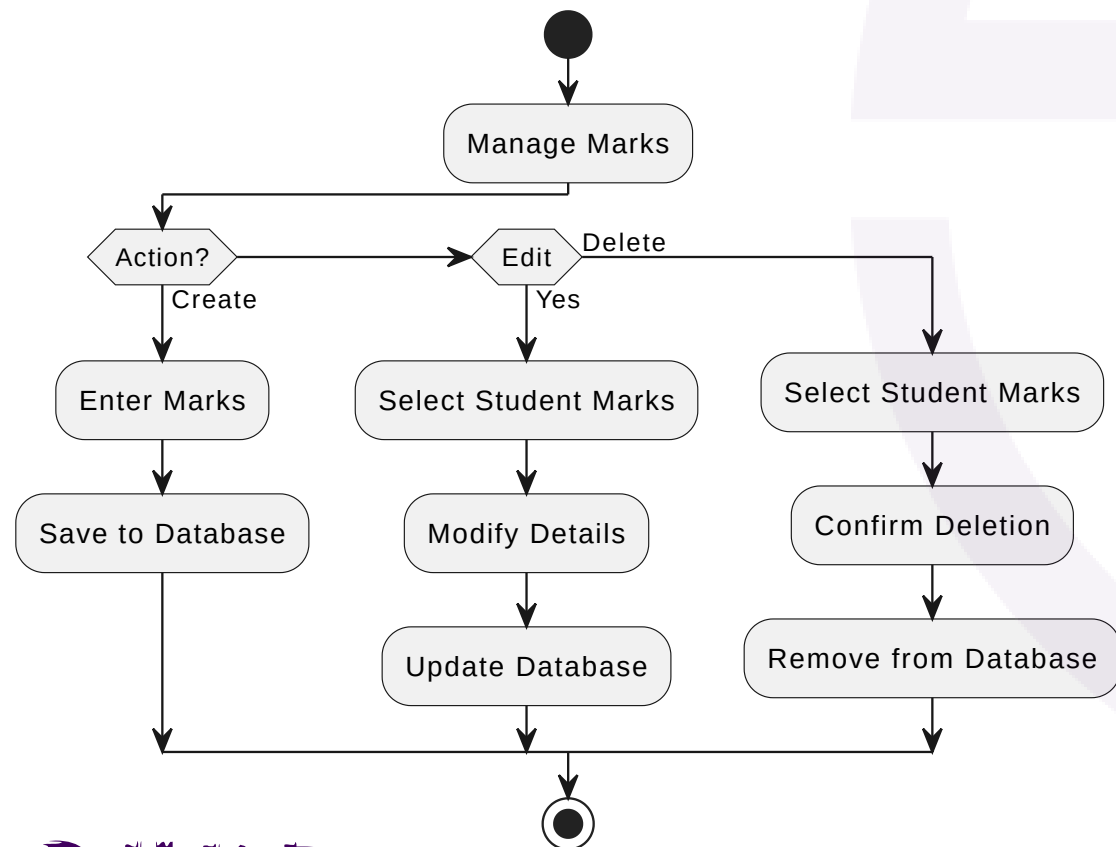
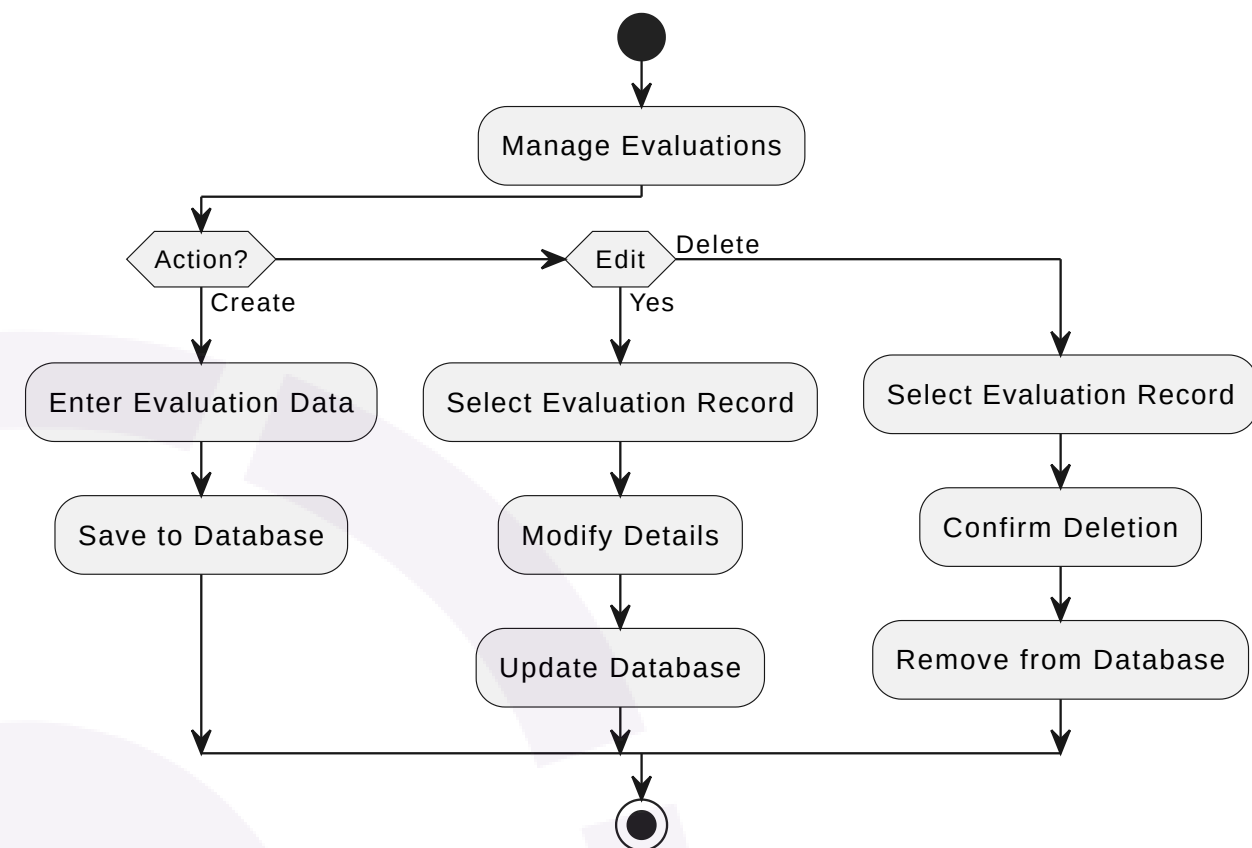
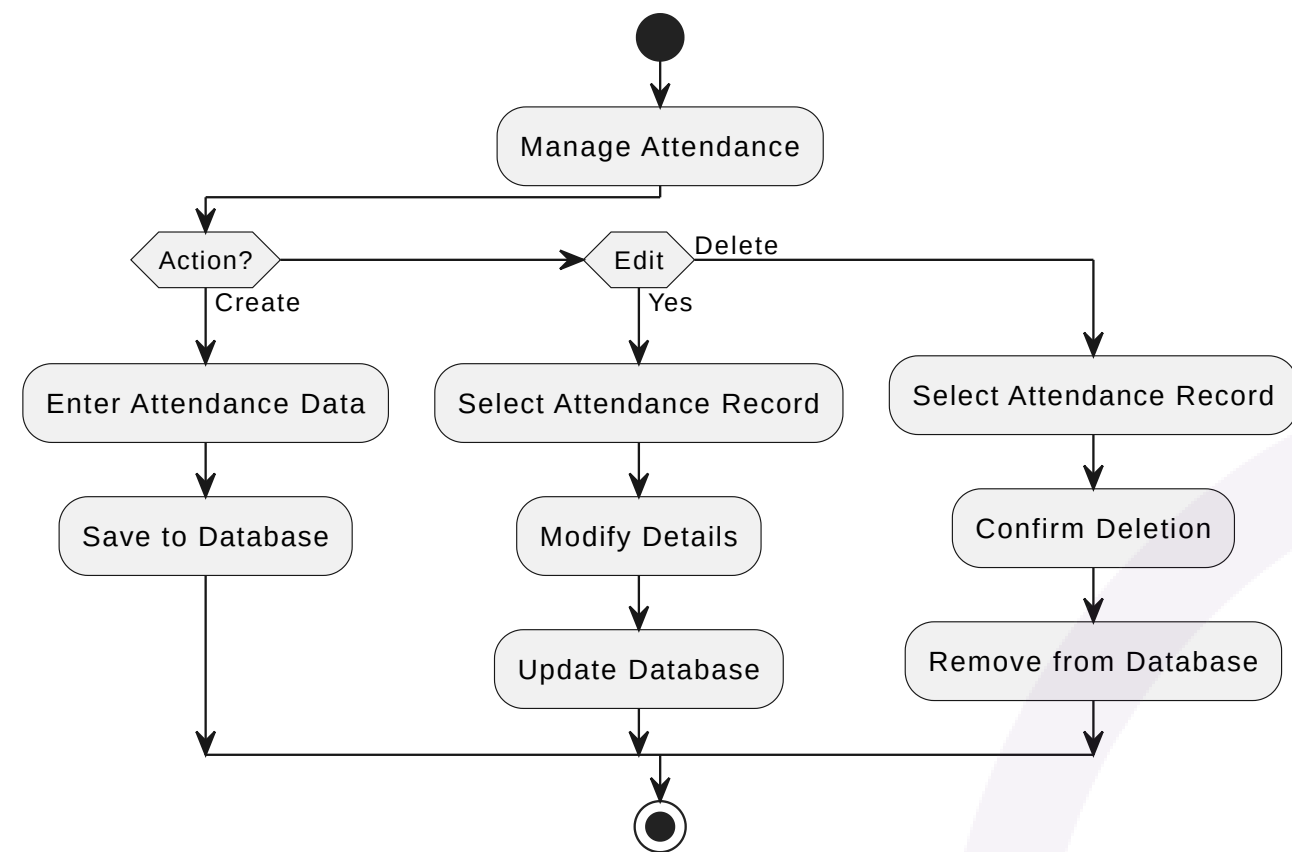
Activity Diagram - Authentication



