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SECURE LOST ITEM CLAIM SYSTEM WITH IMAGE PROOF

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Secure Lost And Found Item Claim System with Image Proof

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Abstract

In this project, a web-based application called safeguard Lost Item Claim System with Image Proof is developed to digitize and safeguard the lost-and-found case management process in a university context. The conventional method, which frequently consists of verbal communication, social media updates, and physical logbooks, is neither standardized, traceable, or secure. Important data may be lost as a result, incorrect claims may be made, and administrative personnel may be overburdened by ineffective procedures.

Students and faculty may report lost or discovered things, provide pertinent information, and upload visual proof to bolster their claims using the system created for this project. Only authorized people may access and handle critical data thanks to its role-based access control, user authentication, and secure file upload capabilities. In order to adhere to fundamental cybersecurity best practices, the system also incorporates input validation, session management, and password hashing.

The system was developed iteratively utilizing the Agile technique, enabling ongoing testing and improvement. Backend and database activities were handled by technologies like Flask (Python) and MySQL, while frontend user interface design was done with HTML, CSS, and Bootstrap. To find and fix common vulnerabilities, security testing was done with tools like OWASP ZAP.

This project effectively illustrates how the administration of lost-and-found goods on campus may be improved using a digital system that is safe, effective, and easy to use. By securely processing personal data and verifying claims, it not only boosts operational efficiency but also user confidence.

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1 INTRODUCTION

1.1 Introduction

Taking care of lost and found things is a crucial but frequently disregarded part of campus operations in most academic settings. When employees or students misplace their property, they typically turn to manual and informal reporting techniques like posting on social media, sending a WhatsApp message, or hanging physical signs around campus. These approaches are unstructured, ineffective, and vulnerable to data loss, misrepresentations, and misunderstandings. In the age of digital transformation, such systems are no longer sufficient to meet the needs of a growing, tech-savvy academic community.

In order to overcome these limitations, this project proposes developing a Secure Lost Item Claim System with Image Proof. The system will function as a centralized platform that allows users to attach photographic proof, report lost or discovered things, and monitor the progress of their claims. The system, which was developed with cybersecurity in mind, will also include key security features including data validation, user authentication, access control, and secure picture management. By combining functionality and security, this system aims to enhance transparency, accountability, and efficiency in managing campus lost-and-found processes.

1.2 Project Background

Observing how colleges, especially Universiti Poly-Tech Malaysia (UPTM), now manage lost and found goods gave rise to the concept for this project. Usually, there is no digital record or follow-up system in place, so staff members or students who locate or lose objects are forced to either contact administrative officials personally or make handwritten reports. Found objects are frequently shared on unauthorized sites like social media or group chats, which are prone to spam, impersonation, and false information.

This project solves a typical operational problem seen in numerous colleges and universities rather than coming from an outside customer. Potential users who regularly come across misplaced objects or want a dependable way to recover them, such as students, faculty, and university employees, are the focus of the suggested solution. Additionally, a single platform will help the student affairs and campus security agencies better monitor, validate, and handle item claims. In addition to enhancing the lost-and-found process from the first reporting to the last verification and claim processing, the platform uses secure design principles to protect the privacy and integrity of data.

1.3 Problem Statement

1.3.1 Manual Lost-and-Found Management at UPTM

At present, UPTM relies on manual methods to manage lost-and-found cases, such as logbooks, emails, and verbal notifications. These practices are time-consuming, difficult to track, and lack standardization. Errors and conflicts are more likely when items are submitted or claimed since it is sometimes impossible to confirm ownership or guarantee that correct records are kept.

1.3.2 Lack of Verification and Security in Existing Processes

Since there is currently no authentication or verification in place, it is simple for impersonation or fraudulent claims to happen. The lack of an accessible and safe platform may prevent students from reporting discovered things at all, and students may fraudulently claim an item without providing evidence of ownership. This makes the system vulnerable to abuse and erodes confidence in the lost-and-found procedure.

1.3.3 Fragmented and Unstructured Management of Lost-and-Found Cases

The current approach to handling lost and found items at UPTM is fragmented and lacks a formal structure. Information about the items is spread through many informal channels, including bulletin boards, messaging apps and verbal conversations, without a dedicated digital platform. This fragmented procedure leads to inconsistent results, redundant work and little visibility into reported incidents. No mechanism has been specifically established to compile reports, monitor the status of items, or ensure regular follow-up. Due to the lack of consolidated data to support audits and decision-making, administrative departments are forced to rely on tedious manual work, and recovery rates continue to be poor. The lack of a single solution severely undermines the effectiveness and transparency of lost and found operations.

1.4 Project Objectives

1.4.1 To create a digital platform that replaces the manual lost and found process at UPTM

Investigating and evaluating several safe and easy-to-use techniques for reporting, confirming, and claiming misplaced objects is the main goal. This entails looking at current solutions, such as iLost & Found and LostandFoundNetwork, to determine best practices, evaluate security requirements, and modify features to fit the demands of UPTM.

1.4.2 To develop a secure user authentication to prevent fake or unauthorized claims

The objective of this project is to thoroughly analyze both functional and non-functional needs. User roles, item tracking, and photo uploads are examples of functional features; security, dependability, and usability are examples of non-functional features. These results will be used to construct system models, including use case diagrams, entity-relationship diagrams (ERD), and data flow diagrams (DFD).

1.4.3 To impliment a system that can manage lost and found records for easy tracking and management.

Designing and implementing a functional prototype of a web-based system with capabilities including image uploads, user login, admin review, and notification alerts that enables users to report and claim missing objects is another important goal. Security features including input validation, role-based access control, session timeout management, and password hashing will all be included into the system.

1.5 Scope and Target User

1.5.1 Project Scope

Designing and creating a web-based system that enables users to safely report lost or recovered things on the UPTM campus is the main goal of the project. Notification alerts, admin approval workflow, item submission, image upload, and user authentication are examples of core modules. The system will be put into use as a prototype, tested for security and functionality, and assessed based on input from a small user base.

1.5.2 Product Scope

The finished solution will provide role-based data access, safe user registration and login, item information submission with photographic proof, and administrative tools for verification. In its first stage, it won't enable mobile apps or third-party system integration, although these features could be added later.

1.5.3 Target User

The primary users of this system are students, lecturers, and administrative staff at UPTM. Administrative personnel (such as those from Security or Student Affairs) will act as system administrators, in charge of confirming claims and keeping an eye on use, while students can utilize the system to report or claim missing things. All stakeholders stand to gain from the system's open, safe, and easy-to-use approach to lost property management.

1.6 Overview of This Report

The format of this report is designed to give a thorough overview of the project's research, development, and assessment stages. The project history and goals are introduced first, and then the requirements and system architecture are thoroughly examined. The development process, implementation procedure, security features, and testing tactics are covered in the following sections. The finished product, obstacles faced, and recommendations for future enhancements are evaluated in the report's conclusion. The ultimate objective is to guarantee that the finished system satisfies user requirements while following industry best practices for safe software development.

2 LITERATURE REVIEW

2.1 Introduction

The study findings on the challenges of managing lost-and-found items, the cybersecurity concerns of web-based systems, and the technology employed to create safe platforms are covered in this chapter. It consists of a thorough analysis utilizing the 4W 1H technique, a review of SQL injection vulnerabilities and defenses, and an assessment of comparable systems that are presently in use. The Secure Lost Item Claim System with Image Proof features and technologies are justified in this chapter by pointing out important shortcomings in current systems and bringing them into line with the project's security needs.

2.2 Investigation

This section offers a thorough analysis of the fundamental factors influencing the creation of the Secure Lost Item Claim System with Image Proof. Using the 4W 1H method (What, Where, Who, Why, and How), this section looks at the project's main elements, including its goal, setting for execution, stakeholders, significance, and development techniques.

The study also takes into account the difficulties that are currently being faced by educational institutions such as UPTM in handling lost-and-found goods, and how the suggested solution may overcome these difficulties by utilizing technology effectively and designing a safe system. In order to avoid abuse and illegal access, this methodical approach guarantees that the system is not only operationally efficient but also compliant with cybersecurity best practices.

2.2.1 What is the Secure Lost And Found Item Claim System With Image Proof?

To fill the operational gap in lost-and-found item management at academic institutions such as Universiti Poly-Tech Malaysia (UPTM), a web-based platform called the Secure Lost Item Claim System was created. Through an online interface, it functions as an organized digital solution that lets users report missing or discovered objects. In addition to providing the item name, description, and location, users will also need to supply a photograph as confirmation of ownership. This photographic proof turns into a vital part of the verification process and aids in separating true claims from false ones.

This approach adds uniformity and standardization to the lost-and-found procedure, in contrast to manual methods that rely on spoken announcements, social media posts, or dispersed WhatsApp messages to report missing things. Before being granted access to any reporting or claiming services, each user must verify themselves through a secure login process. The power to confirm claims, verify picture uploads, and amend the status of reported items has been granted to administrators. Every step of the item handling process is transparent and accountable thanks to this chain of review.

