Islamic University of Technology
Department of Computer Science and Engineering

Team System322 Project Report

Lab 3: Project Management

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Abstract

In light of recent protests at Islamic University of Technology (IUT), it has become increasingly necessary to establish a clear and robust line of communication between the university administration and the students regarding the issues they face. Our selected organization, the IUT Office of Students' Welfare—otherwise referred to as IUT-OSW or OSW hereafter in this report—is the students' official channel of communication with the university administration. OSW's core function is to ensure the well-being of every student by enhancing a favorable academic environment. However, OSW currently lacks the proper necessities to establish a strong line of communication with the students. As a result, student voices often go unheard, buried under layers of informal channels and institutional red tape. This disconnect contributes to student frustration, adding to the existing academic pressure and ultimately disrupting the supportive learning environment essential to their success.

The official university website offers no features for student engagement or issue reporting, leaving a communication gap that affects student well-being and administrative responsiveness. Students resort to using platforms like Facebook to engage in discussions, but the Facebook platform is distraction-prone, and content is often automatically curated by its black-box algorithm—causing important topics to be buried under other posts and discussions. Moreover, there is a lack of credibility and insufficient moderation tools, as anyone with a Facebook profile can infiltrate the groups and cause confusion among the students.

IUTian Threads aims to bridge this gap by creating a Reddit-style forum system tailored to the IUT context. This platform will enable categorized discussions, issue reporting, anonymous posting, and voting features—all designed to empower student voices and streamline their communication with university leadership.

1. Problem Definition and Project Selection Justification

Problem Statement

        The current student communication system with the university administration and OSW at IUT is fragmented, relying heavily on an insufficiently moderated and distraction-prone platform (Facebook). This hinders meaningful dialogue and engagement with university administration, resulting in many student concerns going unresolved. As such a dedicated, structured, and moderated platform is essential to streamline communication and support student well-being.

Key Issues

Among the problems and opportunities identified here are the key problems that needs to be addressed primarily:

1. Communication gap between the students and the administration
2. No official digital platform for student concerns
3. Facebook groups are chaotic, unmoderated, and easily derailed
4. Difficult for students to raise issues without anonymity
5. No effective communication feedback loop with OSW
6. Students feel underrepresented and unheard

Project Objectives

In order to address the key issues that have been outlined above the following are the primary objectives of our project:

1. Create a centralized university-specific discussion forum for students' concerns
2. Enable structured, category based communication
3. Provide moderation features for OSW and designated staff
4. Foster constructive discussions through community feedback
5. Bring attention to sensitive issues by posting anonymously
6. Establish direct reporting channels from students to administration

High-Level Requirements

To ensure the objectives of our project are met, the high-level requirements of our platform

are:

1. User authentication (including anonymous posting)
2. Issue/Category based sub-forums
3. Threads system with voting and comments
4. Thread Management
5. Post and comment system
6. Voting mechanism
7. Analytics/dashboard for OSW insights
8. Desktop/mobile accessibility via modern UI

Constraints

However given the limited scope of our team and the need to coexist development along side

other semester activities there will be some constraints, they are:

1. Limited development time
2. Budget constraints for hardware and licenses
3. Varying technical proficiency among team members
4. Institutional reluctance to adopt new tech platforms

Project Justification (Five Selection Criteria)

1. **Management Backing:**

   OSW is supportive of welfare initiatives and already seeks better ways to interact with
   students. Hence, to improve the overall situation regarding student communication and
   issue resolution, the project has received initial conceptual support. The proposed system
   aligns with OSW's objectives, and with proper demonstration of its benefits and
   feasibility, full backing from OSW is both realistic and attainable.

2. **Appropriate Timing:**

   Given the recent student protests and rising concerns over the lack of a reliable communication channel, the timing for this project is ideal. The university community is actively seeking solutions to improve transparency and student-administration engagement.

3. **Strategic Goal Alignment:**

   It already clear that the project aligns with and stems from OSW's mission to promote student well-being by enabling open, recursive dialogue and issue resolution.

4. **Practicality**:

   The development phase of the project will utilize the existing skill set of the development team. A functional Minimum Viable Product (MVP) can be developed and launched in a short timeframe and the use if free-tier and/or open-source frameworks along with IUT's internal server infrastructure will help to keep costs within development allocations.

5. **Worthwhile Investment:**

   The project is very prospective at addressing the key issues that have been identified. Moreover the tangible and intangible benefits such as reduced admin load, improved morale, and better decision-making clearly outweigh the cost of development and the amount of organizational changes required are little to none.

2. Preliminary Feasibility Assessment with TEO

A. Technical Feasibility

1.Technological Availability:

Among the available technologies, Our system development will be supported by:

- Preferred use of MERN Stack (MongoDB, Express, React, Node.js) for web and Flutter for Mobile

- Authentication and Notification features powered by Firebase

- Source Control managed through GitLab or GitHub

- Team members possessing working knowledge of relevant frameworks and APIs

2. Skill and Infrastructure:

Our team has core skills in web development with additional learning planned for real-time features and role-based access control. Development and deployment will rely on free-tier tools like Firebase Hosting and MongoDB Atlas, eliminating the need for licensed software or specialized hardware. IUT's existing infrastructure and student-accessible devices are sufficient to support both development and user adoption.

3. Potential Obstacles:

Despite smooth development procedures, we may face some potential challenges such as,

- **Integration with University Login Systems:** IUT lacks a centralized OAuth or SSO system, requiring the team to build a custom authentication mechanism for IUT email verification.

- **Server Infrastructure Expansion:** Although IUT has a strong server infrastructure, expanding access and deployment within this environment may involve administrative and technical coordination.