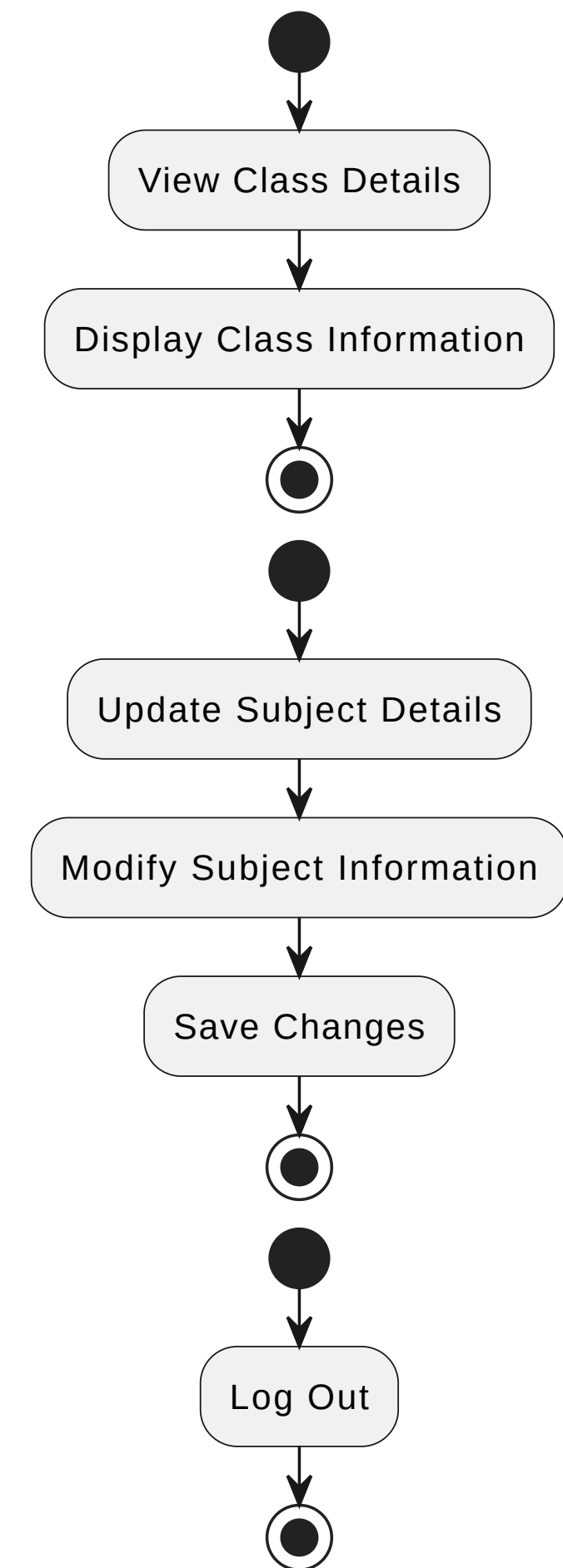
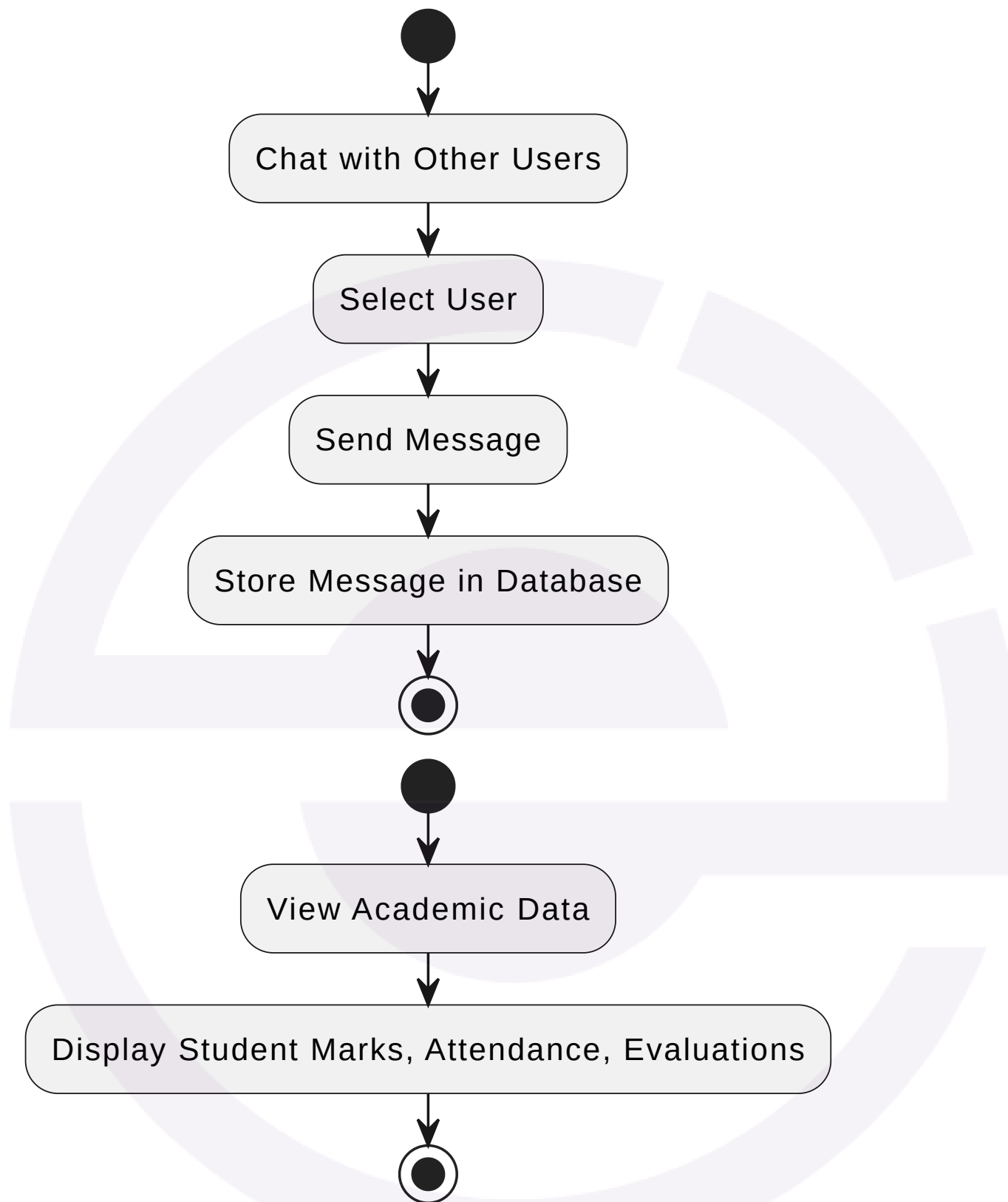
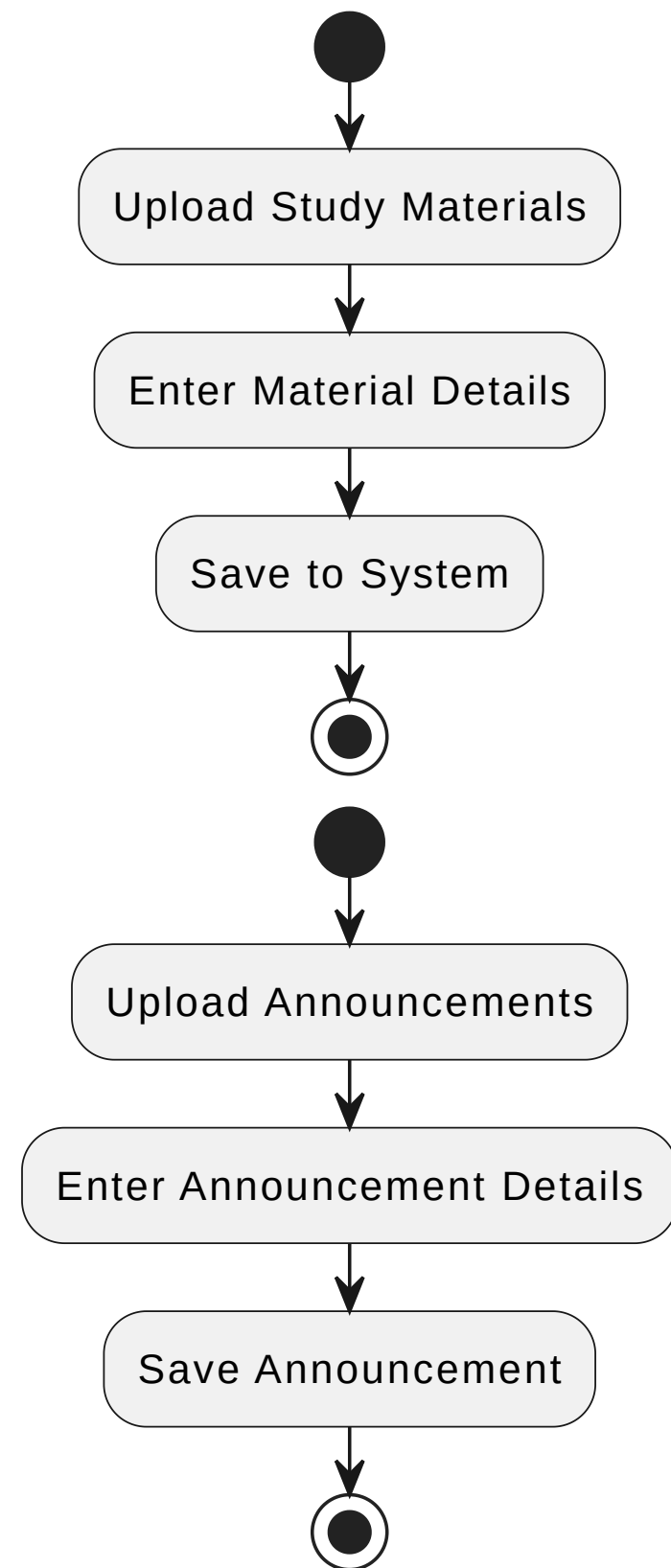
Activity Diagram - Admin