Additionally, user privacy and cybersecurity are given top priority in the system's architecture. Secure coding principles and contemporary encryption techniques are used to safeguard all sensitive user data, including uploaded files and login passwords. Common online dangers like SQL injection and illegal access are reduced by implementing features like role-based access control, input sanitization, and password hashing. The system seeks to establish a reliable setting where users are comfortable filing and handling lost-item claims by including these procedures from the very beginning of the design process.

2.2.2 Where Will the System Be Implemented?

This system will serve as Universiti Poly-Tech Malaysia's (UPTM) official digital platform for managing lost-and-found reports once it is deployed. The lack of a formal or centralized process to handle such issues is the reason for the implementation inside UPTM. Students and employees are currently compelled to use unofficial communication platforms like WhatsApp groups and Facebook posts. These methods are not only ineffective and hard to monitor, but because they are open and uncontrolled, they also raise significant privacy and security issues.

The platform will be useable via smartphones, tablets, laptops, and desktop PCs using any contemporary web browser. Students who are always on the go are among the many users for whom this cross-device accessibility guarantees usefulness and convenience. The ability to access the portal from any secure location will also help administrators, allowing them to quickly examine claims and validate submissions. Platforms like PythonAnywhere or Heroku, which provide flexible deployment and cloud-based features, may be used to host the system initially for development and testing.

Once the system enters a reliable production phase, it can eventually be moved to a local hosting environment or a server hosted by the institution. The institution is able to maintain control over infrastructure management and data protection because to this flexibility. Centralizing the item reporting and claim procedures would improve campus operations and significantly lessen the administrative load

on departments that now handle these matters by hand. Additionally, users that have a dedicated platform feel more accountable and trusting since they know that their data is being managed safely.

2.2.3 Who Will Be Involved?

Several stakeholder groups will be involved in the system, and each will be essential to the creation, implementation, and functioning of the platform. Since they are most likely to suffer misplaced belongings on campus, students make up the largest user group. Through the system, they will provide visual proof, report or claim misplaced things, and get updates on the progress of their submissions. Their input throughout the testing process will also be very important for improving the user experience and making sure the platform satisfies practical requirements.

The backend users and administrators of the system will be administrative personnel, particularly those from the Security Department or Student Affairs. Managing suspicious activity, allowing or rejecting submissions, correlating lost items with claims, and validating reports are some of their duties. They also act as gatekeepers, making ensuring that inaccurate stories are eliminated and the platform's integrity is preserved. Because of their experience with current campus operations, they are the perfect stakeholders to offer insights on decision-making processes and system policies.

Madam Norfazlina Binti Johar, the project supervisor and FYP instructor, is one among the other participants. Throughout the development cycle, she reviews project deliverables, oversees academic affairs, and offers knowledgeable input. The system must be designed, coded, tested, and secured by the developer (project author). The system's documentation, interface design, implementation quality, and compliance with cybersecurity best practices will all be examined by FYP assessors in the interim. These groups' participation guarantees that the project strikes a balance between scholarly objectives, practical user demands, and technological execution.

2.2.4 Why Is the System Important?

Since the Secure Lost Item Claim System solves a number of outstanding issues with UPTM's present operations, its development is crucial. Delays in item recovery, dispersed information, and misunderstandings result from the absence of a centralized reporting mechanism. Many employees and students turn to unofficial channels like WhatsApp or word-of-mouth notifications, which are hard to monitor and untrustworthy. In addition to making users frustrated, this disarray makes it more likely that misplaced objects will go unclaimed or be picked up by the incorrect person.

Implementing this system is also crucial for introducing user responsibility, traceability, and security. The legitimacy of a user's claim to an item cannot be confirmed without a suitable authentication system. Since there is currently no necessity for identification verification or confirmation of ownership, misleading claims can readily emerge in informal networks. By requiring users to provide visual verification and enabling administrators to examine submissions prior to acceptance, the suggested platform addresses this issue and greatly lowers the possibility of impersonation or dishonest reporting.

The solution provides long-term advantages in terms of digital trust and operational efficiency from an institutional perspective. It makes it possible to preserve and examine data over time, lessens the administrative load on employees, and establishes a more timely channel for lost-and-found case resolution. A university that places a high priority on digital transformation and responsible system design must also make sure that user data is safeguarded by integrating cybersecurity practices like hashed passwords, secure image processing, and access restrictions.

2.2.5 How Will the System Be Implemented?

The Agile development technique will be used to create the system, which is ideal for scholarly projects that call for adaptability, ongoing enhancement, and active user input. Each sprint of the development process will concentrate on a distinct aspect, such as administrative controls, item reporting, claim verification, and user authentication. This method enables testing and improvement at every level, facilitating the system's evolution through actual user feedback.

Because of its ease of use, lightweight design, and robust support for security measures, Flask (Python) will be used for the system's backend development. HTML5, CSS3, Bootstrap, and JavaScript will be used in the creation of the frontend to guarantee responsive design on a variety of devices. For simplicity, SQLite will be utilized for data storage in the early stages, with the possibility of switching to MySQL for better scalability and performance in production. Form validation and CSRF protection will be managed by security libraries like Flask-WTF, and all sensitive data, including passwords, will be hashed using bcrypt.

To assist visually limit down search locations, an optional feature is to integrate the Google Maps API, which allows users to mark the place where an item was lost or recovered. To check for typical vulnerabilities like SQL Injection, XSS, and session hijacking, security testing tools like OWASP ZAP will be utilized. The system will be safe, scalable, and future-proof for actual university implementation thanks to the mix of secure technology, tried-and-true development procedures, and iterative improvement.

2.3 Related Works

The development of a safe and effective lost item claim system requires a review of current methods that deal with related issues. The study examined a number of platforms to find commonalities, usability strategies, and—above all—their functional and security advantages and disadvantages. Three popular systems are reviewed in length in this section: LostAndFound.com, iLost, and Lostandfoundnetwork.com. These platforms are helpful resources for developing a system that meets the particular requirements of an academic setting such as Universiti Poly-Tech Malaysia (UPTM).

2.3.1 Lostandfoundnetwork.com

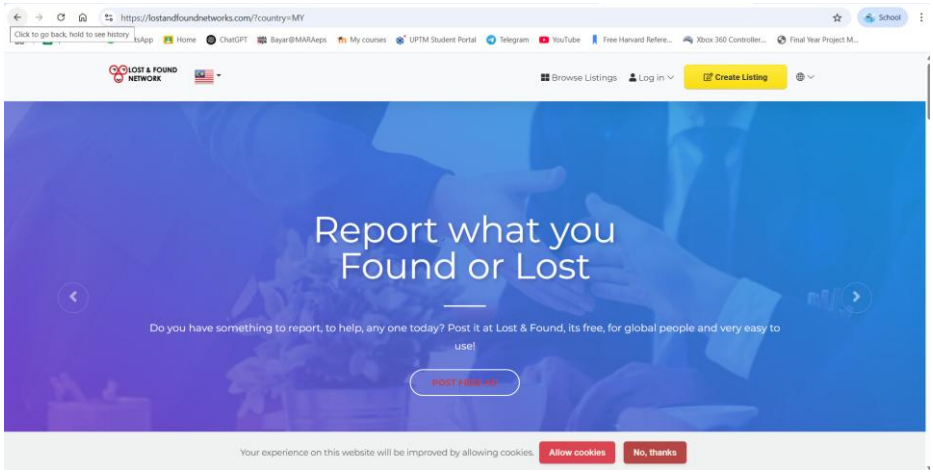


Figure 1: Lostandfoundnetwork.com

A public online platform called lostandfoundnetwork.com enables users to report lost or found objects anywhere in the world. Only the most basic fields—item category, description, and possible picture upload—are present in its extremely simple interface. Although it enables speedy uploads, it is devoid of any kind of monitoring, identity verification, or user login features. The platform is user-friendly because to its open nature, but it is also susceptible to spam, bogus entries, and unsubstantiated claims. There is no administrative backend to monitor or verify the accuracy of each report, and users are free to submit items without supplying evidence of ownership.

Regarding the user experience, the platform seems antiquated and constrained. Notifications for matching reports, item history monitoring, and search filters are not available. Additionally, finders and claimants lack an integrated communication tool, which means follow-ups are either sluggish or dependent on outside contact. As a result, the platform performs poorly in settings where accountability and trust are crucial, like business organizations or colleges, even though it could work effectively in a public space where user verification is not crucial.

The platform is almost uncontrolled in terms of security. Because it lacks role-based access control and user authentication, it is a prime candidate for misuse. In the absence of administrative oversight, input validation, or encryption, personal information provided to the platform might be vulnerable. These drawbacks emphasize how crucial it is to have strong security measures in a system meant for institutional usage. These deficiencies are filled by the safe Lost Item Claim System that this project proposes, which enforces admin control, safe data management, and verification.