- **Security and Scalability:** Ensuring the system can handle spikes in user activity, protect user data, and prevent abuse (e.g., through anonymity) will require careful backend design and testing

4. Hardware vs Cloud/SaaS:

• Why use Hardware?

IUT already has a very robust server infrastructure with its own Class-B IP addresses and it is very well maintained by proficient university professors

• Why not Cloud/SaaS?

Since IUT has existing hardware infrastructure, opting for cloud-based options are not necessary

5.Deployment Challenges:

- Motivating students to shift to a new platform over familiar social media requires strategic onboarding.

- Ensuring seamless and consistent performance across different browsers, desktop and mobile services add development complexity

- Establishing a reliable CI/CD pipeline and managing version control are essential for smooth updates.

- Server downtime must be carefully managed to minimize service interruptions.

B. Economic Feasibility

Tangible Benefits:

- Reduced administrative burden in handling student issues.

- Centralized tracking of complaints and resolutions

- Low-cost development and hosting due to student effort and university resources

- Data analytics to support university policy decisions

Tangible Costs:

- Development will cost 240+ hours of student effort for building and testing the platform.

- Minor expenses include domain registration and optional development tools, libraries or framework.

- Ongoing maintenance and support will incur steady expenses

- Training costs cover materials and sessions for onboarding users and moderators.

Qualitative Judgement:

Benefits outweigh the costs, especially considering long-term efficiency and engagement improvements.

C. Operational Feasibility

i) High likelihood of user acceptance:

- Already active student body on social platforms, indicating openness to online forums

- Student adoption is expected to be high based on their clear need of a centralized, moderated system.

ii) Integration with workflow:

- The system is designed as a non-intrusive supplement to current workflows

- simplifies how student concerns are gathered and responded to

- Administrative users will benefit from clearer feedback streams and improved prioritization of student issues.

iii) Change management:

- Orientation sessions and visual guides for first-time users

- Feedback loops with OSW and IT to ensure gradual refinement

- Moderation and transparency practices to build trust.

3. Costs and Benefits Outline

Tangible Benefits

These are the measurable advantages that has a direct impact on administrative efficiency, cost savings, and the university's daily operations.

1. Reduction of administrative workload

The platform will reduce the burden on authority by centralizing communication and feedback.

2. Faster resolution of student concerns

Structured forums will allow quicker identification and efficient handling of issues.

3. No third-party dependency

Our forum will help to remove reliance on social media platforms (Facebook) to host student discussions.

4. Efficient university planning

Our platform will provide organized feedback, enabling better policy and decision-making.

5. Utilization of existing servers

External hosting costs can be avoided by leveraging current hardware infrastructure.

Intangible Benefits

These are the non-measurable advantages that reinforce the university's culture, student satisfaction, and campus environment.

1. Increased student engagement and representation

Students will feel more connected and valued within the university in university matters.

2. Improved communication and transparency

Open and honest dialogue can be facilitated between students and administration.

3. Enhanced decision-making

Administrators will be able to make more informed decisions based on structured community input.

4. Strengthened campus community

A more cohesive and inclusive environment can be built by utilizing a structured platform.

5. Enhanced reputation of OSW and IUT

Implementing our platform will help to promote IUT as an innovative and student-focused institutionu.

Tangible Costs

These are the direct, measurable expenses required to build, deploy, and maintain the system.

1. Developer labor

The project will require significant time and effort from student developers.

2. Hardware for moderators/admins

Laptops or desktops will need to be purchased for forum administrators and moderators.

3. Domain and software tools

Some minor costs will be required for a domain name and any optional development tools.

4. Training materials and orientation

Orientation sessions and training materials will be created to ensure a successful onboarding.

5. Dedicated Devices for moderators

Dedicated devices will be provided to the moderators and admins of our forum so that they can execute their tasks effectively.

Intangible Costs

These are the non-measurable challenges that may affect adoption, sustainability, and long-tern success.

1. Temporary productivity dips

There may be a temporary decrease in productivity while users adapt to the new system.

2. Risk of misuse

There is a possibility of spam, abuse, or misuse of the platform by users.

3. Ongoing moderation needs

Continuous effort will be needed to ensure healthy and constructive discussions.

4. Platform fatigue

Over time, there is a risk of reduced engagement if the platform is not consistently maintained and promoted.

High-Level Budget Outline

The overall budget prioritizes internal resources, leverages existing infrastructure at IUT, and focuses spending on human capital and moderation to ensure system usability and adoption.

Category	Description	Estimated cost
Project Team Expense	~240 hours @ $10/hr (student developers, planners, testers) for 4hr work day over 60 days	$2400
Hardware	Basic desktop/laptop provisioning for admin/moderator use	$300
Software	Domain name, optional UI libraries or back-end tools	$150
Training	Orientation sessions, handouts, and documentation for stakeholders	$300
Support / Moderation	Honorarium/incentive for moderation and management	$250
		TOTAL: $3400

Sources: Upwork, Quora, Star Tech, Ryans Computers, Namecheap, Glassdoor

Table 1: Budget Outline

- **Project Team Expense ($2,400):** This is the largest component of the budget, accounting for approximately 240 hours of combined effort from student developers, planners, and testers, estimated at $10/hour over a 60-day development cycle.

- **Hardware ($300):** A basic desktop or laptop is budgeted for admin or moderator use, especially for content oversight and management within the forum system. As IUT already has its own server infrastructure, no additional backend hardware is needed.

- **Software ($150):** This includes costs for securing a domain name and potentially licensing UI libraries or backend tools if needed beyond the free-tier offerings.

- **Training ($300):** Orientation sessions and stakeholder documentation are essential for onboarding both student users and staff moderators. This budget covers materials and facilitation.

- **Support / Moderation ($250):** To ensure sustained content quality and responsiveness, a modest honorarium is set aside for moderation and platform oversight.

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