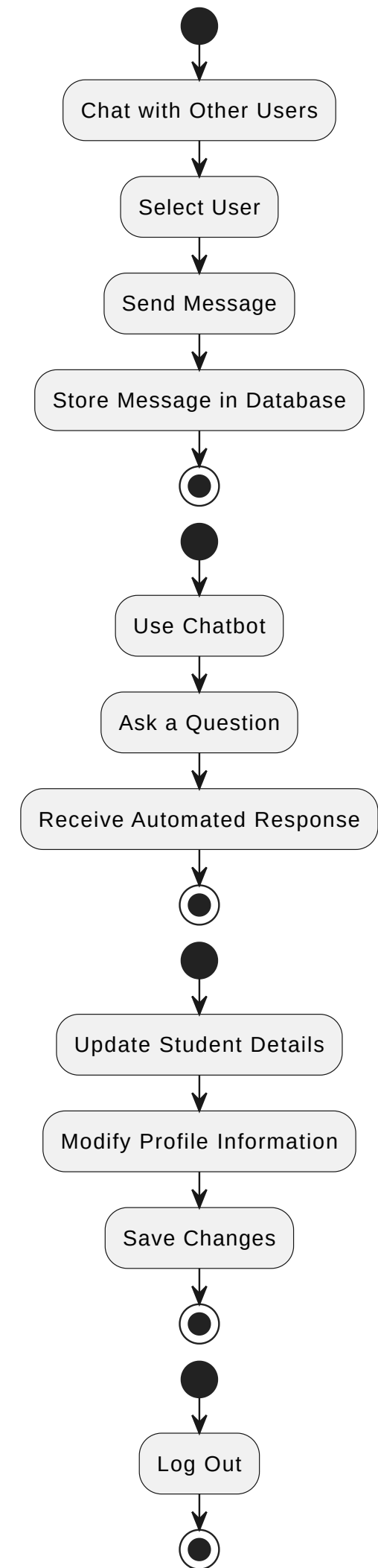
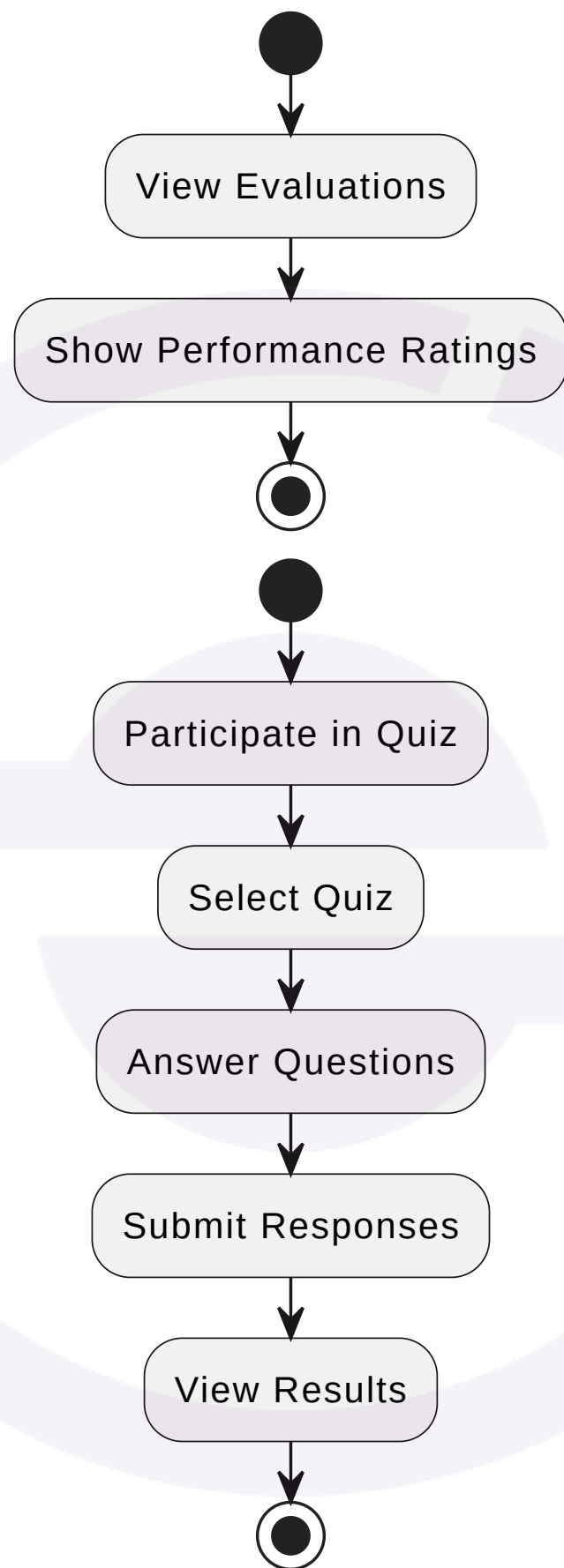
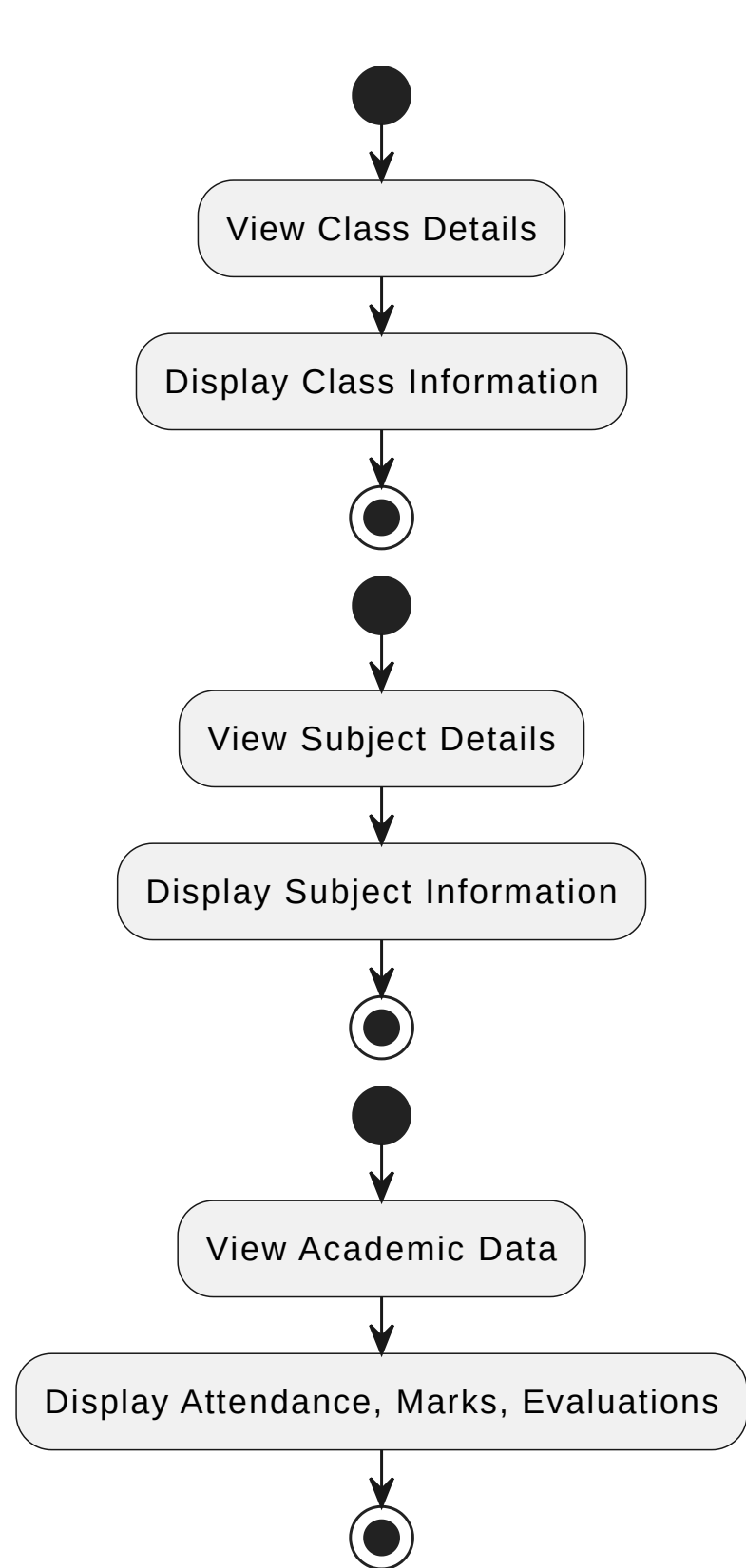
Activity Diagram - Class Head



