Islamic University of Technology
Department of Computer Science and Engineering

Team System322 Project Report

Lab 4: Project Management

Submitted by:

Sadman Shaharier Mahim -220041133

Alfi Shahrin - 220041153

Nayeemul Hasan Prince - 220041125

Submitted to:

Md. Bakhtiar Hasan

Assistant Professor, IUT-CSE

Course Code : CSE 4408

Course Title : System Analysis and Design

Section : 1(A)

Date of Submission : Friday, 20 June, 2025

1. Initial Project Plan and Schedule

The project adopts the Agile development methodology with Object-Oriented design principles, dividing the work into time-boxed sprints and clear, outcome-driven phases.

A. Work Breakdown Structure (WBS)

Top-level phases and activities

Phase	Activities
Exploration	1. Identify project scope and stakeholder needs 2. Define initial requirements and constraints 3. Form project team and define roles
Planning	1. Choosing tools, frameworks and tech stacks 2. Breaking down project into sprints 3. Define sprint durations, delivery targets, and review cadence
Design	1. Create UI wireframes for web and mobile views 2. Design the database schema 3. Define navigation flow and forum structure
Iterations to first release	1. Sprint 1 – User auth, backend-post models, UI routing 2. Sprint 2 – Thread/posting features, API connections, upvoting 3. Sprint 3 – Notifications, moderation tools, anonymous posting 4. Embedded testing and peer feedback in each sprint
Productionizing	1. Integration testing (frontend + backend) 2. User Acceptance Testing (UAT) with small group 3. Bug fixing and refinements 4. Deployment on IUT subdomain (VPS-based) 5. Create deployment docs and run onboarding sessions
Maintenance	1. Ongoing feature updates and performance monitoring 2. Moderator issue resolution and content control 3. Usability testing and feedback incorporation 4. Maintain support channels (FAQs, student helpdesk)

Table 1: WBS

B. Time Estimation

Phase	Duration (Week)	Purpose
Exploration	2	Identify problem, users, goals, and feasibility
Planning	1	Define backlog, roadmap, team roles, and sprint plan
Design	2	Create UI mockups, database schema, and system architecture
Iterations	2+2+2	Divided the Pre-release iterations into 3 sprints
Sprint 1	2	Develop core features (auth, posting)
Sprint 2	2	Add threads, comments, voting, moderation tools
Sprint 3	2	Implement notifications, polish UI, integrate feedback
Productionizing	1	Final testing, documentation, deployment, and training
Maintenance	Ongoing	Post-launch fixes and small improvements

