

Software Requirements Specification (SRS) Document: Academic Progress & Outcome Tracking System

1. Preface

This document is intended to serve as the definitive guide for system architecture, implementation, and quality assurance.

2. Introduction

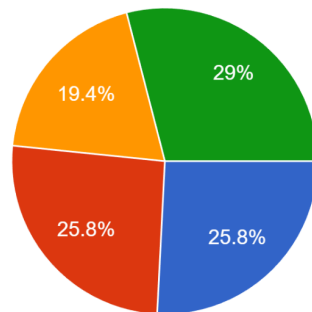
The Academic Progress and Outcome Tracking System is a strategic EdTech platform designed to transform traditional academic recording into a proactive, outcome-based monitoring environment. The system continuously maps assessments to specific learning outcomes, providing stakeholders with real-time analytics and heatmaps to reveal granular strengths and weaknesses. It integrates with existing institutional services—such as attendance registries, notification systems, and scheduling tools—to serve as a centralized hub for data-driven academic intervention.

2.1 User Research and Requirement Elicitation

To validate the problem statement and identify real user pain points, a **student survey was conducted with 31 respondents** from the target user group. The objective was to understand existing challenges in academic tracking, feedback transparency, attendance monitoring, and research coordination. Shown below are pictorial findings:-

How do you currently track your syllabus coverage before an exam?

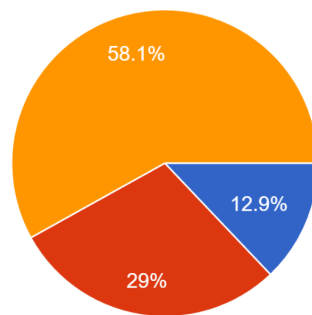
31 responses



- I rely on the professor's verbal updates.
- I ask friends/check WhatsApp groups.
- I maintain my own checklist/notes.
- I usually don't know exactly what is covered until the last minute.

When you receive your exam marks, do you feel you get enough detail to understand where you lost points?

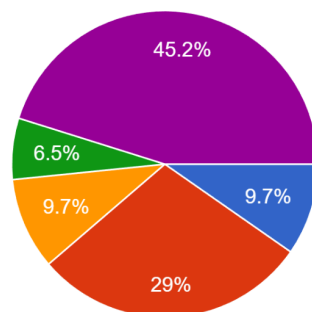
31 responses



- Yes, the feedback is detailed enough.
- No, I only see the final total score.
- sometimes, but it depends on the professor.

If you are involved in BTP/Honors research, what is the biggest challenge in communicating with your guide?

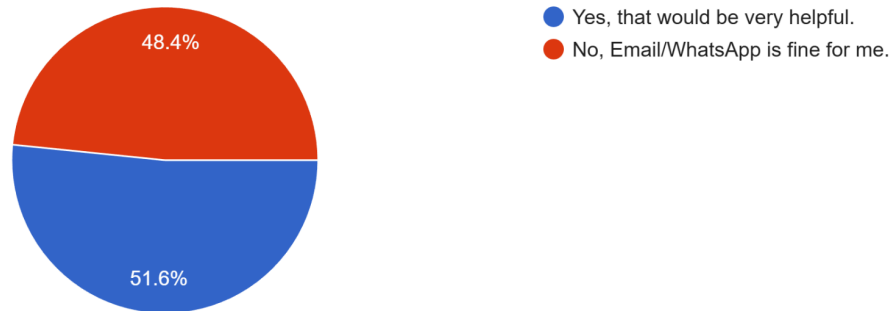
31 responses



- My files/updates get lost in their email inbox.
- Scheduling a time to meet is difficult.
- Getting specific feedback on "doubts" takes too long.
- Keeping track of which version of the document is the latest.
- I am not involved in research yet.

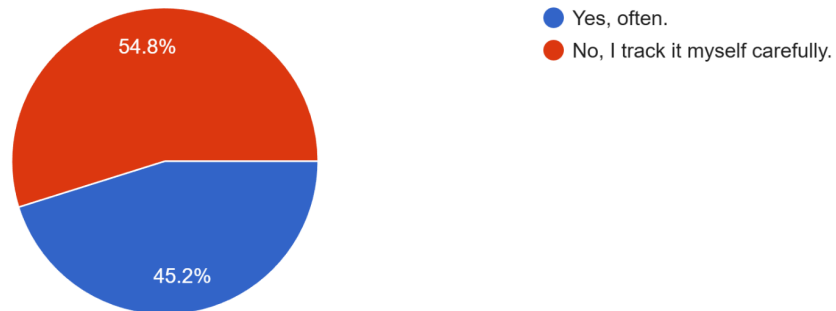
Would you prefer a dedicated "Research Timeline" where you can upload milestones and get comments directly on the platform?

31 responses



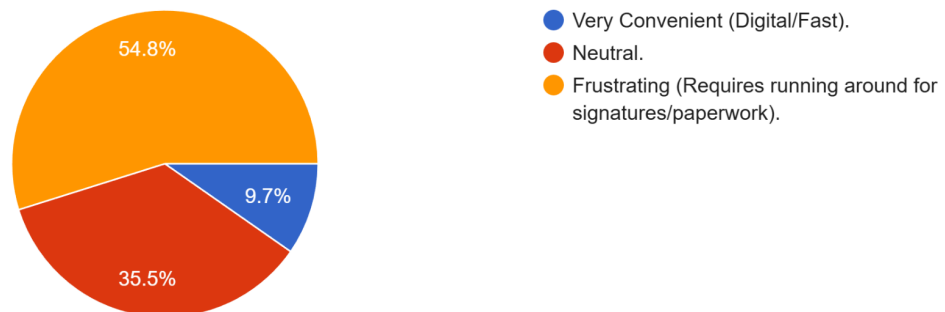
Have you ever been unsure if your attendance was correctly marked or if you were on the verge of being detained?

31 responses



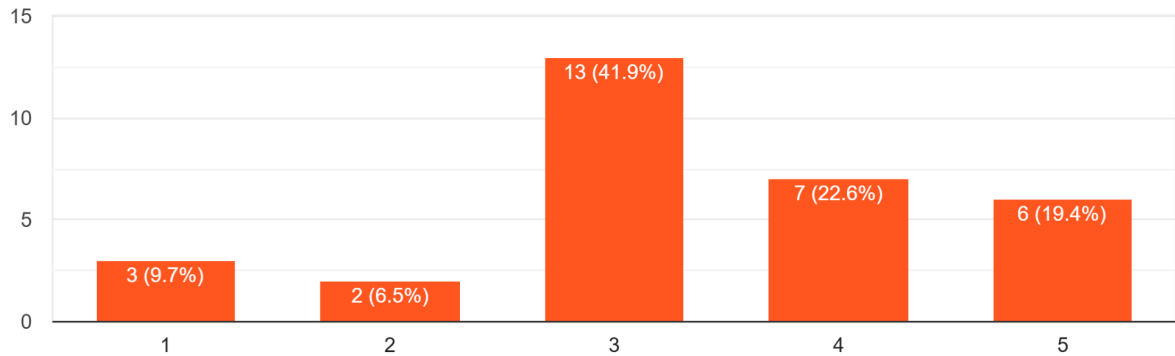
When applying for leave (Medical/Event), how convenient is the current process?