2.3.2 iLost

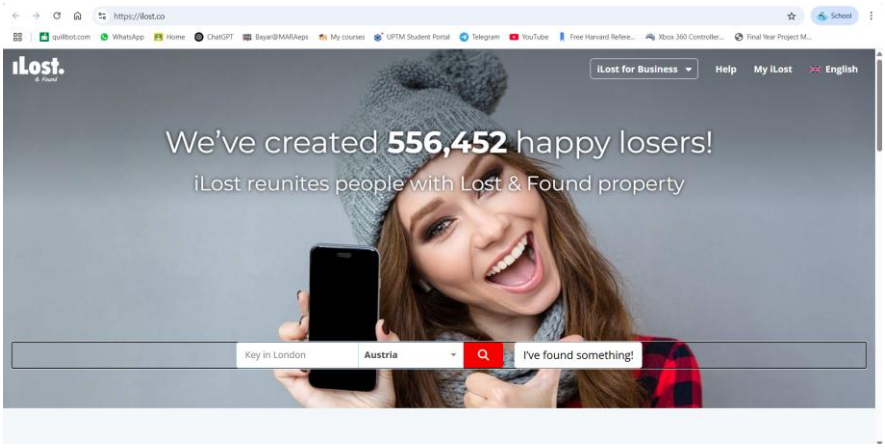


Figure 2: iLost

Airports, rail stations, hotels, and towns all around Europe utilize the commercial lost-and-found website iLost. A comprehensive process for item reporting, administration, and claims is supported by the platform. Through a straightforward interface, anyone may look for and claim objects that have been discovered, and organizations can register them. Additionally, it facilitates online claim submission, item classification, and image uploads. The platform is designed to be scalable in order to accommodate major public institutions, with an emphasis on efficiency and ease.

iLost is not designed with educational institutions in mind, even with its professional interface and wider implementation. Businesses having the means to handle large item quantities and client interactions are the target audience for this premium service. Furthermore, consumers must enter comprehensive personal information throughout the claim procedure, but the security of such information is not made explicit. The platform doesn't disclose to the public how it manages access control, data encryption, or defense against frequent online threats like XSS and SQL injection. These restrictions might provide difficulties for academic use cases where funding and openness are crucial.

Despite having a lot of appealing features, iLost lacks local control and customization, two things that are necessary for workflows unique to a school. Universities need a more specific method that enables internal alerts, student login, admin verification, and restricted scope searches (only on campus). By

providing comparable functionality and emphasizing data protection, safe user access, and academic setting flexibility, the suggested solution for UPTM closes this gap.

2.3.3 LostAndFound.com

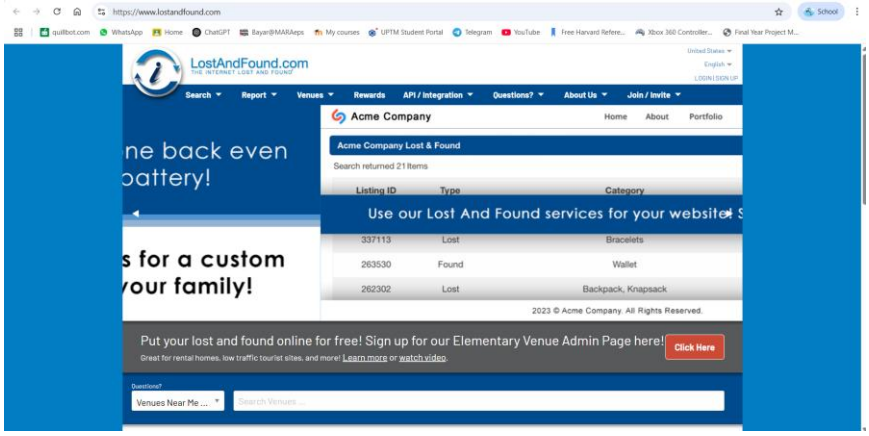


Figure 3: LostAndFound.com

Another international website dedicated to matching those who have lost things with those who have located them is LostAndFound.com. Compared to Lostandfoundnetwork.com, the site is more well-designed and offers helpful features including location-based searches, picture uploads, and a classified list of lost and found things. LostAndFound.com is a community-driven website that builds its item database through user donations, in contrast to iLost, which serves companies. Serving as a central location for those looking for or reporting lost things is its aim.

The platform's location tagging feature, which lets users indicate where an item was lost or found, is one of its advantages. This facilitates geographical filtering of results. However, LostAndFound.com lacks a secure verification method, just like Lostandfoundnetwork.com. Anyone can submit entries or claims without proving their identity or ownership, and there is no login need. Although the platform promotes connection between finders and seekers, its lack of a regulated administrative layer leaves it open to misuse, including trolling, impersonation, and improper use of contact details.

The site doesn't seem to have robust security measures in place to guard against illegal access or data breaches. It lacks features like admin approvals, security audits, and login history, and nothing is known about how it keeps or encrypts user data. It is inappropriate for institutional contexts where users want both privacy and system accountability due to its lack of openness. On the other hand, the suggested Secure Lost Item Claim System is more secure and suitable for usage at universities as it includes administrative claim approval, verified login, and appropriate file validation.

2.4 Comparison

This analysis examines three separate security applications Lostandfoundnetwork.com, iLost, and LostAndFound.com. Each of these solutions is specifically designed to bolster cybersecurity, yet they focus on distinct facets of security requirements. Here is a comprehensive comparison of these systems, focusing on their features, user base, navigation, security components, and results.

Table 2.1: Comparison of Existing Project

Criteria	Lostandfoundnetwork.com	iLost	LostAndFound.com
Features	Basic reporting, item categories, image uploads. No admin panel or matching system.	Item registration, claim form, image upload, automated workflows, and business-oriented tools.	Item listings, image upload, location tagging, email communication between users.
Users	General public. No login or verification required.	Organizations (airports, hotels) and public users with claim access.	General public. Open platform, no registration required.
Navigation	Simple but outdated interface. Manual filtering. No advanced search tools.	Clean, modern UI. Filters by category and location. Fast and user-friendly.	Organized categories and map-based search, but less responsive on mobile.
Security Element	No authentication, no admin control, no input validation, and no encryption visible.	User claims require ID details, but platform security measures are not transparent.	Open submission system. No login, no admin verification, and unclear data protection methods.
Summary	Easy to use but lacks structure, accountability, and security. Not suitable for institutions.	Professional and efficient for large organizations but lacks customization for universities.	Better than basic platforms in design and location search, but security and verification are weak.

2.5 Discussion

It is evident from an analysis of Lostandfoundnetwork.com that its primary advantages are its openness and simplicity. Posting lost or discovered things is simple and doesn't require an account. But this simplicity often leads to a lack of structure and control, particularly in environments like universities that need appropriate administrative supervision and verification. The system is susceptible to spam and fraudulent claims since anybody may submit a complaint without identification. As a result, even if its basic item reporting function is user-friendly, a secure campus setting is not a good fit for its implementation. Because Lostandfoundnetwork.com lacks security and accountability procedures, its features are not prioritized in this project.

Out of the three solutions examined, iLost provides the most organized and expert platform. It has functions like guided claim processing, user communication, and item classification. Despite being created for commercial usage by major organizations like governments and airports, iLost is a powerful reference point due to its well-organized workflow and user interface. Not all of iLost's capabilities are immediately relevant, though, as it is not open-source and lacks transparency around how it manages user data and security. Its item categorization system and simple navigation structure, however, were seen to be the most successful, and they are incorporated into the suggested system with improvements in admin-level management and user verification for a university setting.

One helpful tool offered by LostAndFound.com is location tagging, which lets users indicate the location of an item's loss or discovery. This feature gives the submissions additional context and increases the likelihood of matching reports. It is not appropriate for academic usage, nevertheless, because it lacks administrator verification and login authentication, just like Lostandfoundnetwork.com. Notwithstanding these limitations, it was determined that the location-based search and tagging function was a useful add-on that could be included into the suggested system by utilizing the Google Maps API.

2.6 Conclusion

The Secure Lost Item Claim System with Image Proof's history, goals, and implementation considerations have been examined in this chapter via a methodical analysis and comparison of current lost-and-found systems. The 4W 1H technique was used to clearly identify the system's objectives, technological approach, target users, implementation environment, and requirement. It was underlined how crucial security is when managing reports of sensitive items, and many methods—including input validation, authentication, and image-based verification—were cited as crucial elements in providing a reliable solution.

It became evident from the analysis of three current platforms—Lostandfoundnetwork.com, iLost, and LostAndFound.com—that each system has advantages but also notable drawbacks when used in a university context. The structure and security required for institutional use are absent from lostandfoundnetwork.com. While LostAndFound.com offers helpful tools like location tagging, it does not have admin control or identification verification. The strongest model for the suggested system, on the other hand, is iLost, which offers a polished and organized user experience. This is especially true of its item categorization, clear interface, and guided workflow.

The design of the suggested system was directly influenced by the results of this literature research. The safe Lost Item Claim System seeks to provide a dependable, safe, and effective digital solution that is suited to UPTM's requirements by integrating the best features of current platforms and resolving their drawbacks, particularly in areas like administrative supervision, security, and verification. The approach adds a degree of formality and accountability that is lacking in the present informal reporting techniques while prioritizing user confidence, data safety, and simplicity of use.