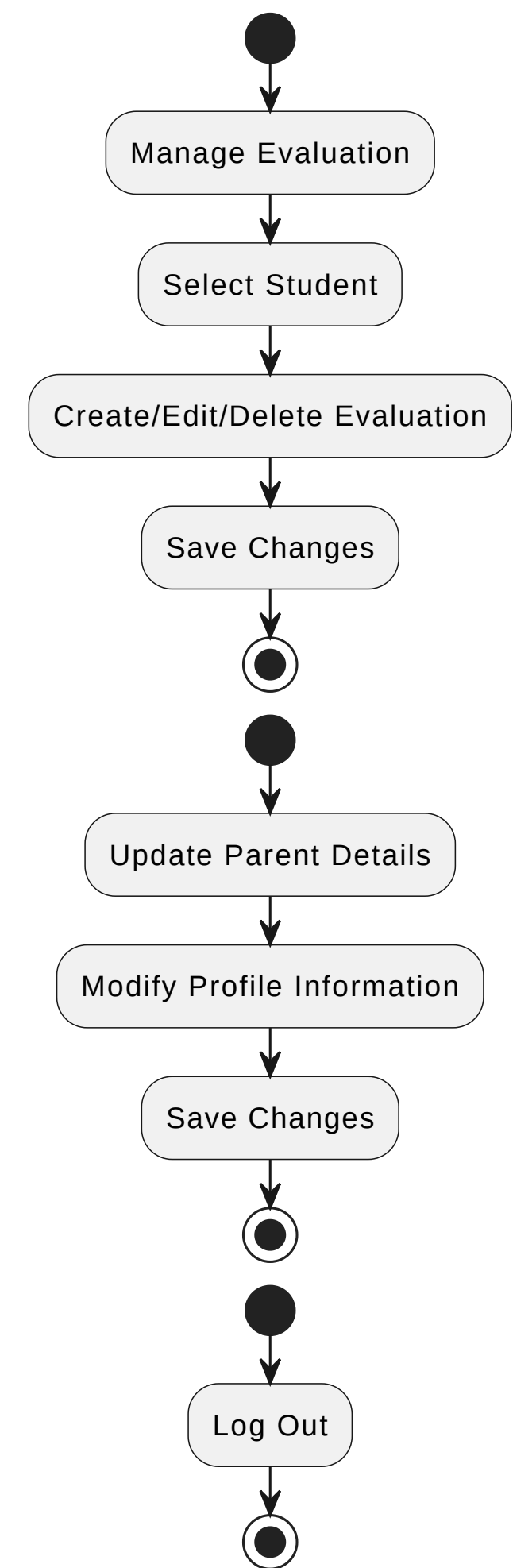
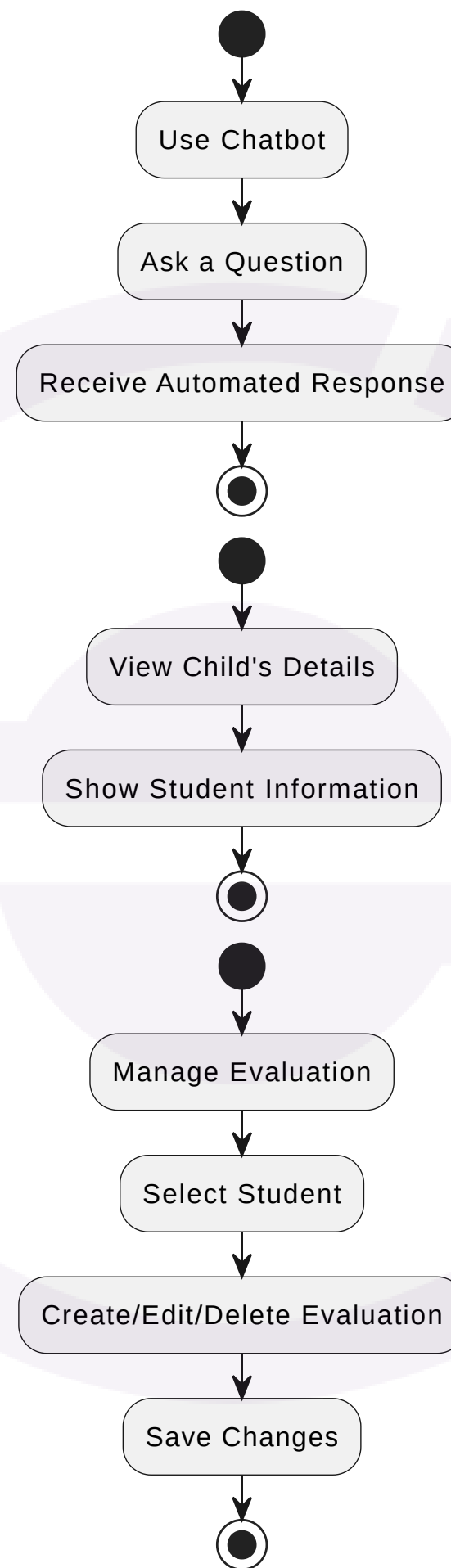
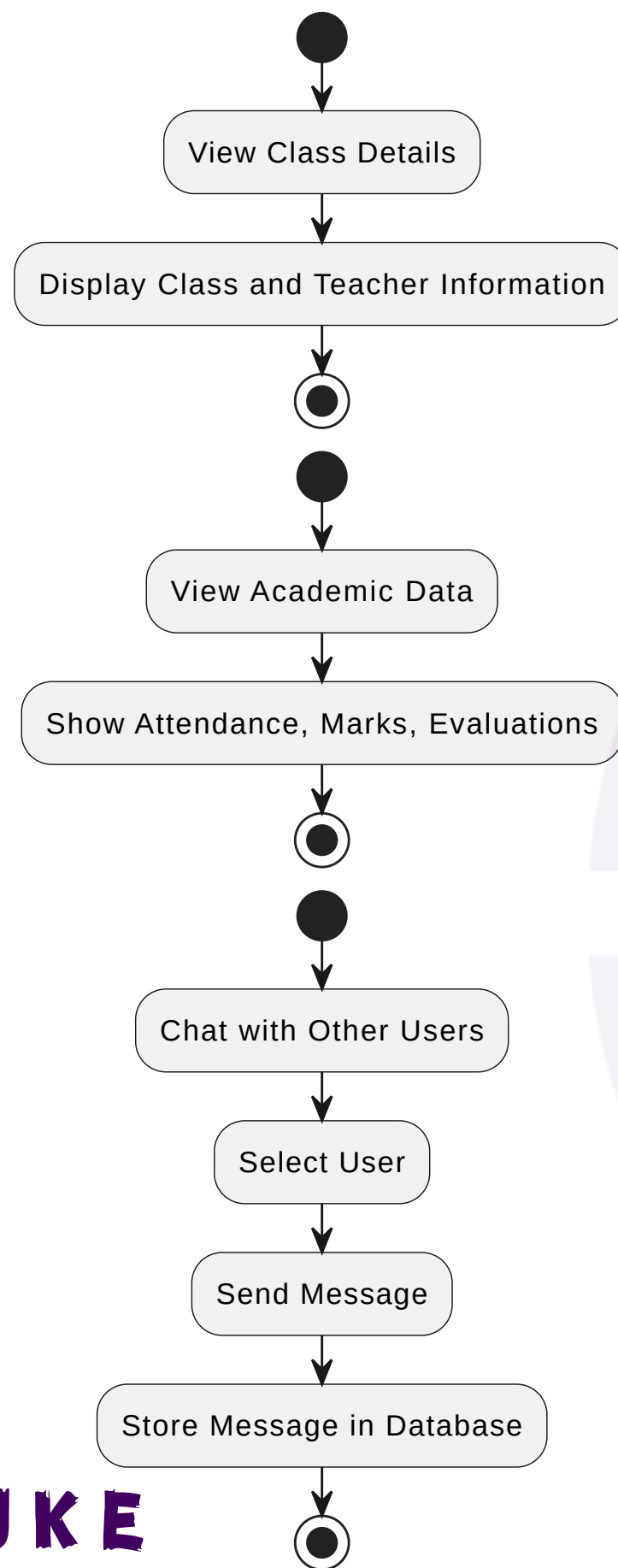
Activity Diagram - Subject Head