31 responses



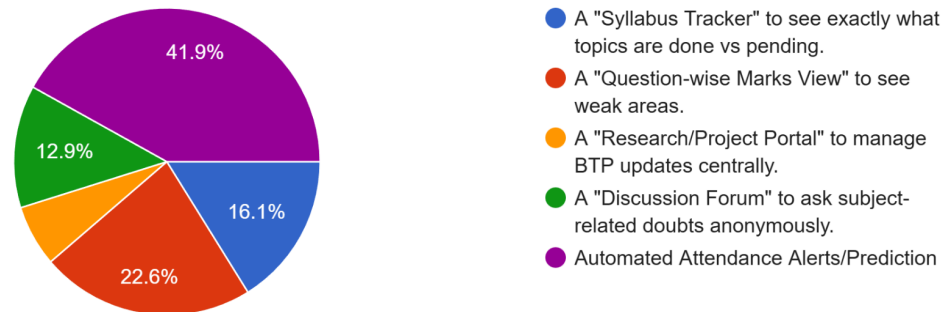
On a scale of 1 to 5, how frustrating is the current process for checking your attendance records?

31 responses



If you could have ONE feature added to your student portal immediately, which would it be?

31 responses



Key Findings

- **Syllabus Tracking:**

A majority of students rely on informal sources such as verbal updates, peers, or last-minute realization to understand syllabus coverage, indicating the absence of a reliable, centralized syllabus tracking mechanism.

- **Marks & Feedback Transparency:**

Most respondents reported receiving only aggregate exam scores with insufficient question-wise or outcome-based feedback, limiting their ability to identify learning gaps.

- **Attendance Management:**
Over half of the respondents expressed uncertainty regarding attendance accuracy and detention risk, with attendance checking rated as moderately to highly frustrating.
- **Leave & Administrative Processes:**
A significant portion of students found the current leave approval process inefficient due to manual paperwork and lack of digital tracking.
- **Research / Project Coordination:**
Students involved in BTP/Honors research highlighted scheduling difficulties, delayed feedback, and lack of centralized version control for submissions.
- **High-Demand Features:**
The most requested features included:
 - Automated attendance alerts and prediction
 - Question-wise marks analysis
 - Syllabus completion tracker
 - Centralized research/project timeline
- **Predictive Analytics:**
Students showed strong interest in predictive insights such as final grade estimation based on current performance.

Conclusion from Survey

The survey results confirm a **strong demand for a centralized, transparent, and analytics-driven academic platform**. The findings directly informed the system's functional and non-functional requirements, particularly in areas of syllabus tracking, outcome-based evaluation, attendance transparency, and proactive academic alerts

3. Overall System Description

3.1 Product Perspective

The system is a centralized management and analytics platform that integrates academic tracking, outcome analysis, notification services, and file storage.

3.2 Stakeholders and User Classes

- **Students:** Track academic progress, update research status, view marks/attendance, submit assignments, and post on contextual forms.

- **Faculty (Teachers):** Manage attendance and grades, creates and publish assignments, review research work and progress of students, provide qualitative feedback, and trigger alerts.
 - **Academic head:** Manage users and academic structures, oversee institutional reports and attendances, resources management and event scheduling, tracking fee compliance.
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4. Functional System Requirements

4.1 Authentication & User Management

1. The system shall allow users to log in using a unique user ID and password.
2. The system shall support role-based access control for Student, Faculty, and Academic Heads.
3. The system shall display role-specific dashboards after successful login.
4. The system shall prevent unauthorized access to restricted features.

4.2 Student Functional Requirements

5. The system shall allow students to view marks, grades, and subject-wise performance.
6. The system shall allow students to view attendance percentage and history.
7. The system shall allow students to: view assignments and deadlines, submit assignments online and view completed syllabus and feedback.
8. The system shall allow students to track topic-wise and learning-outcome-wise progress.
9. The system shall display performance analytics using charts and graphs.
10. The system shall notify students of: Low attendance, low academic performance and pending assignments.
11. The system shall allow students to post doubts/ discuss questions.
12. The system shall allow students to update their progress in BTP/Honours research and notify the faculty.

4.3 Faculty Functional Requirements

13. The system shall allow faculty to create, update, and delete assignments, quizzes, and projects.
14. The system shall allow faculty to grade assignments submitted on the platform.
15. The system shall allow faculty to enter and update marks for exams conducted outside the platform.
16. The system shall allow faculty to mark attendance (daily / lecture-wise).
17. The system shall allow faculty to provide qualitative feedback to students
18. The system shall allow faculty to define and map learning outcomes to topics and assessments.
19. The system shall allow faculty to update syllabus completion status.

20. The system shall allow faculty to view: Student-wise analytics and class-level performance reports.
21. The system shall allow faculty to monitor the student's progress and updates regarding their BTP/Honours.

4.4 Academic Head Functional Requirements

22. The system shall allow heads to create, update, and delete user accounts.
23. The system shall allow heads to manage subjects, classes, and batches.
24. The system shall allow heads to assign faculty to subjects and classes.
25. The system shall allow heads to monitor overall academic performance.
26. The system shall allow heads to generate institution-level reports.
27. The system shall manage system-level alerts and notifications.

4.5 Academic Tracking & Outcome Analysis

28. The system shall calculate learning outcome mastery levels for students.
29. The system shall analyze performance trends over time.
30. The system shall identify and flag at-risk students based on predefined rules.

4.6 Reporting & Visualization

31. The system shall generate role-specific reports (student, faculty, academic heads).
32. The system shall visualize data using charts, graphs, and heatmaps.
33. The system shall allow reports to be viewed and downloaded.

5. Non-Functional Requirements

5.1 Performance Requirements

- The system shall support multiple concurrent users.
- The system shall load dashboards within an acceptable response time.
- The system shall handle large volumes of academic data efficiently.

5.2 Security Requirements

- The system shall implement role-based access control (RBAC).
- The system shall encrypt user passwords and sensitive data.
- The system shall ensure secure client-server communication.

5.3 Reliability & Availability

- The system shall ensure data consistency and integrity.
- The system shall support data backup and recovery mechanisms.

5.4 Scalability Requirements

- The system shall support growth in users, subjects, and records.
- The system shall allow future feature expansion without major redesign.

