

Software Engineering Project: Milestone 1

*Project report submitted to
Indian Institute of Technology, Madras
In partial fulfilment of the requirements for the course*

BSCSS3001: Software Engineering

by

Aditya Aman (22F3002024)
Soumyadeep Ghorai (21F1002906)
Mohak Khatri (21F1000865)
Prathyush Abhilash Kamti (22F2001059)
Aniket Ganguly (21F1002378)



BS in Programming and Data Science

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PROBLEM STATEMENT

Title: Tracking system for tracking student progress in Software projects for the IITM BS degree program.

Description:

The task is to create a web application that allows instructors to manage and monitor student software projects throughout the semester. The system will let instructors set clear milestones, track progress, and integrate with GitHub to automatically visualize student commit histories. Additionally, the platform will use AI to analyse project submissions (e.g., proposals, reports) and provide feedback. Instructors will have access to a centralized dashboard for an overview of all student projects and receive alerts for any falling behind schedule. The system also includes features for administrators and coordinators to manage users, track progress, and generate analytics for reporting and curriculum adjustments.

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MILESTONE 1: USER REQUIREMENTS

1.1 Various Types of Users

The users can be categorized into three types mainly 'Primary', 'Secondary' and 'Tertiary'. The different types and users are summarized in the table below.

[1.1] Identified Users

Category	Users	Remark
Primary	Students, Instructors	Student are primary users as they will upload the project milestones and other things and instructors will evaluate those and analyses those.
Secondary	Administrators, Coordinators	Administrators will manage user access and permissions. Coordinators will review analytics and overall dashboards along with insights.
Tertiary	Support Staff, Technical team	Support staff will assist students and instructors with any technical issue and technical team will watch for bugs and errors to fix and will keep the app updated.

1.2 Primary Users (Students and Instructors)

Students

1. **As a student,**
I want to log into my account securely,
so that I can access and use the project tracking features safely.
2. **As a student,**
I want to view a dashboard showing all my project milestones and their deadlines,
so that I can manage my tasks and progress effectively.
3. **As a student,**
I want to submit project documents, such as proposals and reports, directly through the application,
so that I can share my work with instructors for feedback and evaluation.
4. **As a student,**
I want to receive notifications for upcoming milestone deadlines and instructor feedback,
so that I can stay updated and make timely progress on my project.
5. **As a student,**
I want to view a visualization of my team's commit history,
so that I can reflect on our coding activity and identify areas for improvement.

Instructors

1. **As an instructor,**
I want to integrate the application with GitHub to automatically pull student commit histories,
so that I can monitor their coding progress without manually checking each repository.
2. **As an instructor,**
I want to set and customize milestones for each student project,
so that students have clear deadlines and tasks to follow throughout the semester.
3. **As an instructor,**
I want to use AI to analyse student-submitted documents, such as project proposals and technical documentation,
so that I can quickly assess their quality and provide feedback.
4. **As an instructor,**
I want to access a centralized dashboard showing the progress of all students or teams,

so that I can have an overview of their status and identify any at-risk projects.

5. **As an instructor,**

I want to receive alerts when a student is behind on their milestones,
so that I can intervene and provide support to help them get back on track.

1.3 Secondary Users (Administrators and Program Coordinators)

1. **As an administrator,**

I want to manage user access and permissions,
so that only authorized users can access specific features of the application.

2. **As an administrator,**

I want to upload bulk student enrolment data at the start of each semester,
so that all relevant student information is up-to-date and accessible.

3. **As a program coordinator,**

I want to monitor overall student project progress and milestone completion rates,
so that I can report on student engagement and performance to stakeholders.

4. **As a program coordinator,**

I want to review analytics on student project submissions and milestone achievements,
so that I can identify trends and recommend adjustments to the project structure if needed.

5. **As an administrator,**

I want to handle system-wide notifications,
so that students and instructors receive updates on important events or system changes.

6. **As a program coordinator,**

I want to access AI-generated insights on student submissions and performance,
so that I can make informed decisions on curriculum adjustments and support needs.

1.4 Tertiary Users (Support Staff, Technical Support)

Support Staff

- **As support staff,**
I want to assist students and instructors with any technical issues they encounter on the platform, so that they can continue using the application smoothly without disruptions.
- **As support staff,**
I want to have access to a support ticketing system integrated within the application, so that I can track, resolve, and manage any technical or usage-related issues efficiently.
- **As support staff,**
I want to receive system alerts related to outages or bugs, so that I can respond quickly to minimize downtime for users.

Technical Support

- **As technical support,**
I want to have access to detailed error logs and system diagnostics, so that I can quickly identify and fix issues in the application infrastructure.
- **As technical support,**
I want to regularly maintain and update the system, so that it remains secure, up-to-date, and performs optimally for users.
- **As technical support,**
I want to ensure proper backups of student and instructor data, so that no information is lost in case of system failure or unexpected events.

REFERENCES

- [1] Software Engineering Project: [Problem Statement](#)