3 METHODOLOGY

3.1 Introduction

Methodology is the organized procedure used to successfully manage and finish a project. It comprises all of the methods, procedures, rules, and practices that were employed in the system's creation and execution. To guarantee that the project is completed on schedule, satisfies user needs, and retains flexibility for modifications, the appropriate technique must be chosen. A well-organized approach enhances stakeholder participation, efficiency, and project planning, claims Sommerville (2011). Because of its iterative approach, adaptability to changes, and ongoing feedback loop that promotes quick development and user interaction, the Agile technique has been chosen for this project.

Agile works best on real-world and academic projects where needs may change while the project is being developed. It lets the developer to make adjustments in response to continuous feedback and concentrates on producing functioning components in brief cycles, known as sprints. Agile allows for the system to be developed and improved progressively based on real user demands because this project involves interaction with real users (administrators and students).

3.2 Agile Methodology

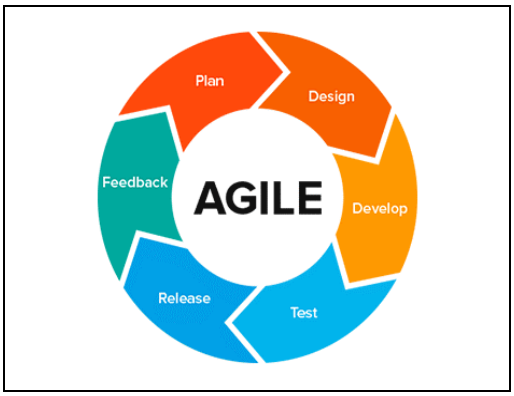


Figure 3.1: Agile Methodology Diagram

The agile methodology, which emphasizes flexibility, incremental progress, and user collaboration throughout the project lifetime, is a popular approach in software development. Agile enables the system to be constructed in smaller, more manageable components known as sprints, as opposed to the classic Waterfall model's upfront design of the full system. A workable version of a feature is created at the end of each sprint so that it may be examined, tested, and refined in the following cycle. This method works particularly well for projects whose requirements may alter or develop in response to continuous feedback.

Agile was selected for this project because it facilitates regular user communication, quicker functional module delivery, and flexible change management. Agile makes it possible for feedback from university employees and students to be continuously collected and incorporated into the system's development process. This makes it simpler to enhance the system's security, usability, and design in accordance with practical requirements.

Additionally, Agile promotes frequent testing, which is advantageous for a system like this one that deals with cybersecurity. It is possible to test each feature in phases to make sure it is secure and works, including user login, item reporting, and picture upload. Agile provides this project with a flexible yet organized methodology that guarantees the finished product is useful, easy to use, and in line with the requirements of the UPTM community.

3.3 Phases in Agile Methodology

The six iterative stages of the agile methodology used in this project include planning, designing, developing, testing, releasing, and providing feedback. By repeating these stages in cycles called sprints, the system is able to develop and get better over time. In order to create a safe, useful, and user-focused application, each stage is essential.

3.3.1 Plan

The entire project is built upon the planning stage. This stage involved determining the project's goals, parameters, and user needs. Surveys and conversations with staff and students were used to gather preliminary information about the issues UPTM is currently facing with lost-and-found item reporting. Key elements including item reporting with image proof, admin approval, item tracking, and user registration were documented based on this input. To guarantee that the system satisfies actual user needs and to direct development priorities, user stories were developed.

3.3.2 Design

The system's appearance and structure were designed during this period. This include designing the system architecture, specifying the navigation flow, and producing wireframes for the user interface (UI). Mockups of the admin dashboard, item listing page, and report form were created using programs like Figma. Additionally, database tables and associations were created to facilitate safe data retrieval and storage. To provide a safe user experience, security features like input validation, access control, and picture upload protection were incorporated into the design.

3.3.3 Develop

During the development phase, the design is converted into useful system components. HTML/CSS/Bootstrap was used for the frontend, Flask (Python) for the backend, and SQLite/MySQL for the database. Starting with fundamental components like login and registration, the system was developed gradually in sprints. Item submission, claim acceptance, and admin controls came next. Security features including form validation, role-based access control, and bcrypt password hashing were incorporated into each module.

3.3.4 Test

In Agile, testing is a continuous process that is completed at the conclusion of each sprint. To make sure they work as intended, the developed modules were evaluated both separately (unit testing) and together (integration testing) throughout this phase. To find bugs, security flaws, and usability concerns, manual testing and simulated use cases were used. Threats like SQL injection and cross-site scripting (XSS) were found using vulnerability detection tools like OWASP ZAP. Before proceeding to the next stage, the required corrections and enhancements were performed in light of the testing results.

3.3.5 Release

After testing and completion of a working version of the system, PythonAnywhere was used to deploy it to a live environment. This made it possible for actual users—staff and students—to test out the system and take advantage of its main functions. A walkthrough session using example data was part of the deployment to show how the reporting and claim process operates. Feedback could be obtained while the system was being developed in the following sprint if it were released in phases.

3.3.6 Feedback

Responses from supervisors and users who used the deployed system were gathered during the feedback phase. Questionnaires, brief interviews, and observation were used to collect feedback. Users pointed up areas for improvement, such as style, notification messages, or picture upload restrictions, as well as what worked well. In the subsequent iteration of the development cycle, these comments were utilized to modify

designs, include new features, or streamline procedures. The feedback loop makes sure the system keeps changing in response to demands and expectations from the real world.

3.4 Conclusion

This chapter concludes by outlining the development process of the Secure Lost Item Claim System with Image Proof and outlining the rationale for the Agile approach. Because of its adaptability, iterative design, and capacity to integrate user input at every stage of the development process, agile was selected. Agile methods provide continuous improvement, which is essential for a project that seeks to meet changing requirements and real-time user demands in an academic context. This is in contrast to classic linear models.

To guarantee that the system was constructed in a way that was safe, useful, and focused on the needs of the user, every stage of the Agile model—Plan, Design, Develop, Test, Release, and Feedback—was closely adhered to. While the design phase concentrated on user-friendly interfaces and database structure, the planning phase comprised gathering needs from staff and students. Because testing and development were done in cycles, errors could be corrected and new features could be added gradually. During the release and feedback stages, users were able to engage with the system and offer recommendations that shaped subsequent enhancements.

Through the use of Agile, the project maintained its flexibility and responsiveness, generating a functional product in each sprint that was progressively improved over time. In addition to guaranteeing technological advancement, the methodology promoted enhanced usability, greater code quality, and increased user communication. All things considered, Agile has shown itself to be a successful technique for creating a dependable and safe web-based solution that is customized to meet the unique requirements of the UPTM community.

4 REQUIREMENTS

4.1 Introduction

This chapter describes the specifications that were determined in order to construct the Secure Lost Item Claim System with Image Proof. Gathering, evaluating, and defining the requirements and features the system must have in order to satisfy user demands is the aim of this phase. In software development, requirements collecting is an essential stage since it establishes the framework for the system's functionality, user expectations, and performance. A thorough grasp of the system's intended functions and performance is ensured by discussing both functional and non-functional requirements.

Online surveys and informal interviews with potential users, including students and administrative staff from Universiti Poly-Tech Malaysia (UPTM), were among the requirement elicitation strategies used to make sure the system meets real user needs and expectations. These techniques yielded insightful input on user preferences and current lost-and-found problems, which were then converted into system requirements. The results of their actions are presented in this chapter.

4.2 Data Gathering Techniques

Comprehending user needs is crucial to developing a system that successfully fulfills its intended function. The target users for this project, who comprise Universiti Poly-Tech Malaysia (UPTM) employees and students, were surveyed in order to collect pertinent data. Google Forms was used to produce an organized survey, which was then disseminated online through university channels including student Telegram platforms and class WhatsApp groups. Ten multiple-choice and open-ended questions made up the form, which focused on the users' prior experiences with campus lost-and-found problems, the efficacy of the present approaches, and their preferences for a new digital system's features, usability, and security. In order to guarantee adequate input for analysis and validation, a minimum of fifty replies were need.

This method's goal was to swiftly and effectively gather a variety of viewpoints, particularly from a wide range of consumers. Answers to questionnaires are useful in determining user expectations, prevalent problems, and features that should be given top priority during development. This approach is particularly helpful for scholarly endeavors that need information from huge populations. To compare features and comprehend industry norms, a basic evaluation of comparable lost-and-found systems was carried out in

addition to the questionnaire. User feedback and reference analysis were used to create a more useful, safe, and approachable lost item management system at UPTM.

4.3 Functional Requirement

The essential features and capabilities that the system must offer its customers are outlined in the functional requirements. The following functional requirements were found for the Secure Lost Item Claim System:

No.	Requirement	Description
1.	User Registration and Login	Users must be able to create accounts and log in securely.
2.	Report Lost or Found Items	Users can submit details of lost or found items, including description, category, and image.
3.	View and Search Items	Users can browse reported items and filter by category, date, or keyword.
4.	Claim Item	Users can claim a listed item by submitting supporting details and image proof.
5.	Admin Approval System	Admin can approve or reject item reports and claims.
6.	Notification System	Users are notified of claim status changes (e.g., approved, rejected).
7.	Item Status Update	Admins can update item statuses (e.g., claimed, pending, unverified).
8.	Activity Logging	System logs user and admin activities for auditing and traceability.
9.	Image Upload	System allows users to upload images for item verification and claim validation.
10.	Role-Based Access	Different user roles (user/admin) have access to different functions and dashboards.