5.5 Usability & Accessibility

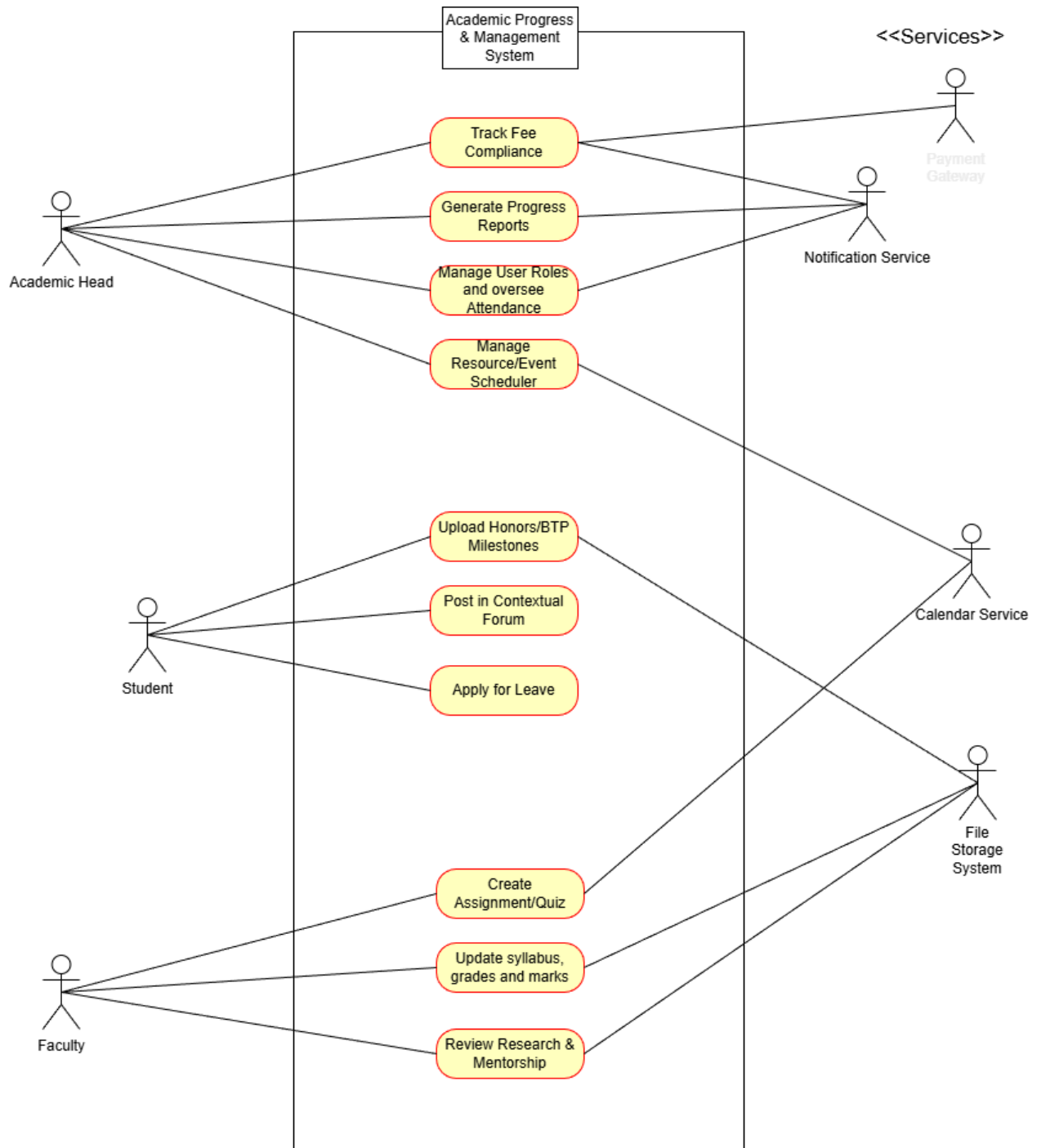
- The system shall provide a user-friendly and intuitive interface.
- The system shall require minimal training for users.
- The system shall be accessible on desktop and mobile web browsers.

5.6 Compliance & External Constraints

- The system shall comply with academic data privacy regulations.
 - The system shall integrate with external services such as: Notification services, File storage systems and Calendar services
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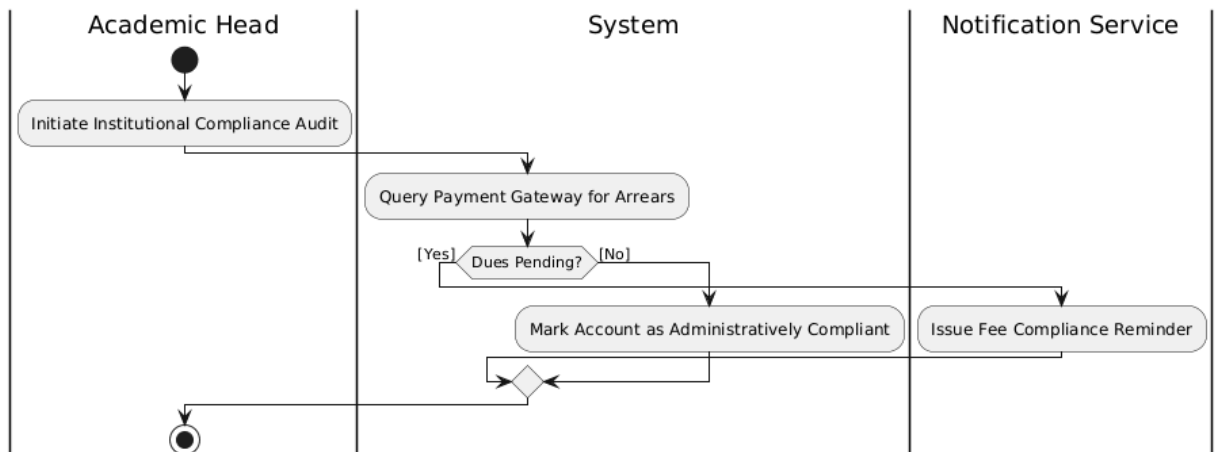
6. UML Diagrams