Activity Diagram - Subject Head



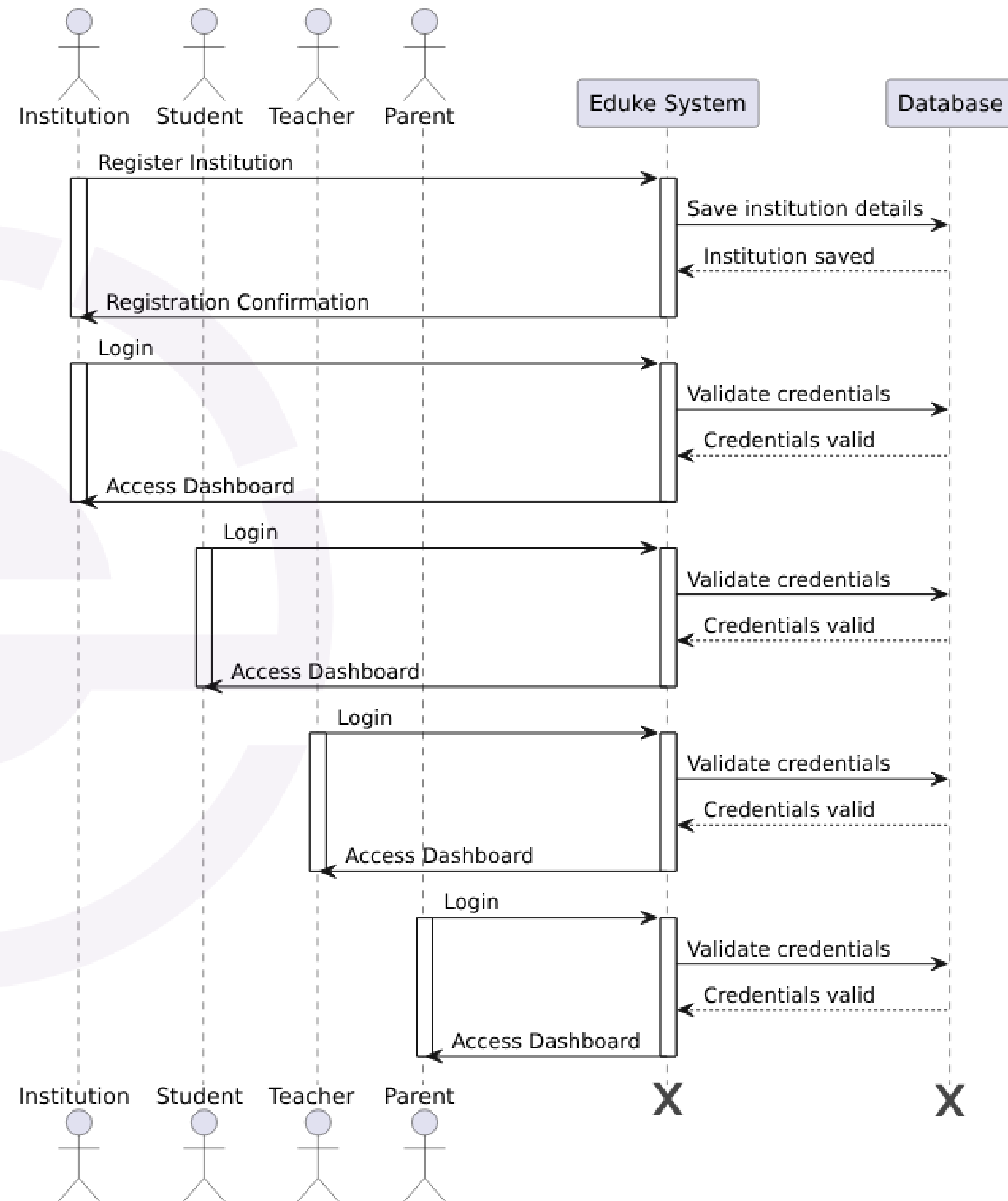
Activity Diagram - Student

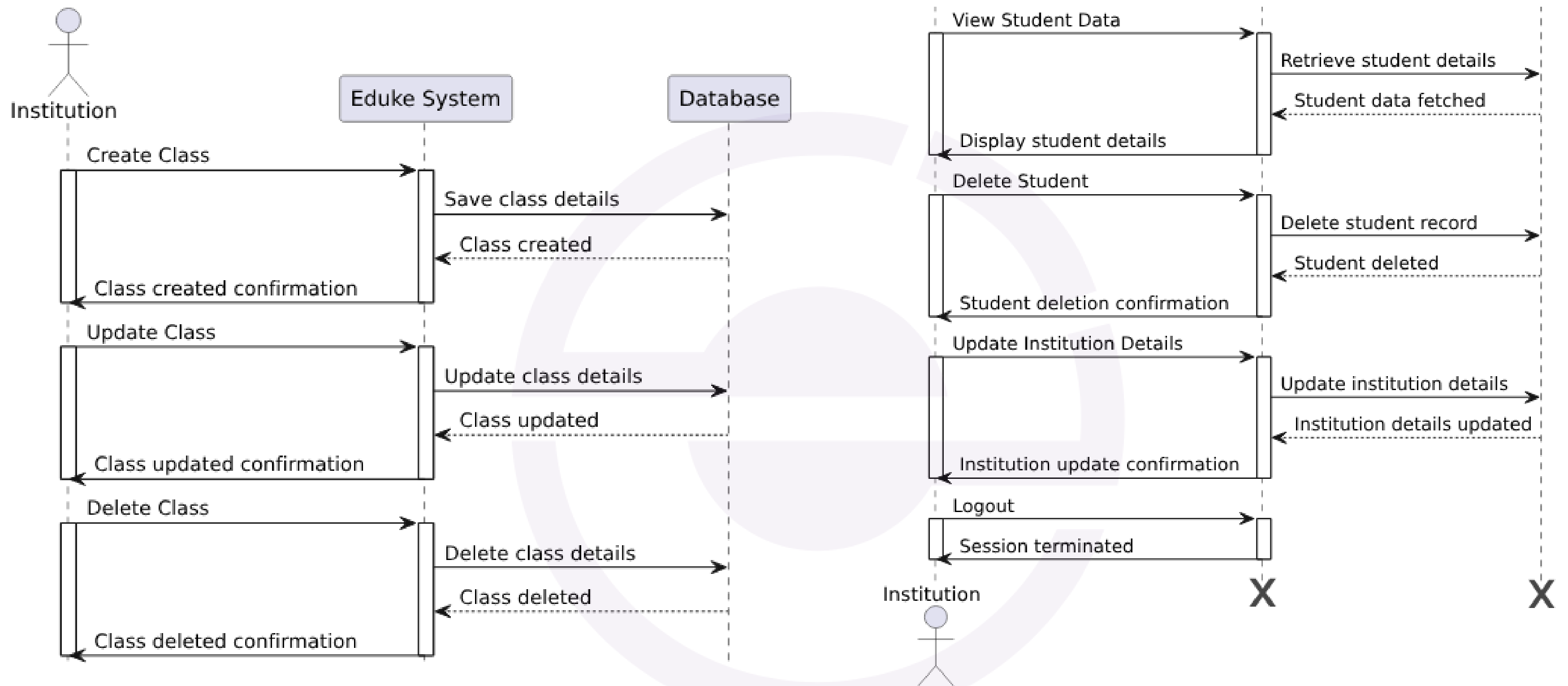


Activity Diagram - Parent

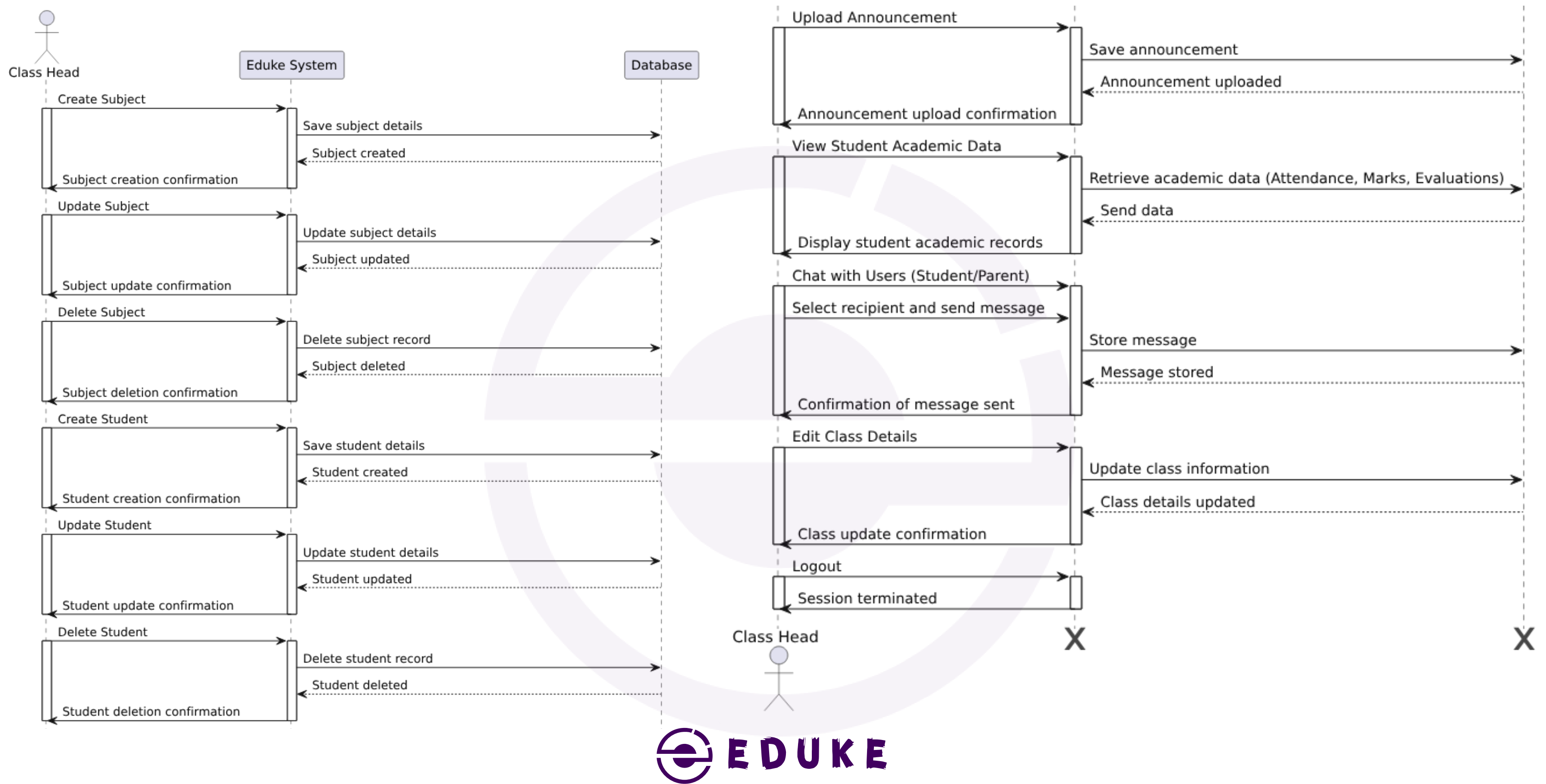


Sequence Diagram - Authentication

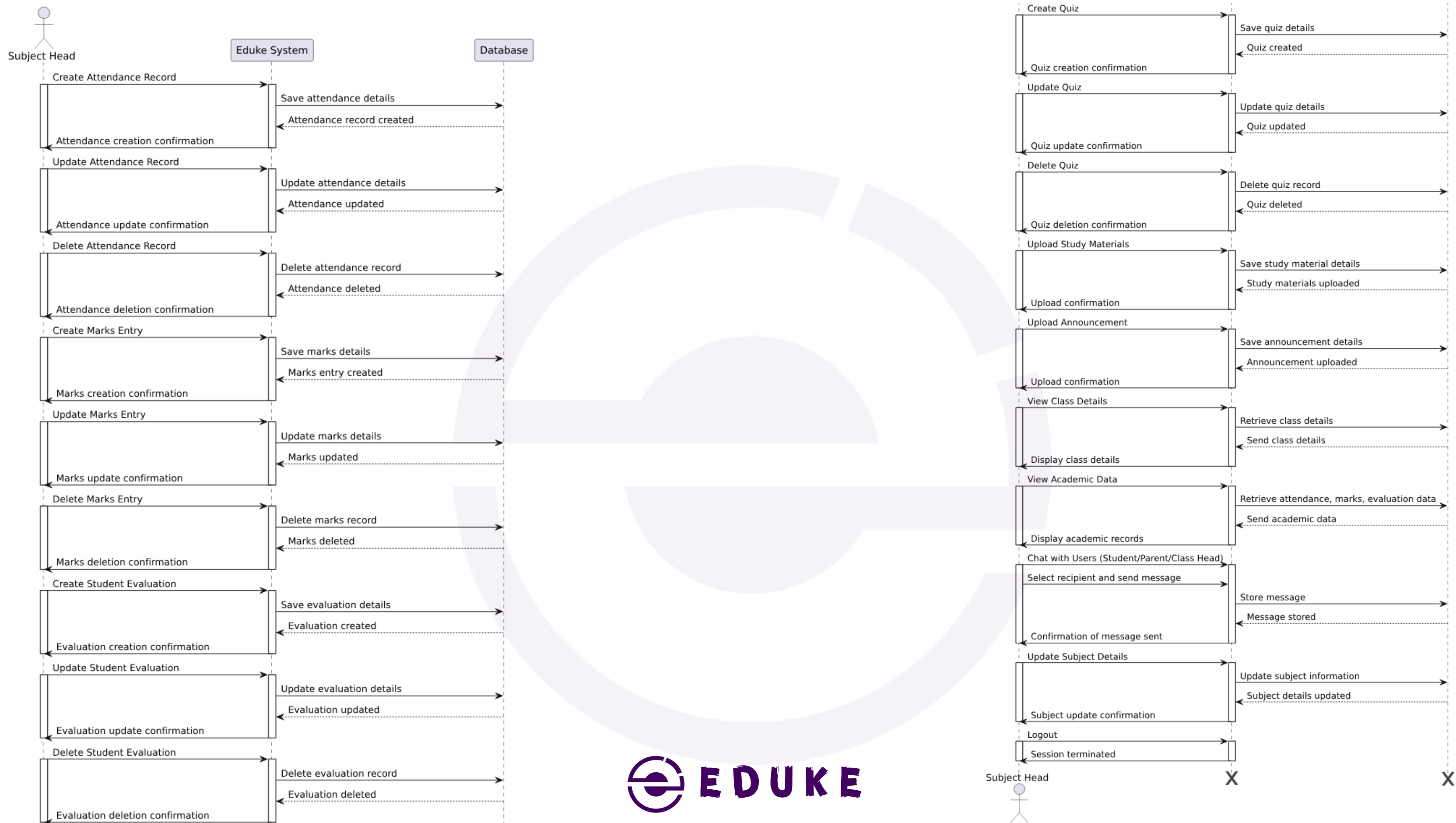




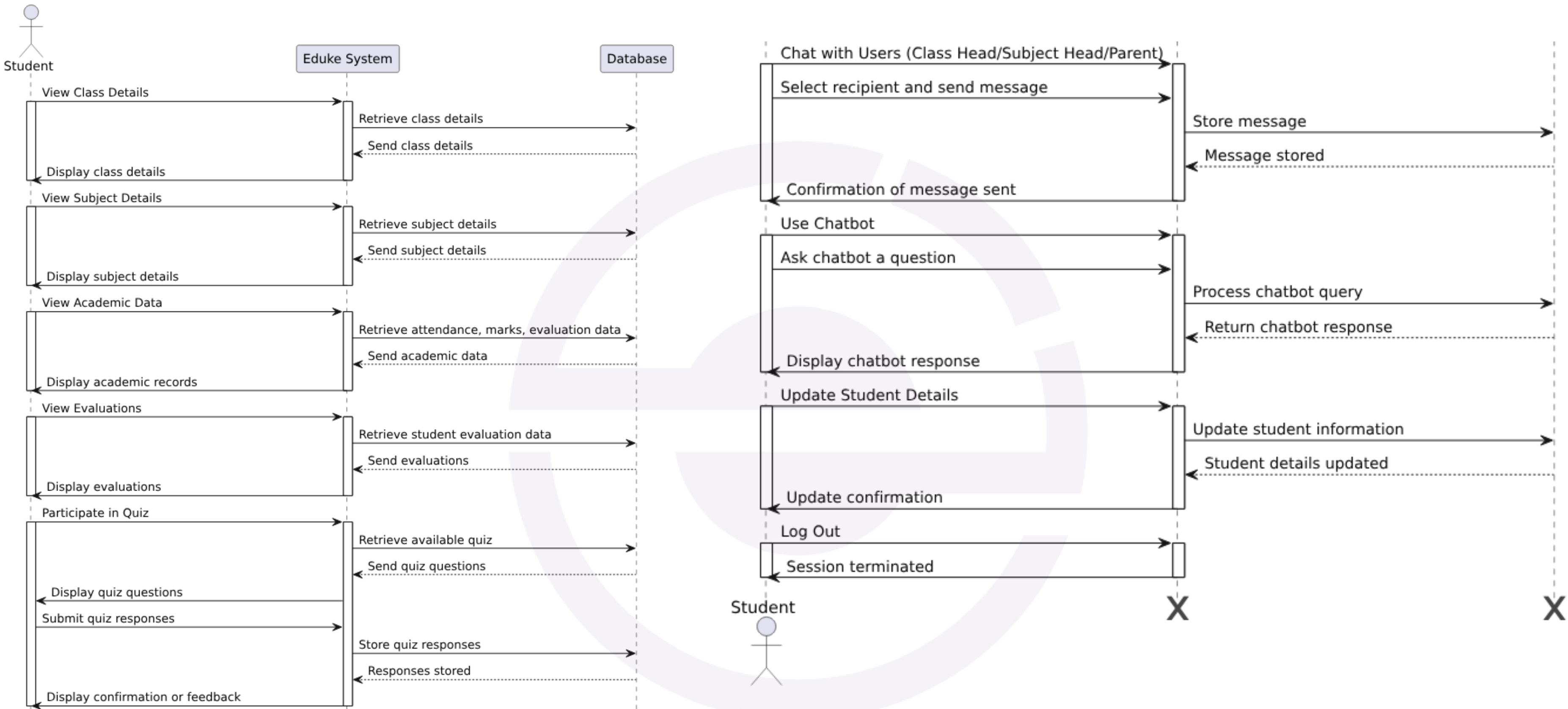
Sequence Diagram - Admin



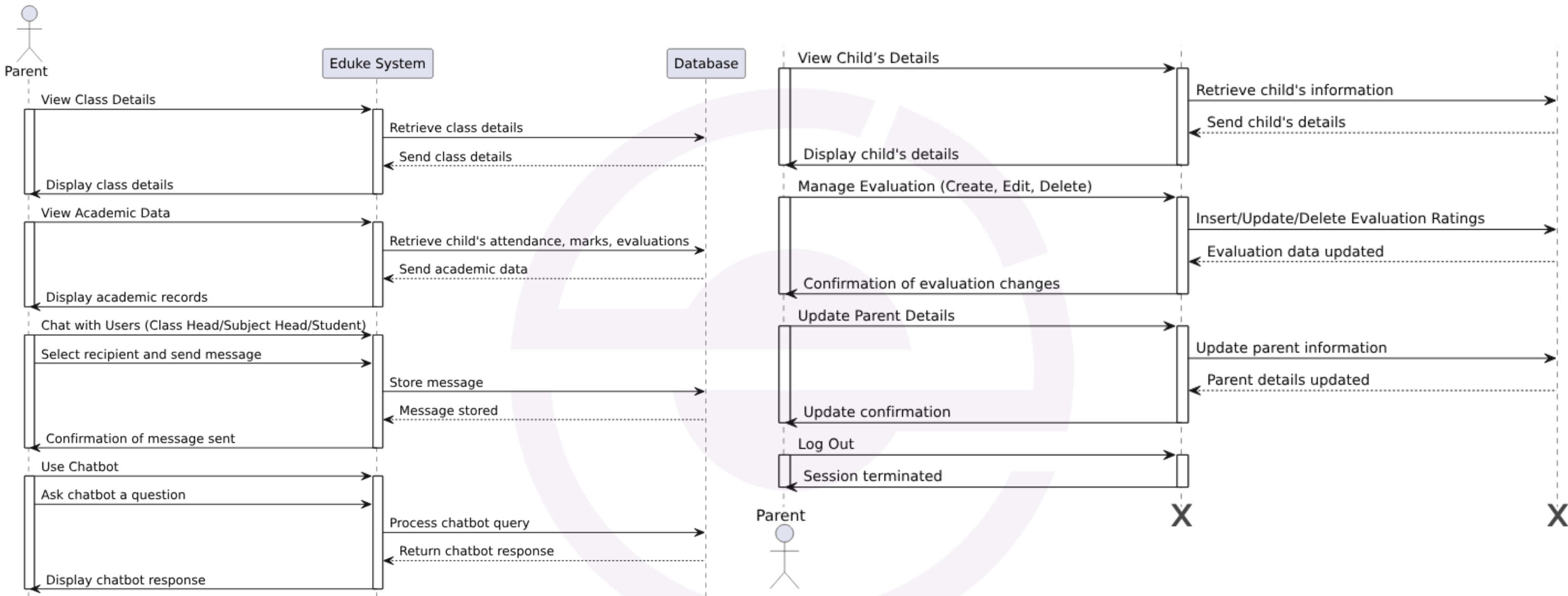
Sequence Diagram - Class Head



Sequence Diagram - Subject Head



Sequence Diagram - Student



Sequence Diagram - Parent

Table - Institution

| COLUMN NAME | DATA TYPE | CONSTRAINTS | DESCRIPTION |
|------------------|--------------|--------------------------------|------------------------------|
| institution_id | INT | PRIMARY KEY, AUTO_INCREMENT | Unique ID for institution |