4.4 Non-Function Requirement

Non-functional requirements are more concerned with the system's operation than its functionality. These are essential for guaranteeing maintainability, security, and usefulness. The non-functional needs listed below were determined:

No.	Requirement	Description
1.	Security	All user data and images must be securely stored; passwords must be hashed (e.g., bcrypt).
2.	Privacy	User-submitted data and item claims must be accessible only to authorized users/admins.
3.	Performance	System should load pages within 3 seconds under normal usage conditions.
4.	Usability	Interface should be simple, clean, and responsive across devices (desktop, tablet, mobile).
5.	Scalability	The system should be able to handle increasing numbers of users, data, and feature upgrades.
6.	Maintainability	Code should be modular and well-documented for future maintenance and enhancements.
7.	Availability	The system should be available online with a minimum uptime of 95% during standard usage hours.
8.	Compatibility	System should be compatible with modern web browsers (e.g., Chrome, Edge, Firefox).
9.	Backup and Recovery	The system should support regular data backup and provide recovery options in case of failure.
10.	Input Validation	All user inputs should be validated to prevent injection, broken logic, and form errors.

4.5 System Requirement

The hardware and software prerequisites for designing, creating, testing, and implementing the Secure Lost Item Claim System with Image Proof are described in this section. The system is designed to be web-based, portable, and compatible with a wide range of devices and platforms. Common open-source technologies will be used in its development to guarantee affordability and maintainability. The minimal system requirements are listed in the following tables.

4.5.1 Hardware Requirements

Component	Minimum Requirement
Processor	Intel Core i3
RAM	4 GB or higher
Storage	10 GB free disk space
Display	1366 x 768 resolution or higher
Internet	Stable internet connection for cloud deployment access

4.5.2 Software Requirements

Software Component	Details
Operating System	Windows 10 / Linux Ubuntu
Backend Framework	Python 3.x with Flask
Frontend Technologies	HTML5, CSS3, Bootstrap, JavaScript
Database	SQLite (for development), MySQL (for deployment)
Version Control	Git, GitHub
IDE	Visual Studio Code or PyCharm
Hosting Platform	PythonAnywhere (for cloud deployment) or localhost (for testing)
Design Tools	Figma / Canva (for wireframes, UI mockups, and interface layout)
Security Testing Tool	OWASP ZAP (to scan vulnerabilities such as SQL Injection, XSS, CSRF, etc.)
Authentication Library	bcrypt (for secure password hashing)

Software Component	Details
Form Handling & Security	Flask-WTF (form validation, CSRF protection)
Package Manager	pip (Python package installer)

4.6 Conclusion

The Secure Lost Item Claim System with Image Proof criteria have been carefully examined and recorded in this chapter. The criteria that will direct the whole system development process comprise both functional and non-functional needs. The functional requirements outline the fundamental functions that the system must provide, including administrative approval, item reporting, claim processing, and user registration. The system's performance in terms of security, privacy, usability, performance, and maintainability—all crucial elements for a web-based application that manages sensitive user data—is guaranteed by the non-functional criteria.

A questionnaire-based method was used to collect the needs from at least 50 UPTM respondents, including administrative and student personnel. Their comments gave us a clear understanding of the difficulties currently encountered in handling campus lost and found goods. A solution that is pertinent, safe, and in line with user expectations was also shaped via unofficial interviews and evaluations of current systems. By ensuring that the system is developed using actual situations rather than conjecture, this demand elicitation technique increases the system's likelihood of being successfully adopted and being useful.

The chapter also described the software and hardware requirements for effectively developing and implementing the system. Web technologies and open-source tools were used to guarantee scalability and accessibility. The implementation phase is built around these system requirements, which also aid in preserving uniformity throughout testing and deployment. The Secure Lost Item Claim System will be operational, dependable, and secure for the UPTM community thanks to the knowledge in this chapter, which serves as an essential foundation for the next stages of system design and development.

5 ANALYSIS

5.1 Introduction

The project's analysis phase, which is presented in this chapter, is essential to comprehending user demands and forming the fundamental components of the system. Interpreting information obtained from surveys, determining user expectations, and converting them into visual system models are all part of the analysis process. These models aid in clarifying the intended operation of the Secure Lost Item Claim System with Image Proof. A use case diagram, flowchart, and BPMN (Business Process Model and Notation) are some of the tools used to show the system's functional process.

5.2 Data Gathering Analysis

A questionnaire was created and disseminated online via Google Forms in order to gather precise and pertinent needs. It was directed at Universiti Poly-Tech Malaysia (UPTM) students and administrative personnel who would frequently use the lost-and-found system. Both multiple-choice and open-ended questions on security issues, preferred features in a digital platform, and current reporting practices were included in the form. To guarantee a diverse variety of input and reliable feedback for analysis, a total of 56 replies were gathered.

5.2.1 Questionnaire Analysis

Google Form access has been used to create questionnaires that collect user needs. Ten questions in all were posed to the user. Feedback from at least fifty users will be obtained using the Google Form used by the respondent.

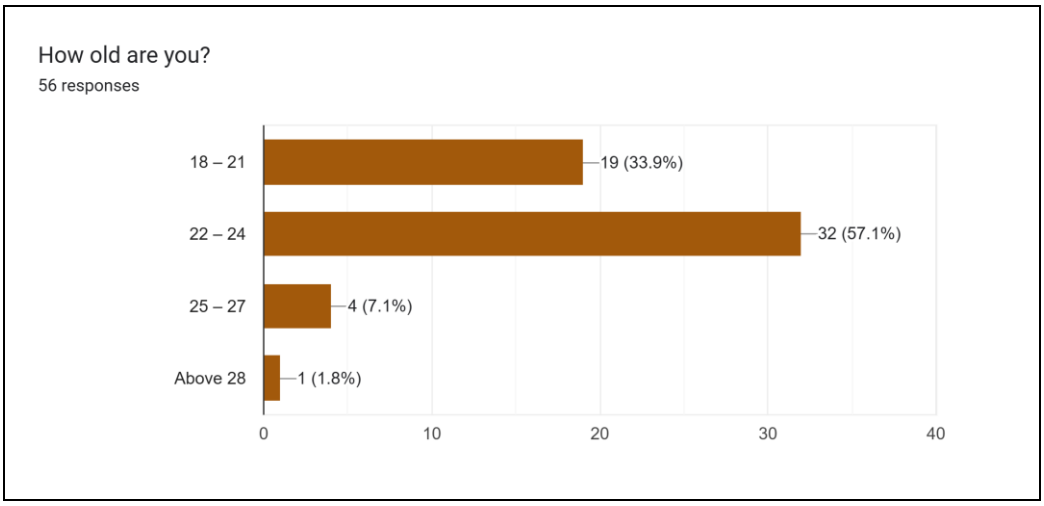


Figure 5-1: Question 1

The age of the user is inquired about. Based on the information gathered from this survey, it can be said that the majority of respondents 57.1% of the total are between the ages of 22 and 24. 19% of the population is between the ages of 18 and 21. Only 7.1% of those surveyed are between the ages of 25 and 27. Additionally, 1.8% of respondents who are older than 28 have finished this survey.

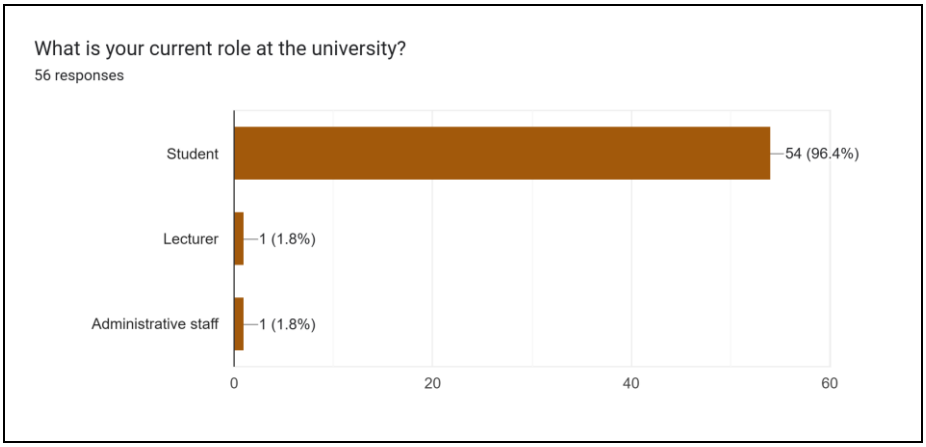


Figure 5-2: Question 2

They asked about the user's involvement at the university. 54 out of 56 answers, or 96.4% of the total, were from students, according to the data gathered. Moreover, lecturers make up 1.8% of the responses, followed by administrative personnel at 1.8%. This suggests that students are the system's main users, however staff feedback also helps to validate the system.