6.1 Use Case Diagram

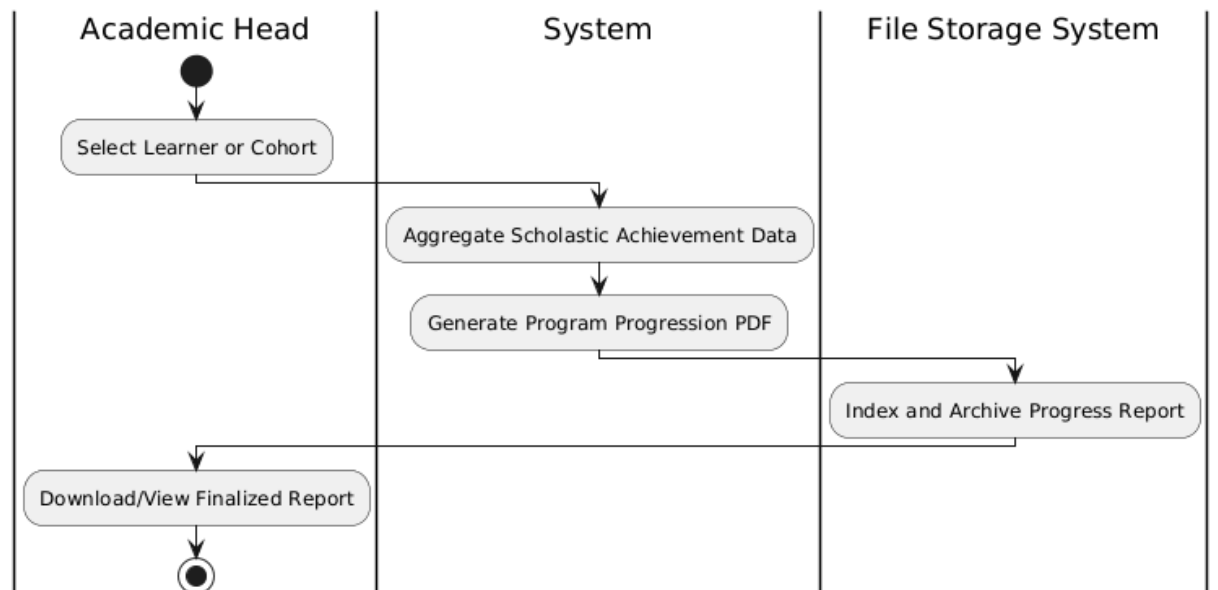


6.2 Activity Diagrams

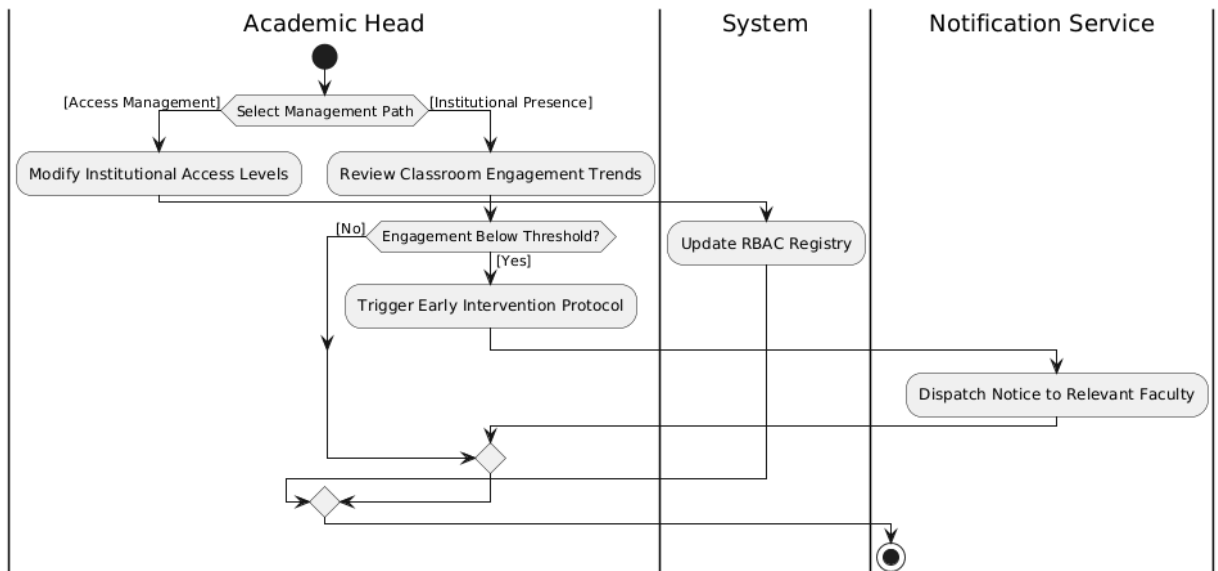
1. Track Fee Compliance



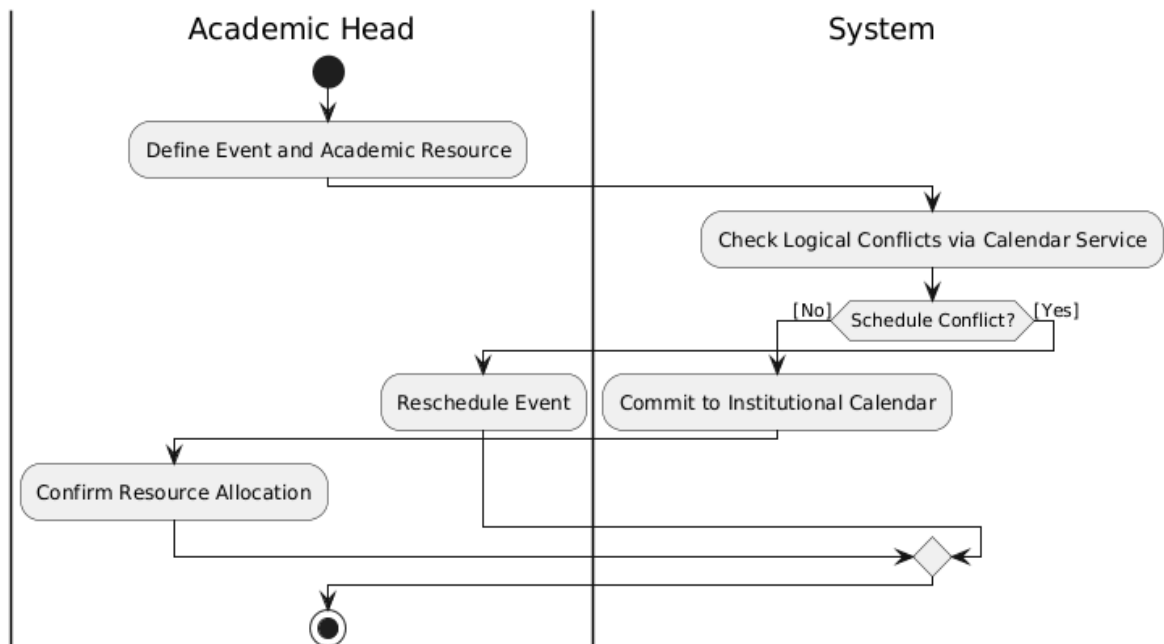
2. Generate Progress Reports



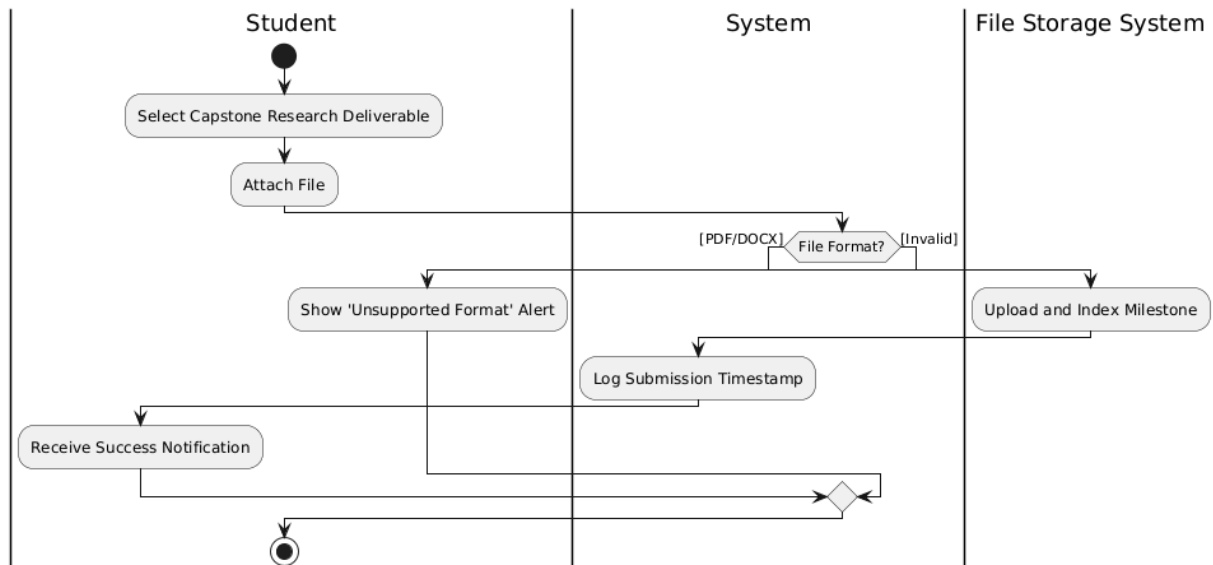
3. Manage User Roles and oversee Master Attendance