| email | VARCHAR(255) | NOT NULL, UNIQUE | Institution email |
| institution_name | VARCHAR(255) | NOT NULL | Name of the institution |
| password | VARCHAR(255) | NOT NULL | Institution's password |

Table - Classes

| COLUMN NAME | DATA TYPE | CONSTRAINTS | DESCRIPTION |
|----------------|--------------|---|-----------------------------------|
| id | INT | PRIMARY KEY, AUTO_INCREMENT | Unique ID for the class |
| class_name | VARCHAR(255) | NOT NULL | Name of the class |
| class_head | VARCHAR(255) | NOT NULL | Teacher managing the class |
| email | VARCHAR(255) | NOT NULL, UNIQUE | Class head's email |
| password | VARCHAR(255) | NOT NULL | Class head's password |
| user_id | INT | FOREIGN KEY → users.id | Links to the users table |
| institution_id | INT | FOREIGN KEY → institution.institution_id | Institution this class belongs to |

Table - Subjects

| COLUMN NAME | DATA TYPE | CONSTRAINTS | DESCRIPTION |
|--------------|--------------|-----------------------------|-------------------------------------|
| id | INT | PRIMARY KEY, AUTO_INCREMENT | Unique subject ID |
| subject_name | VARCHAR(255) | NOT NULL | Name of the subject |
| subject_head | VARCHAR(255) | NOT NULL | Teacher responsible for the subject |
| email | VARCHAR(255) | NOT NULL, UNIQUE | Subject head's email |
| password | VARCHAR(255) | NOT NULL | Subject head's password |
| user_id | INT | FOREIGN KEY → users.id | Links to the users table |
| class_id | INT | FOREIGN KEY → classes.id | Class this subject belongs to |