Table 2: Time estimation

C. Gantt Chart

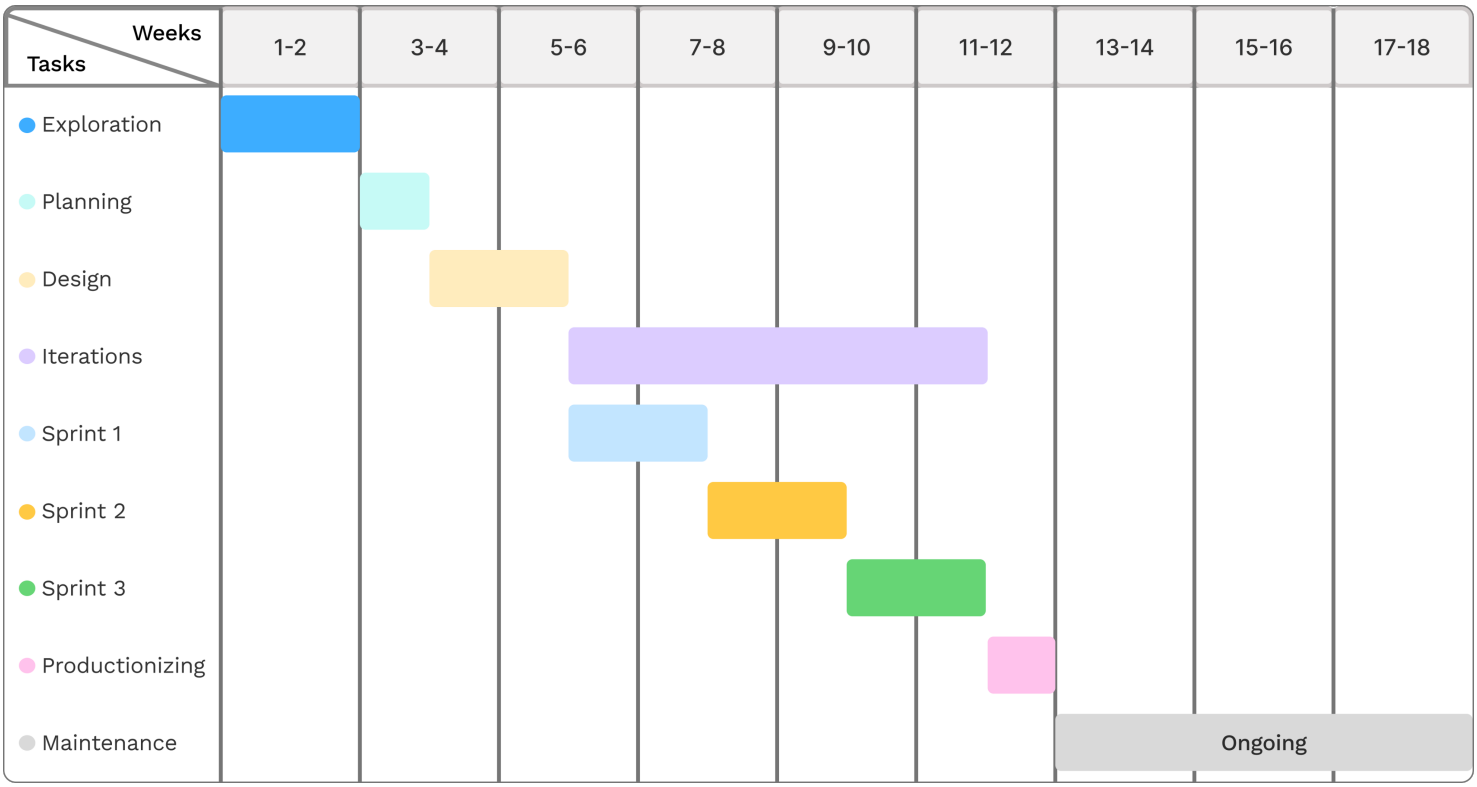

Fig 1: Gantt chart

2. Team Composition and Risk Analysis

A. Key Skills and Responsibilities

Role	Skills	Focused areas
Project Lead	Requirement gathering from stakeholders, user needs analysis and workflow visualization	Planning, Analysis
Programmer	MERN Stack (React, Express, Node js) , Git, REST and OAuth API etc	Development, Testing
Database Specialist	MongoDB, schema design, ER modeling	Development, DB Design
UI/UX Designer	Figma, HTML/CSS/JS, usability testing	Design
Domain Expert	Familiarity with university structure, OSW protocols.	Testing, Analysis

Table 3: Team composition

B. Assessment of project risks

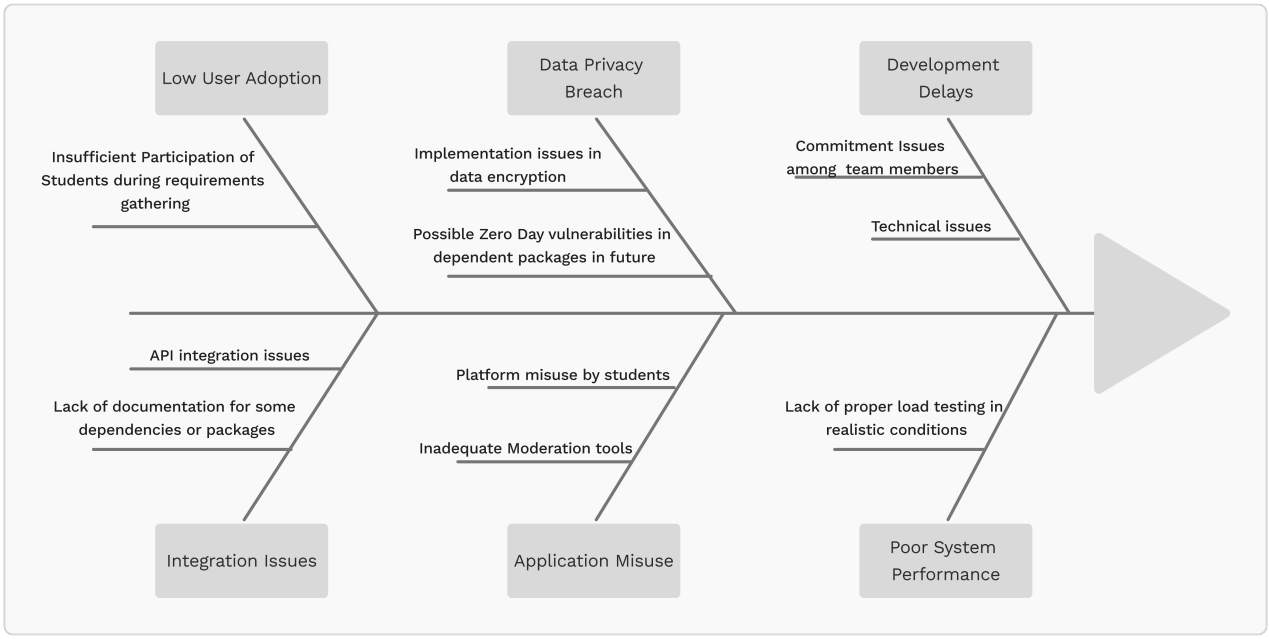

Fig 2: Fishbone diagram

i. Risk: Low User Adoption

Cause: If students are not actively involved during the requirements gathering phase, they may feel disconnected from the system and less motivated to use it after launch.