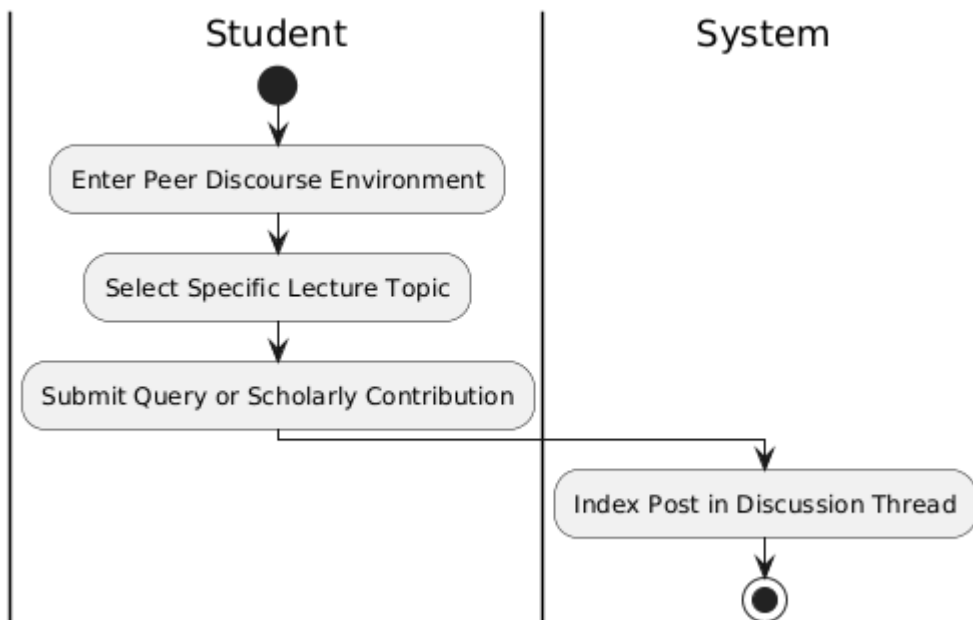
4. Manage Resources and Event Schedules



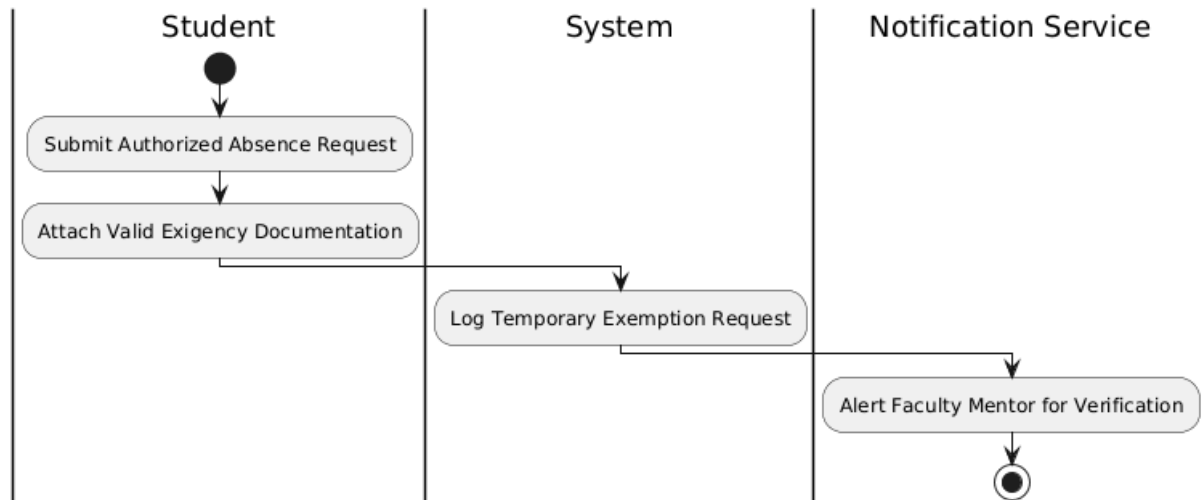
5. Upload Honours/BTP milestone



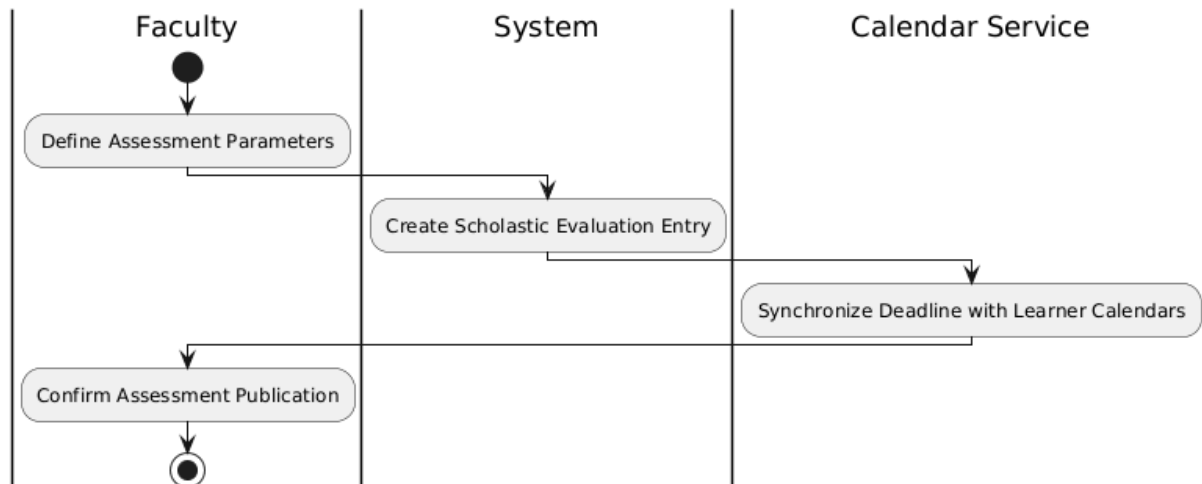
6. Post in Contextual Forum



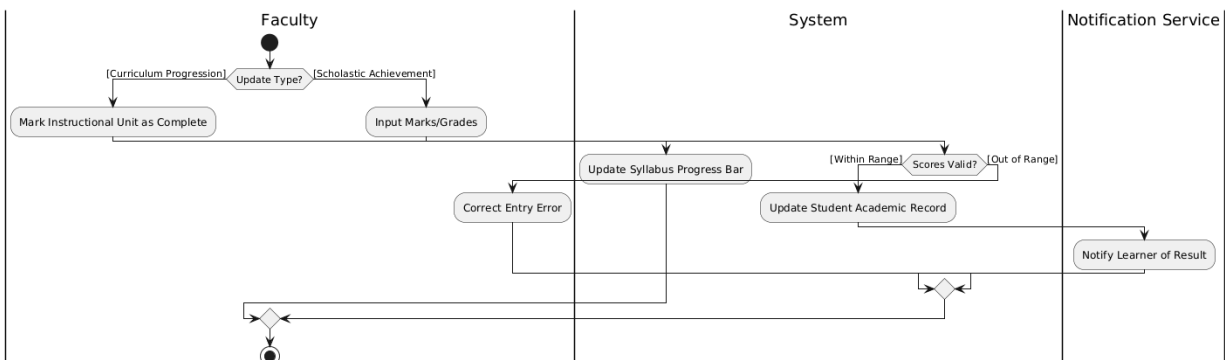
7. Apply for Leaves



