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

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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.
   Timeline: This feature should be implemented by the start of the semester to ensure account security from day one.
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.
   Timeline: The dashboard should be live within two weeks after the project begins to allow sufficient time for tracking.
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.
   Timeline: This feature should be implemented by the start of the semester.
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.
   Timeline: The notification system should be fully operational within three weeks of project kickoff to avoid missed deadlines.

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.
   Timeline: This feature should be implemented by the start of the semester to ensure account security from day one.
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.

Timeline: The feature to customize milestones must be ready within the first three weeks of the semester to provide timely structure for students.

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.
   Timeline: AI analysis tools should be functional by mid-semester to help speed up evaluation for the majority of student submissions.
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.
   Timeline: The centralized dashboard should be fully implemented within the first month of the semester to allow early identification of issues.

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.
   Timeline: This feature should be implemented before the system goes live, ensuring access control is in place from the start.
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.
   Timeline: Bulk enrollment uploads must be ready one week before the semester begins to allow proper onboarding.
3. **As an administrator,**
   I want to handle system-wide notifications,
   so that students and instructors receive updates on important events or system changes.
   Timeline: The notification system should be set up within the first two weeks of system implementation to ensure timely communication.

1.4 Tertiary Users (Support Staff, Technical Support)

Support Staff

1. **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.

   Timeline: The support system should be operational from day one to handle any technical issues as they arise.

2. **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.

   Timeline: The ticketing system should be available within three weeks of launch to ensure smooth issue management.

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.

  Timeline: Error logs and diagnostic tools should be available from day one to address any system failures or bugs.

- **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.

  Timeline: Maintenance schedules should be set up within the first two weeks, with updates occurring monthly to ensure continuous system stability.

REFERENCES

[1] Software Engineering Project: Problem Statement