ii. Risk: Data Privacy Breach

Cause: Implementation flaws in data encryption or future vulnerabilities in third-party packages (e.g., Zero-Day exploits) could lead to unauthorized access to sensitive information.

iii. Risk: Development Delays

Cause: Commitment issues among team members or unexpected technical obstacles may slow down progress and affect sprint timelines.

iv. Risk: Integration Issues

Cause: Lack of proper documentation for certain APIs or packages could result in unexpected errors or delays during system integration.

v. Risk: Application Misuse

Cause: Without strong moderation tools, students may misuse the platform for spamming, trolling, or posting inappropriate content, affecting the platform's reputation and safety.

vi. Risk: Poor System Performance

Cause: If load testing is not conducted under realistic user conditions, the system may fail to scale or perform reliably when accessed by a large number of users.

3. Project Charter and Proposal Outline

A. Project Charter

i) Objective: To create a centralized, university-specific forum for students to report issues, seek help, and engage with university administration in a moderated and structured environment.

ii) Scope:

In-Scope:

- User Authentication
- Thread & Post Management
- Forum-based issue reporting
- Voting and commenting system
- Notifications
- Moderation tools

Out-of-scope:

- Private Messaging (DMs)
- Monetizations/Ads
- Unvetted AI-generated content

iii) Methods:

Development Methodology: Agile with Object-Oriented principles

Technology: Use of MERN stack and Flutter

iv) Participants:

Project Team: Assembled for the analysis, design and development

Stakeholders:

- General Students
- University Faculty
- Alumni

- University Admins

v) Deliverables:

- Full stack web platform called IUTian Threads\
- User guide, deployment manual
- System documentation including APIs
- Testing Reports

vi) Evaluation Criteria:

- System functionality & completeness
- Usability and user feedback
- Alignment with project goals

vii) Timeline: 4-5 Months, 1-2 buffer weeks

viii) Training Plan:

- User guides for students and moderators
- Live demonstration sessions
- Support page in FAQ format
- Admin/moderator onboarding session

ix) Maintenance:

- Will remain continuous after deployment, following Agile approach
- Designated moderators to handle content issues
- Server performance monitoring and periodic system checks

B. Project Proposal Outline

i) Executive Summary:

- **Who:** Students at (IUT) and the Office of Students' Welfare (OSW)
- **What:** A university-hosted forum platform (IUTian Threads) for structured student-administration communication

- **Why:** Current platforms are distraction-prone and ineffective for issue reporting, especially in times of crisis (e.g., recent student protests)
- **How:** The system will be built in-house using IUT's infrastructure
- **Final Recommendation & Desired Action:** Development and pilot deployment of IUTian Threads

ii) Outline of Systems Study:

Data Collection Methods:

- Issue observation (communication bottlenecks during crises)
- Informal feedback from students and moderators
- Cultural analysis of digital platform usage at IUT
- Research on institutional communication models

Participants:

- Students (general users)
- IUT-OSW members and university administration

iii) Detailed Results of Study:

Key Problems

- No centralized channel for structured student-administration communication
- Use of unregulated platforms (e.g., Facebook groups) leads to misinformation
- Students lack confidence in privacy and impact when raising issues

Opportunities

- University-hosted, structured, anonymous reporting platform
- Moderated discussions improve civility and actionable feedback
- Archivable communication threads for accountability

iv) Systems alternative analysis:

1. **Continue Status Quo (Facebook/WhatsApp groups)**
    - **Pros:** No setup needed
    - **Cons:** Distracting, unmoderated, lacks credibility or structure

2. Use External SaaS Platforms (e.g., Discord, Slack)

- **Pros:** Ready-made tools, supports discussion features
- **Cons:** Lacks institutional control, privacy concerns

3. (Recommended): Build IUTian Threads

- **Pros:** Custom, secure, moderator-backed, IUT-branded
- **Cons:** Requires in-house development and training

v) Systems Analysts' Recommendation:

Suggested Solution: Develop IUTian Threads

Reasons:

- Directly addresses gaps in structured communication
- Secure and scalable within IUT's hosting infrastructure
- Supports IUT's student wellbeing and digital campus goals

vi) Proposal Summary:

- **Objective:** Improve issue reporting and feedback channels between students and administration
- **Feasibility & Backing:** Strong, supported by OSW vision and university infrastructure
- **Recommendation**: Proceed with full-stack development and phased pilot launch
- **Overall Note:** IUTian Threads will enhance transparency, improve trust, and promote a collaborative campus culture.

— End of Report —