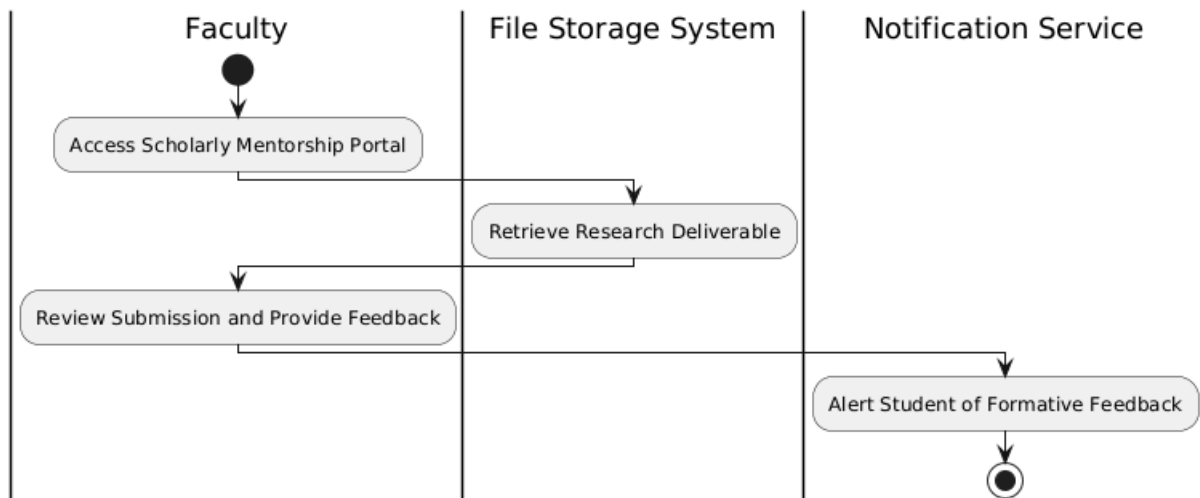
8. Create Assignments/quizzes



9. Update syllabus/grades/marks

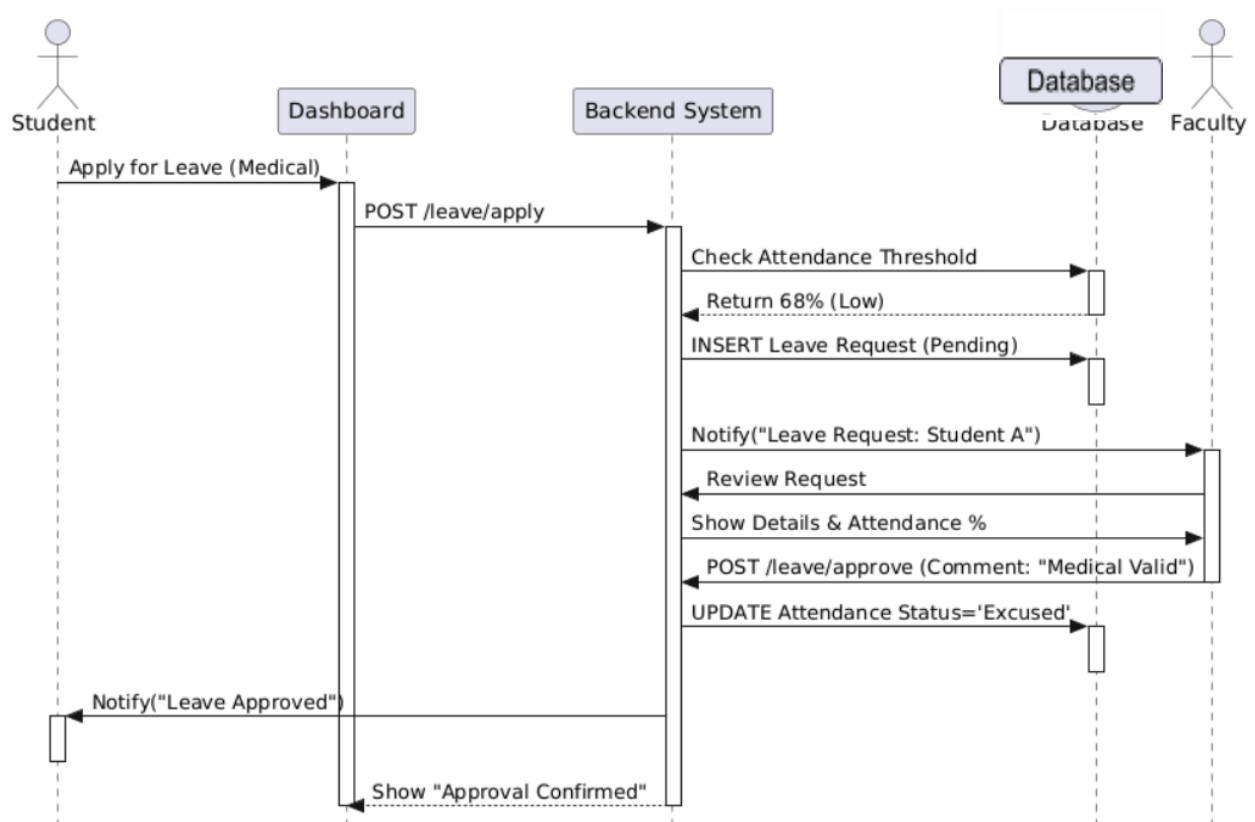


10. Review Research and mentorship



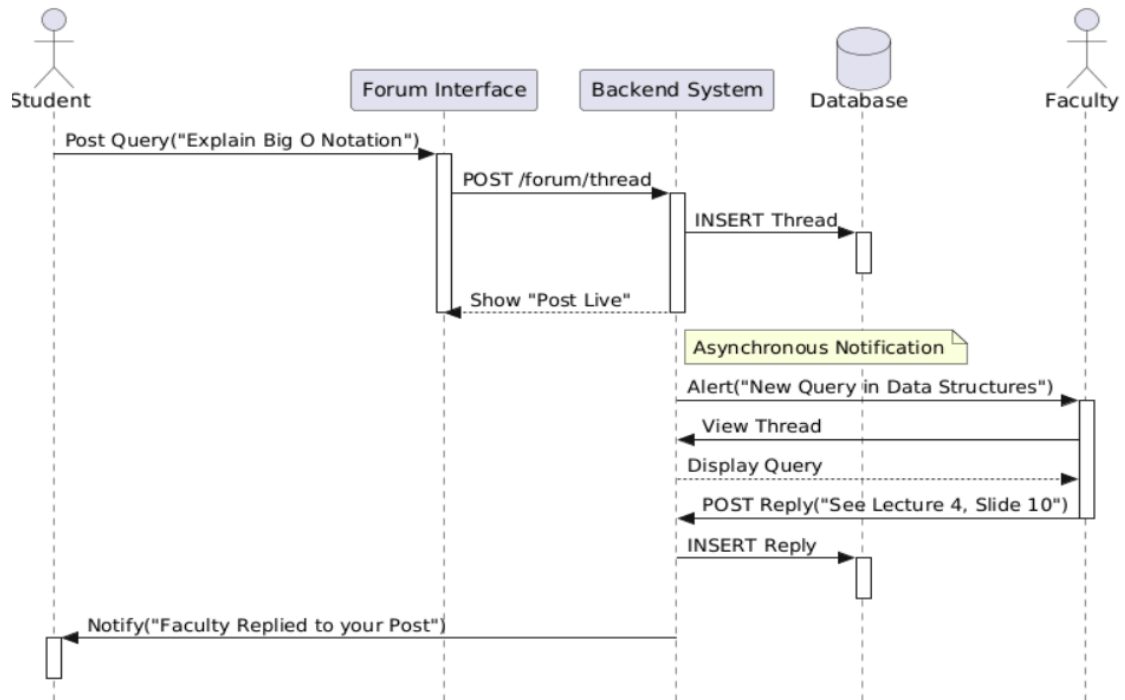
6.3 Sequence Diagrams

1. Apply for Leave