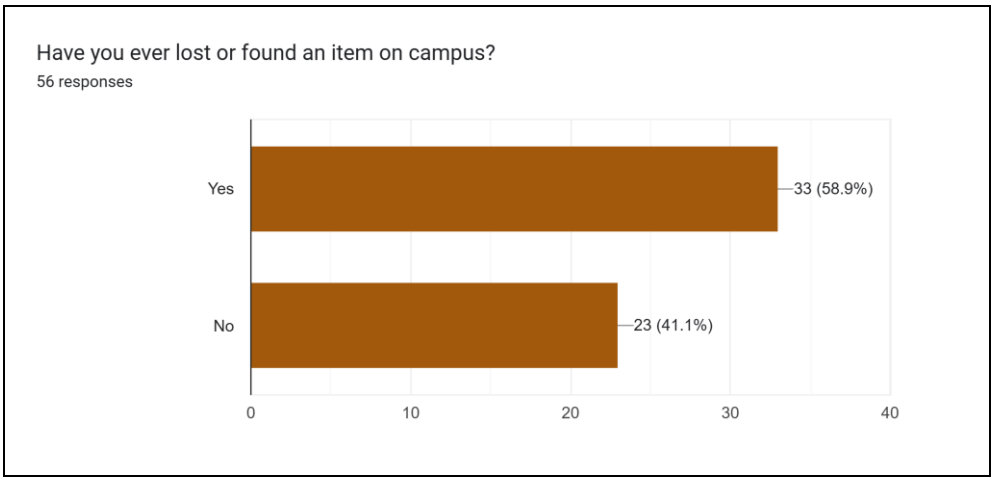


Figure 5-3: Question 3

In the survey, the respondent was asked if they had ever misplaced or located something on campus. 58.9% of individuals indicated they have experienced such an event, according to the results. According to 41.1% of respondents, they had not come across such circumstances. This demonstrates that a sizable section of the campus community has experienced lost-and-found problems firsthand, underscoring the necessity of an appropriate system.

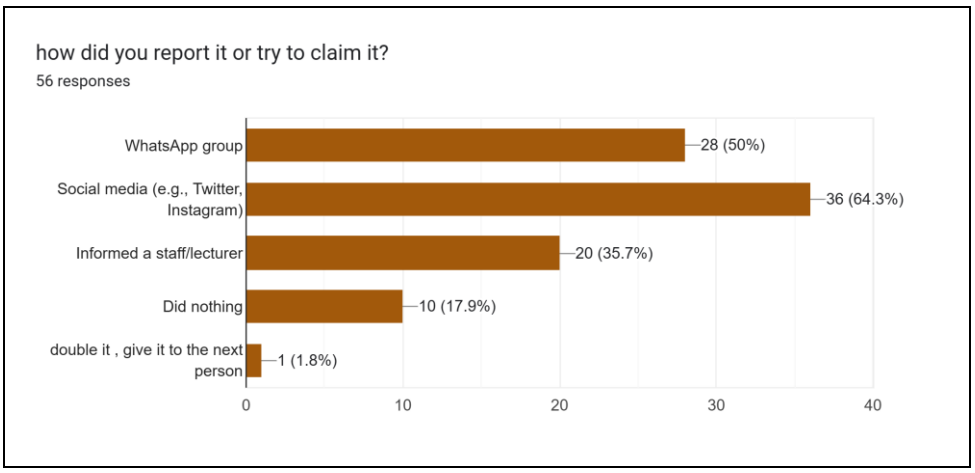


Figure 5-4: Question 4

How respondents reported or tried to claim a lost or recovered item was one of the questions posed to them. 64.3% of people utilized social media sites like Instagram or Twitter. Half of those who reported via WhatsApp groups came next. Furthermore, 17.9% acknowledged doing nothing when they came upon a missing item, but 35.7% notified a staff member or instructor. It's interesting to note that 1.8% of respondents chose to "double it and give it to the next person," maybe in jest. These results underline the necessity for a centralized and secure platform by indicating that the majority of students rely on informal and unstructured approaches.

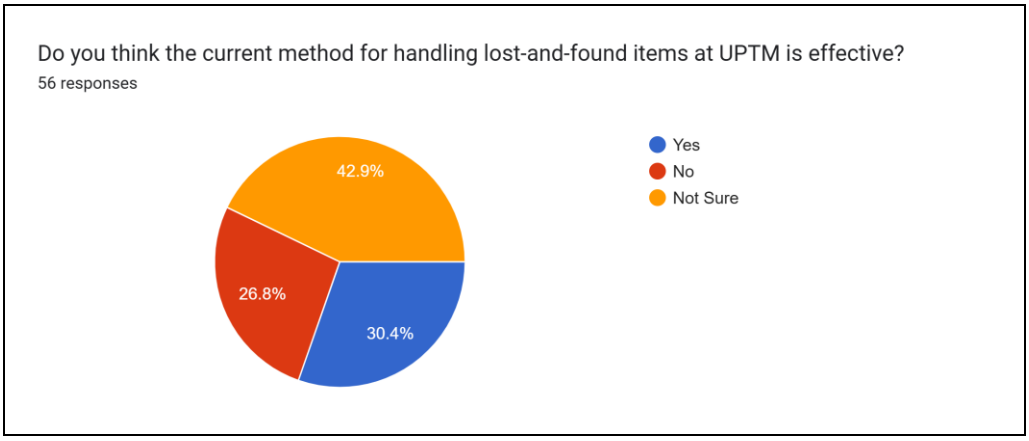


Figure 5-5: Question 5

Respondents were asked in the questionnaire if they thought the way UPTM currently handles lost-and-found goods was efficient. According to the findings, 42.9% of participants selected "Not sure," followed by "Yes" (30.4%) and "No" (26.8%). According to these comments, a significant percentage of users either don't know about the present procedure or think it's confusing, which suggests that they don't trust it.

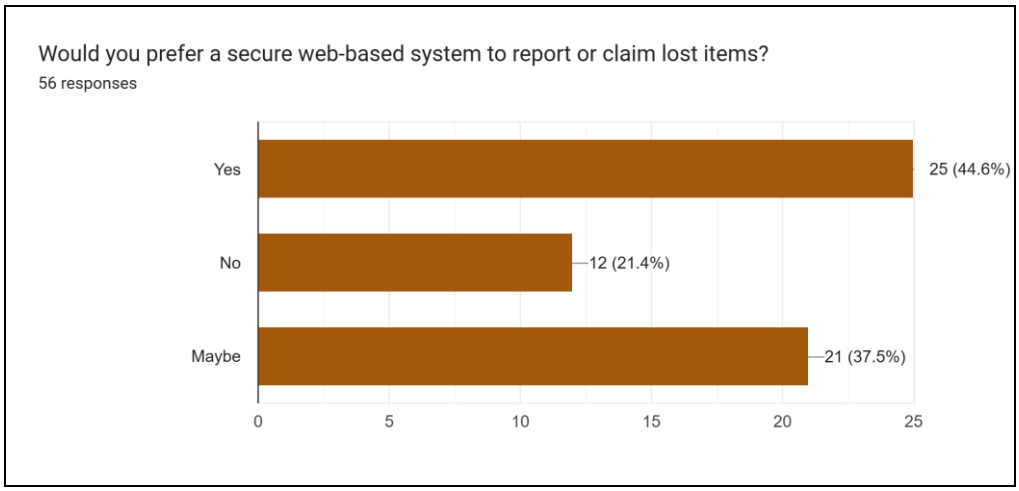


Figure 5-6: Question 6

44.6% of respondents indicated that they would prefer a secure web-based method to report or claim missing things, demonstrating their unambiguous support for a digital solution. In contrast, 37.5% of respondents replied "Maybe" and 21.4% said "No," suggesting that they are receptive to the notion but could want further details or confirmation. These findings underline the necessity of user education and trust-building while also indicating a great desire for a more organized and safe reporting mechanism.

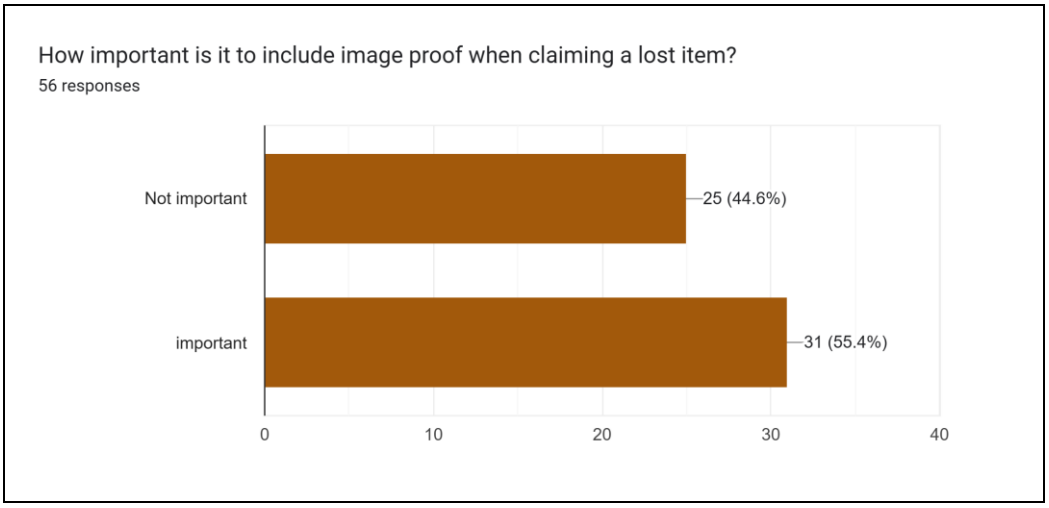


Figure 5-7: Question 7

When claiming a lost item, respondents were asked how crucial it is to provide photographic evidence. Of those surveyed, 55.4% thought it was important, compared to 44.6% who didn't. The necessity of this feature in the suggested system is supported by the fact that over half of the respondents acknowledge the importance of visual proof in confirming item ownership.