Table - Students

| COLUMN NAME | DATA TYPE | CONSTRAINTS | DESCRIPTION |
|-------------|--------------|--------------------------------|--|
| id | INT | PRIMARY KEY, AUTO_INCREMENT | Unique student ID |
| roll_no | VARCHAR(50) | UNIQUE, NOT NULL | Student's roll number |
| password | VARCHAR(255) | NOT NULL | Student's password |
| name | VARCHAR(255) | NOT NULL | Student's full name |
| class_id | INT | FOREIGN KEY → classes.id | Class student belongs to (Nullable) |
| user_id | INT | FOREIGN KEY → users.id | Links to the users table |

Table - Parents

| COLUMN NAME | DATA TYPE | CONSTRAINTS | DESCRIPTION |
|-------------|--------------|-----------------------------------|---|
| id | INT | PRIMARY KEY, AUTO_INCREMENT | Unique parent ID |
| student_id | VARCHAR(50) | FOREIGN KEY → students.roll_no | Links to student using roll number |
| password | VARCHAR(255) | NOT NULL | Parent's password |
| name | VARCHAR(255) | NULLABLE | Parent's name (NULL if not provided) |
| user_id | INT | FOREIGN KEY → users.id | Links to the users table |

Table - Marks

| COLUMN NAME | DATA TYPE | CONSTRAINTS | DESCRIPTION |
|-----------------|--------------|--------------------------------|----------------------|
| id | INT | PRIMARY KEY, AUTO_INCREMENT | Unique mark entry ID |
| student_id | INT | FOREIGN KEY → students.id | Student's ID |
| subject_id | INT | FOREIGN KEY → subjects.id | Subject ID |
| mark_percentage | DECIMAL(5,2) | NOT NULL | Marks in percentage |

Table - Attendance

| COLUMN NAME | DATA TYPE | CONSTRAINTS | DESCRIPTION |
|-----------------|------------------------------|--------------------------------|----------------------|
| id | INT | PRIMARY KEY, AUTO_INCREMENT | Unique attendance ID |
| student_id | INT | FOREIGN KEY → students.id | Student's ID |
| subject_id | INT | FOREIGN KEY → subjects.id | Subject ID |
| attendance_date | DATE | NOT NULL | Date of attendance |
| status | ENUM('present', 'absent') | NOT NULL | Attendance status |

Table - Student_Evaluation

| COLUMN NAME | DATA TYPE | CONSTRAINTS | DESCRIPTION |
|----------------------------|-----------|-----------------------------|--------------------------------|
| id | INT | PRIMARY KEY, AUTO_INCREMENT | Unique evaluation ID |
| student_id | INT | FOREIGN KEY → students.id | Student ID |
| subject_id | INT | FOREIGN KEY → subjects.id | Subject being evaluated |
| study_time_rating | DOUBLE | NOT NULL | Rating for study time |
| sleep_time_rating | DOUBLE | NOT NULL | Rating for sleep habits |
| homework_completion_rating | DOUBLE | NOT NULL | Rating for homework completion |
| assignment_rating | DOUBLE | NOT NULL | Rating for assignment |
| attendance_percentage | DOUBLE | NOT NULL | Attendance percentage |
| marks_percentage | DOUBLE | NOT NULL | Marks percentage |
| quiz_percentage | DOUBLE | NOT NULL | Quiz percentage |

Table - Chat

| COLUMN NAME | DATA TYPE | CONSTRAINTS | DESCRIPTION |
|-------------|-----------|--------------------------------|------------------------|
| id | INT | PRIMARY KEY, AUTO_INCREMENT | Unique chat message ID |
| message | LONGTEXT | NOT NULL | Message content |
| sender_id | INT | FOREIGN KEY → users.id | Sender's user ID |
| receiver_id | INT | FOREIGN KEY → users.id | Receiver's user ID |
| created_at | TIMESTAMP | DEFAULT CURRENT_TIMESTAMP | Timestamp of message |

Table - Users

| COLUMN NAME | DATA TYPE | CONSTRAINTS | DESCRIPTION |
|-------------|---|--------------------------------|----------------|
| id | INT | PRIMARY KEY, AUTO_INCREMENT | Unique user ID |
| role | ENUM('class_head', 'subject_head', 'student', 'parent') | NOT NULL | User role |

Table - Quizzes

| COLUMN NAME | DATA TYPE | CONSTRAINTS | DESCRIPTION |
|-------------|--------------|--------------------------------|---|
| id | INT | PRIMARY KEY, AUTO_INCREMENT | Unique quiz ID |
| name | VARCHAR(255) | NOT NULL | Name of the quiz |
| class_id | INT | FOREIGN KEY → classes.id | Class the quiz belongs to (Nullable) |
| subject_id | INT | FOREIGN KEY → subjects.id | Subject the quiz belongs to |

Table - Quiz_Questions

| COLUMN NAME | DATA TYPE | CONSTRAINTS | DESCRIPTION |
|----------------|--------------|--------------------------------|--------------------|
| id | INT | PRIMARY KEY, AUTO_INCREMENT | Unique question ID |
| quiz_id | INT | FOREIGN KEY → quizzes.id | Related quiz ID |
| question | LONGTEXT | NOT NULL | Quiz question |
| option_a | VARCHAR(255) | NOT NULL | Option A |
| option_b | VARCHAR(255) | NOT NULL | Option B |
| option_c | VARCHAR(255) | NOT NULL | Option C |
| option_d | VARCHAR(255) | NOT NULL | Option D |
| correct_option | VARCHAR(1) | NOT NULL | Correct answer |

Table - Quiz_Response

| COLUMN NAME | DATA TYPE | CONSTRAINTS | DESCRIPTION |
|------------------|------------|------------------------------------|------------------------------------|
| id | INT | PRIMARY KEY, AUTO_INCREMENT | Unique response ID |
| student_response | VARCHAR(1) | NOT NULL | Student's selected answer |
| question_id | INT | FOREIGN KEY → quiz_questions.id | Related quiz question ID |
| student_id | INT | FOREIGN KEY → students.id | Student who attempted the question |

Table - Announcements

| COLUMN NAME | DATA TYPE | CONSTRAINTS | DESCRIPTION |
|-------------|-----------|--------------------------------|---|
| id | INT | PRIMARY KEY, AUTO_INCREMENT | Unique announcement ID |
| message | LONGTEXT | NOT NULL | Announcement content |
| created_at | TIMESTAMP | DEFAULT CURRENT_TIMESTAMP | Time when the announcement was made |
| class_id | INT | FOREIGN KEY → classes.id | Class associated with the announcement |

Table - Study_Materials

| COLUMN NAME | DATA TYPE | CONSTRAINTS | DESCRIPTION |
|--------------|-----------|--------------------------------|--|
| id | INT | PRIMARY KEY, AUTO_INCREMENT | Unique study material ID |
| file_url | LONGTEXT | NOT NULL | URL or path to the study material file |
| created_at | TIMESTAMP | DEFAULT CURRENT_TIMESTAMP | Timestamp when the material was uploaded |
| class_id | INT | FOREIGN KEY → classes.id | Class associated with the study material |
| subject_id | INT | FOREIGN KEY → subjects.id | Subject associated with the study material |
| announcement | LONGTEXT | NULLABLE | Optional announcement or description |



EDUKE Future Enhancements

- **Enhanced Security & Role-Based Access:** Strengthening security measures with two-factor authentication and better role-based access controls.
- **Parent-Teacher Meeting Scheduler:** Allowing parents and teachers to schedule virtual or in-person meetings through the platform for better collaboration.
- **Mobile App Integration:** Developing a mobile application to provide seamless access to Eduke's features on smartphones and tablets.
- **Multi-Language Support:** Expanding the platform to support multiple languages, making it accessible to a diverse range of users.
- **Handwritten Notes Recognition:** Integrating AI-based recognition to convert handwritten notes into digital format for easy access and sharing.
- **AI-Powered Study Planner:** Providing personalized study plans based on students' performance, deadlines, and time availability.
- **Gamified Learning:** Introducing interactive and gamified learning modules to keep students engaged while improving their academic performance.



Conclusion

Eduke is an innovative AI-powered platform designed to enhance academic performance tracking and management. By integrating predictive analytics, real-time communication, and structured data management, it bridges the gap between students, teachers, and parents. With its user-friendly interface and intelligent features, Eduke empowers educational institutions to make data-driven decisions, ensuring better learning outcomes and academic success.

Eduke transforms education through data-driven insights, fostering a smarter and more connected learning environment.

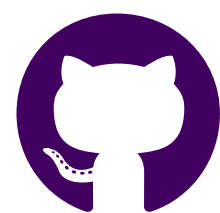


THANK YOU

We appreciate your time and interest in

EDUKE

An Academic Performance Prediction and
Management System.



For GitHub Repository

www.github.com/theRealSain/eduke



Contact

sainsaburaj@depaul.edu.in