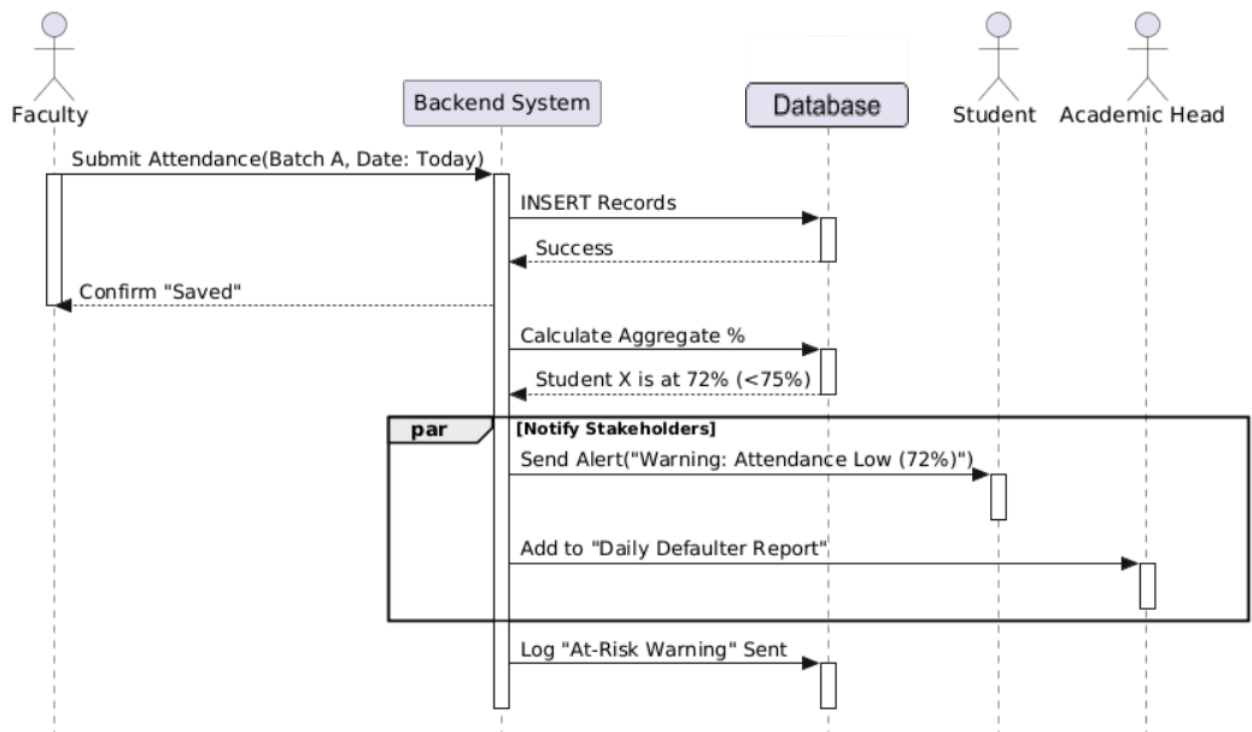


2. Post in Contextual Forum

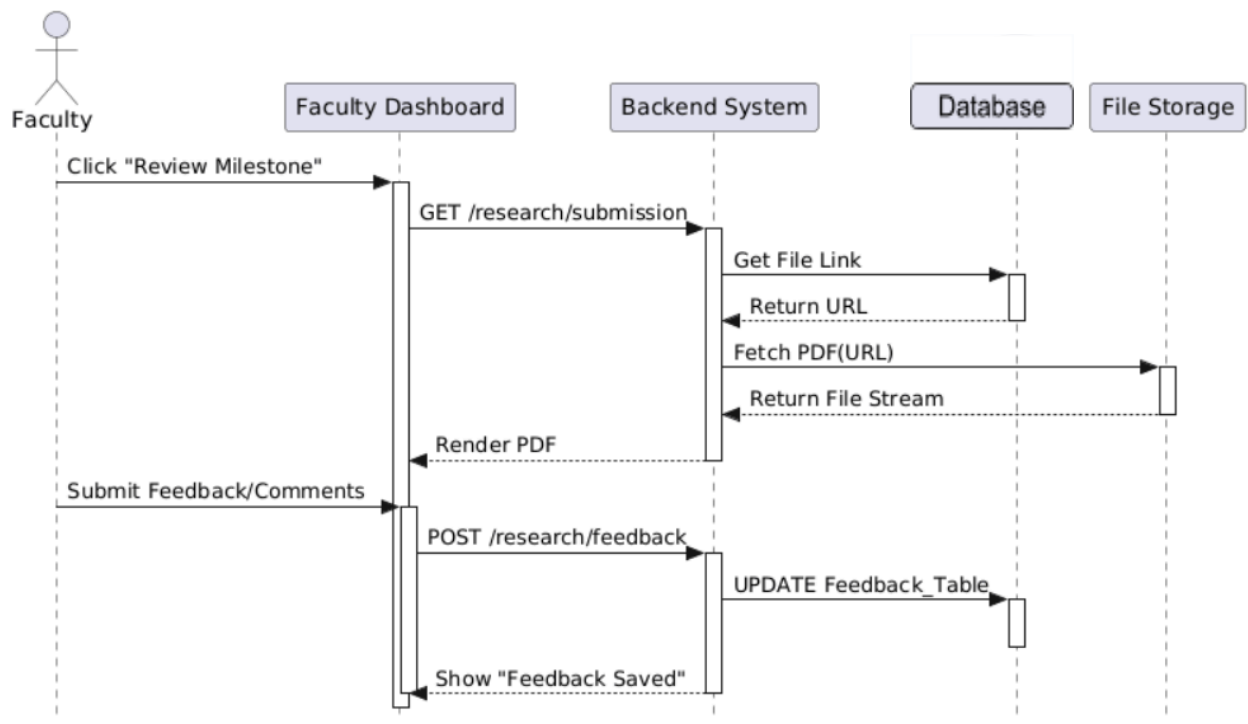




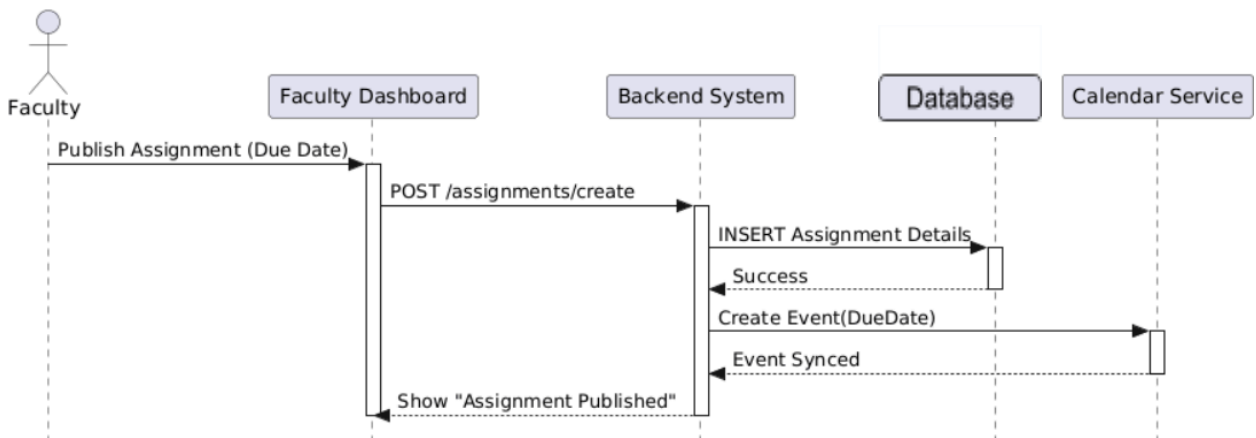
3. Comprehensive Attendance Cycle



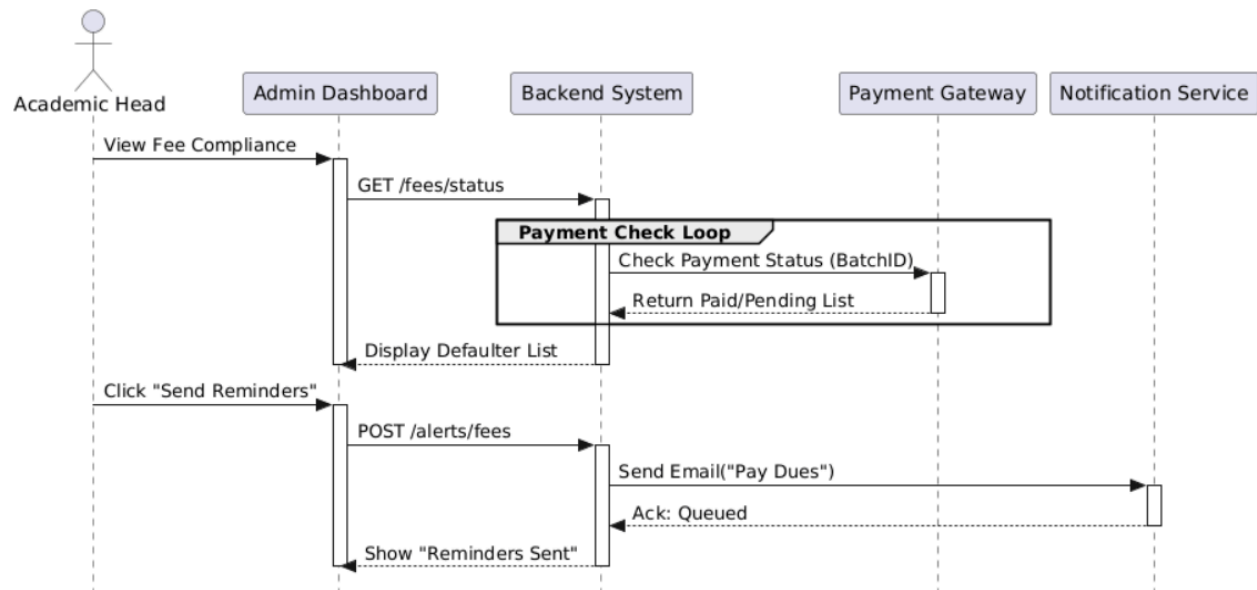
4. Review Research & Mentorships



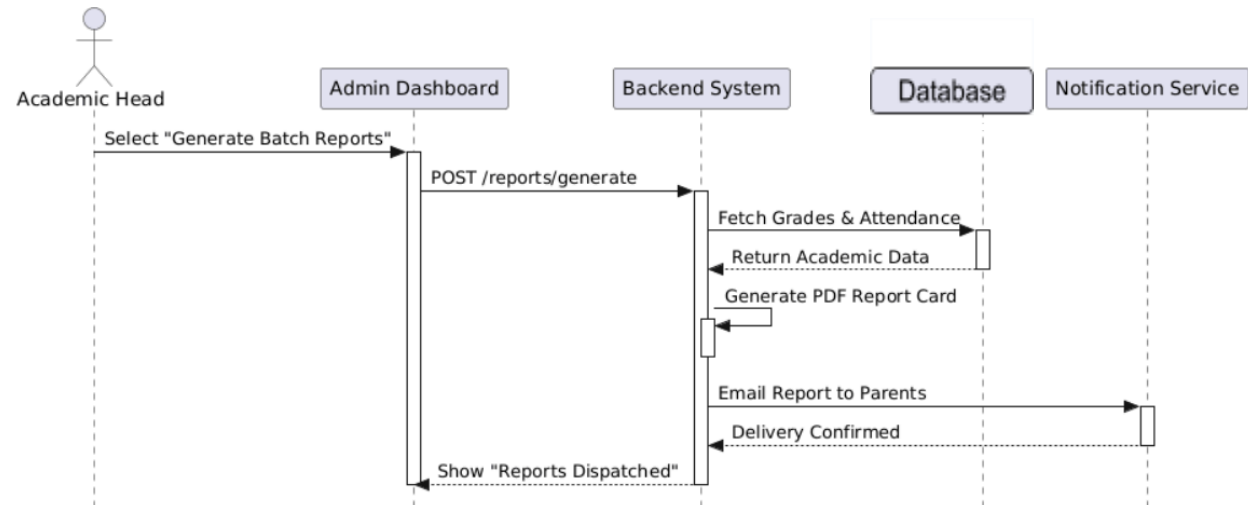