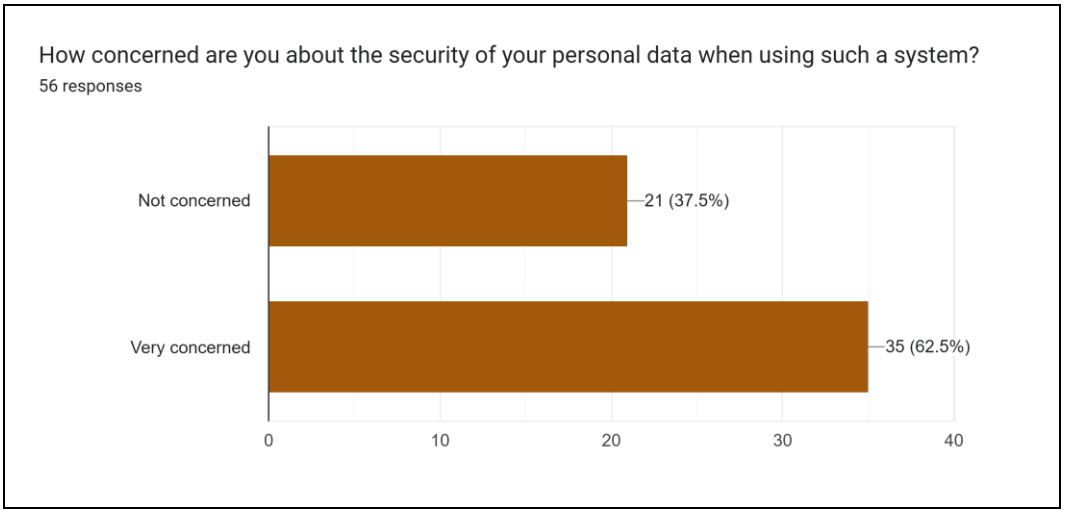


Figure 5-8: Question 8

Participants were questioned about how concerned they were about the safety of their personal information when utilizing a system for reporting lost and found items. 37.5% said they were not concerned, whilst the majority, 62.5%, said they were. This emphasizes how crucial it is to put in place robust data security and privacy policies in order to win over users and guarantee safe system adoption.

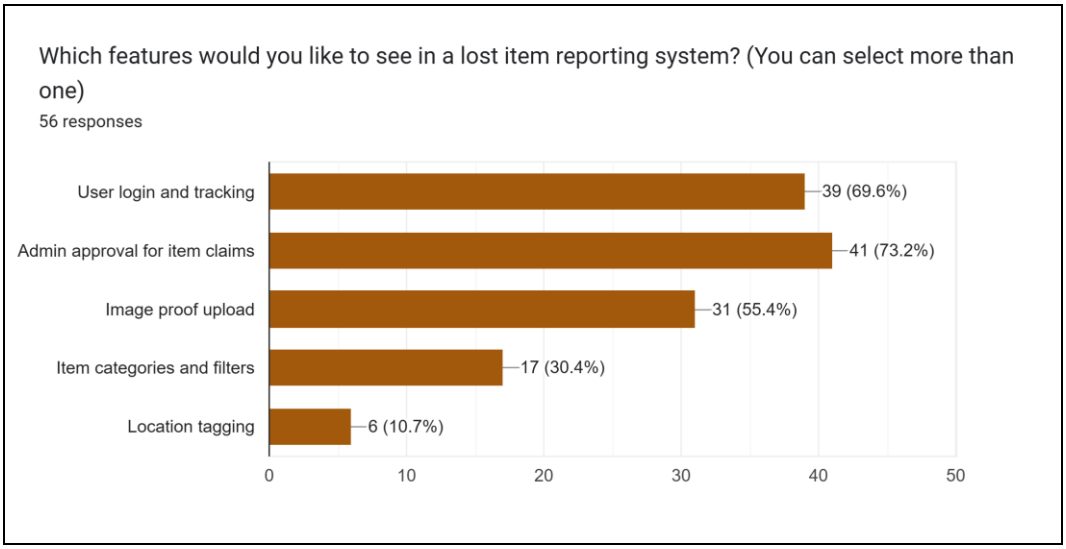


Figure 5-9: Question 9

Multiple choices were permitted when participants were asked what elements they would want to see in a system for reporting missing items. Admin clearance for item claims was the most popular feature, selected by 73.2% of respondents, followed by user login and tracking (69.6%). Additionally, 55.4% of respondents supported the addition of image proof upload. In the meanwhile, 10.7% of respondents chose location tagging, and 30.4% want item categories and filters. These findings suggest that while using a digital lost-and-found platform, consumers give priority to security, traceability, and appropriate verification capabilities.

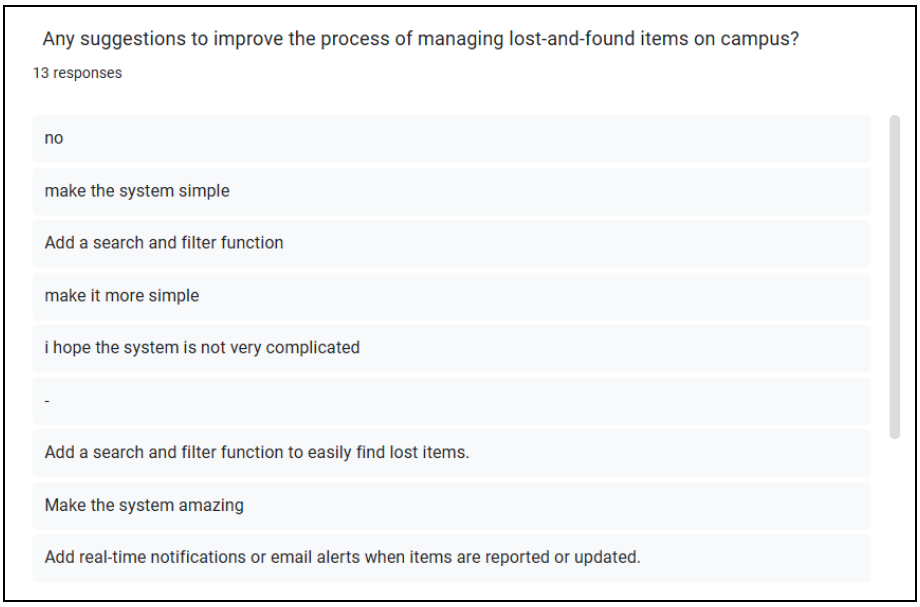


Figure 5-10: Question 10

Several participants offered helpful recommendations when asked for ways to enhance the campus lost-and-found procedure. Simple and easy-to-use design, a search and filter feature to find goods fast, and email alerts or real-time notifications to inform consumers of item status were all common recommendations. Four respondents, however, said they had no recommendations, suggesting that they were either satisfied with the concepts that were already in place or unsure of what needed to be improved. All things considered, the comments back up the requirement for a system that is effective, user-friendly, and has useful features.

5.2.2 Interview Analysis

Figure 5-11: Farah Nurain Binti Mohd Fauzi

Farah Nurain Binti Mohd Fauzi, the Majlis Eksekutif Tugas-tugas Khas dan Logistik under MPP UPTM, was interviewed via email on June 24. This interview was conducted in order to get the student leadership's opinion and support for the Secure Lost Item Claim System's proposed development.

The respondent said that she fully supports the initiative and that it is in line with MPP's continuous goal of enhancing student welfare and accessibility to campus services. She also praised the notion of a centralized, secure digital platform to handle lost-and-found cases more effectively, while acknowledging the present limitations in this regard.

5.3 Use Case Model

A UML use case diagram is essential for outlining the software and system requirements of a newly developed application. Use cases, which do not go into the technical implementation specifics, highlight how users interact with the system to define what it should accomplish. Following the identification of the primary use cases, a use case diagram may be used to visually and verbally represent them. When creating a system with the end user and their experience as the top priority, this type of modeling is crucial. The functionality and breadth of the system may be well understood by clearly describing how people interact with it from the outside (Visual Paradigm, 2019).