5. Create Assignment/Quiz



6. Track Fee Compliance

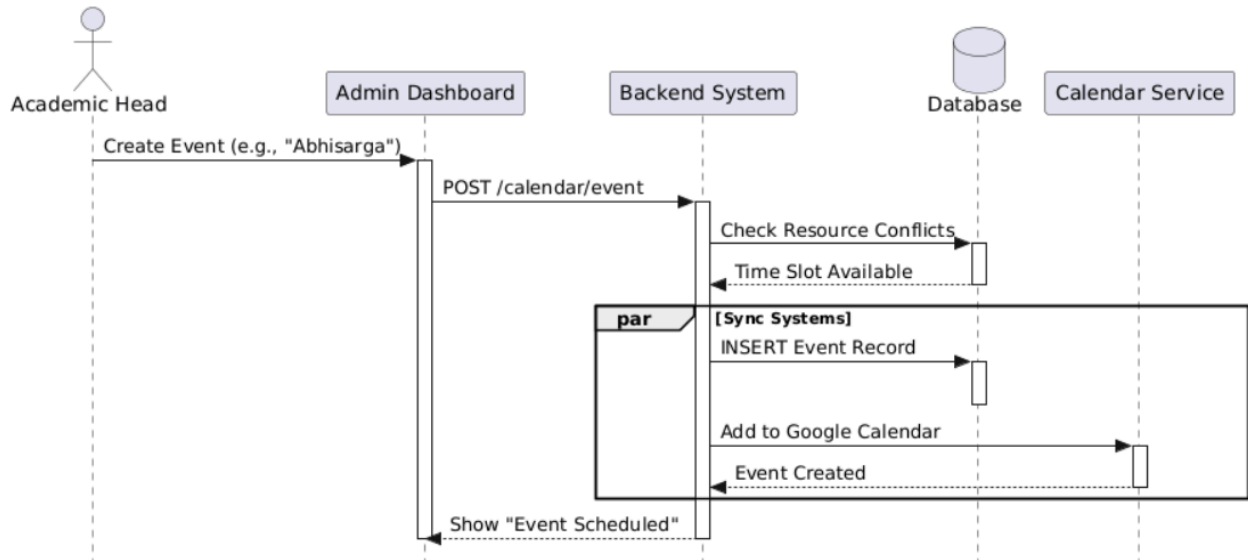


7. Generate Progress Reports

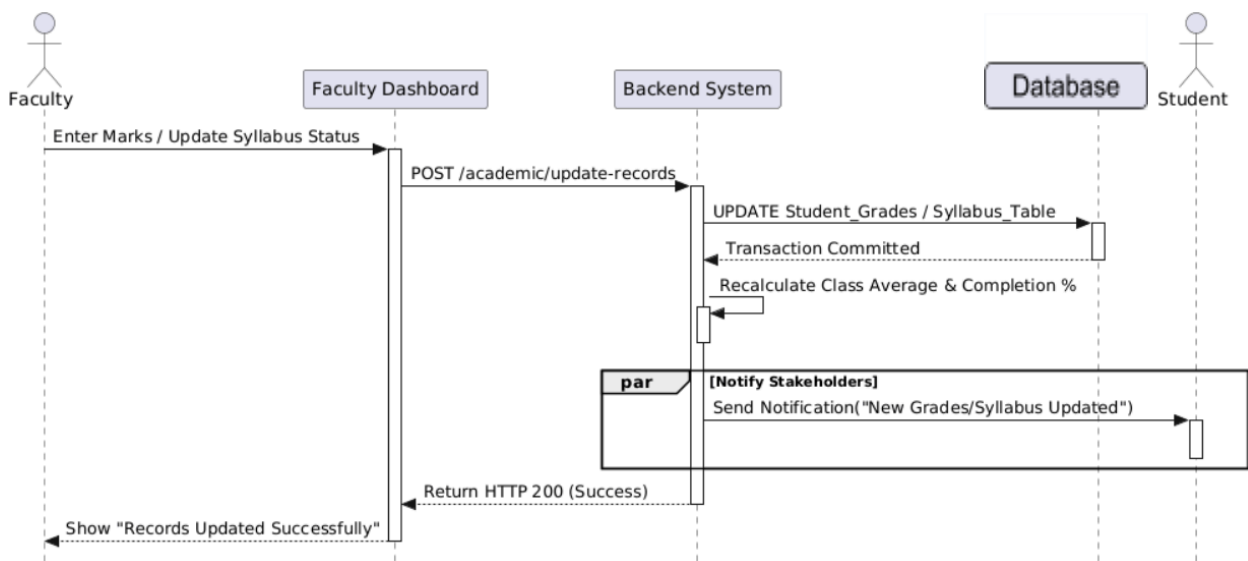


8. Manage Resource/Event Scheduler





9. Update Syllabus, Grades & Marks



10. Manage User Roles & Oversee Attendance