The Use Case Model in this project illustrates how various user types interact with the Secure Lost Item Claim System with Image Proof. The two main players are the Admin (system administrator) and the User (worker or student). While administrators validate reports, authorize claims, and oversee the database, users are in charge of reporting or claiming missing things with visual proof. These exchanges provide the fundamental framework of the system and guarantee that its operation corresponds with user requirements, encouraging responsibility, security, and usability.

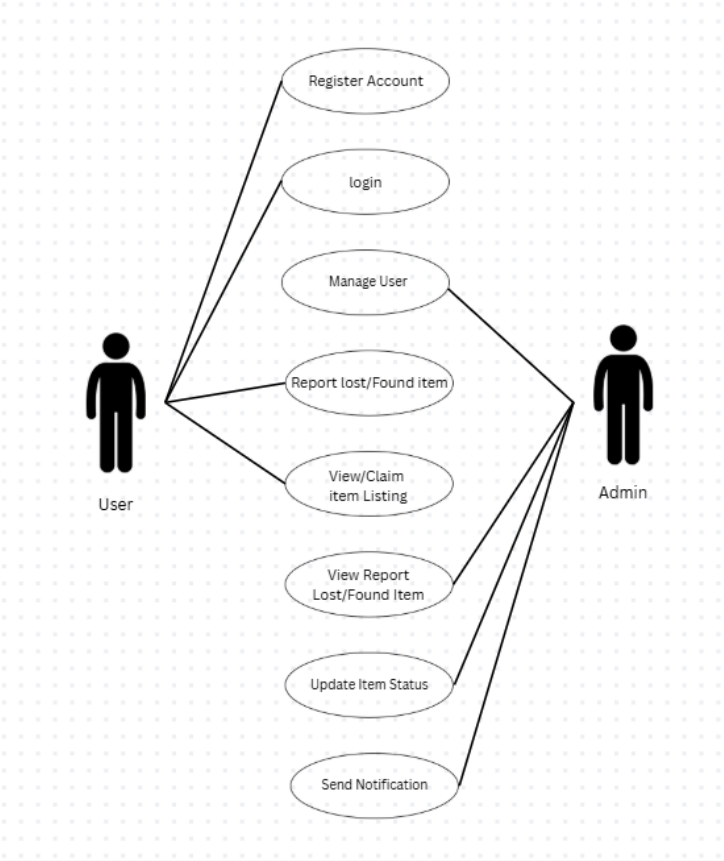


Figure 5-12: Use case diagram

The interaction between the two primary players in the Secure Lost Item Claim System with Image Proof—the User and the Admin—is depicted in the use case diagram above. A number of essential functions are available to the user on the left, such as Register Account, Login, Report Lost/Found Item, and View/Claim Item Listing. These behaviors are characteristic of how users report objects or look for their belongings.

Additional system functions, such as View Report Lost/Found Item, Update Item Status, Send Notification, and Manage User, are accessible to the administrator on the right. These features enable the administrator to keep track of user information, examine cases that have been submitted, update the system in response to claim rulings, and notify users of updates.

5.4 Flowchart

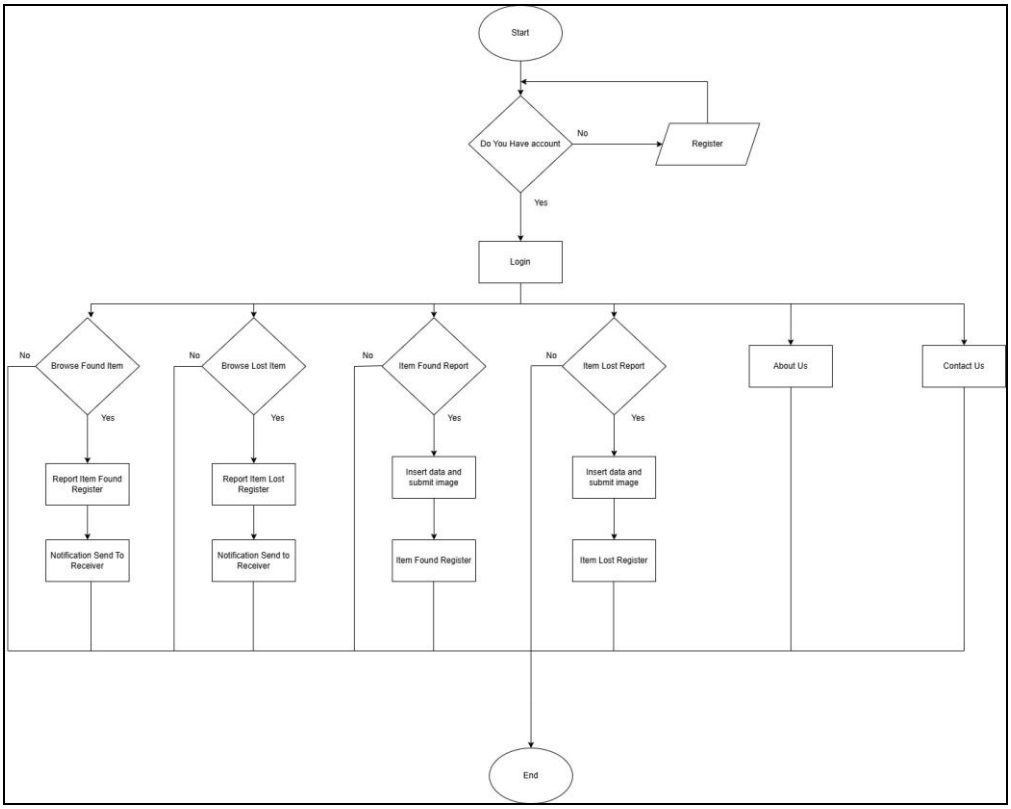


Figure 5-13: Flow Chart Diagram

Starting with the user gaining access to the system, the above flowchart shows the steps involved in the Secure Lost Item Claim System with Image Proof. The first choice determines if the user already has an account. Otherwise, the user is sent to the registration procedure by the system. The user logs in to the system after registering or if they already have an account.

There are two primary choices available to the user after logging in: reporting a found item or browsing stuff. The user can search for a match by looking through the listed things if they decide to explore. In the event that no match is discovered, they have the option to report a lost item, which registers in the system and notifies the appropriate receiver. On the other hand, if a user chooses to report a discovered item, they need to provide an image before the item is marked as found in the system.

The user is sent to the Contact Us area for help if they run into any problems or are unable to continue through the main flow. Once a lost or found item has been successfully registered, the procedure is over. The significance of user identification, item verification by picture, and the platform's automatic notification system are all highlighted in this flowchart, which also clearly describes the user interaction step-by-step.

5.6 Conclusion

To sum up, Chapter 5 offered a thorough examination of the Secure Lost Item Claim System with Image Proof's user behavior, system requirements, and system interactions. We were able to comprehend the requirements and expectations of the main users, which comprise UPTM students, instructors, and administrative personnel, through the data collection procedure, which was mostly conducted through surveys. The need for a centralized, secure reporting platform with picture capabilities was confirmed by their input.

The way administrators and users interact with the system was further made clear by the use case model and flowchart. Every job has distinct duties, and the platform determines their access according to their function. While the flowchart showed the logical path of user activities, from registration and login to reporting and examining missing or discovered goods, the use case graphic highlighted role-based capabilities. These models guaranteed the system's operational efficiency and user-friendliness.

Overall, by giving a thorough grasp of the workflow, technological requirements, and user interactions, the analysis phase has reinforced the basis for system design and development. In order to lower fraud, improve traceability, and raise the success rate of returning misplaced objects to their rightful owners, it affirms the need of combining secure procedures, organized reporting, and visual proof.

6 Design

6.1 Introduction

A crucial step in the creation of the Secure Lost Item Claim System with Image Proof is the design process, during which all needs are examined and converted into organized system blueprints for deployment. During this stage, the emphasis is on making sure the system not only meets its functional goals but also offers a user-friendly interface, strong security measures, and effective processes that meet the requirements of UPTM administrators, staff, and students.

Developing user-friendly interfaces, specifying safe authentication methods, establishing effective item reporting and claiming procedures, and putting administrative verification procedures into place are all part of the design process. In order to improve accuracy and confidence while also guaranteeing data security and privacy, special attention is paid to integrating photographic proof into the claim procedure.

A number of design artifacts are created to support these objectives, such as use case diagrams, flowcharts, entity-relationship diagrams (ERDs), and data dictionaries, which provide a clear description of how various users interact with the system. Furthermore, the security framework and system architectural diagram guarantee that the right safeguards are in place to stop unwanted access and preserve data integrity. A successful development and deployment of the system is made possible by this methodical approach, which guarantees that it is technically, logically, and aesthetically in line with project goals.

6.2 Interface Design

The process of creating a system's visual user interface while making sure it is both practical and easy to use is known as interface design (Hannah, 2020). The UI of the Secure Lost Item Claim System with Image Proof has been thoughtfully created to offer administrators, employees, and students a straightforward yet effective experience. In addition to providing all essential functionality like reporting, claiming, verification, and notification management, the platform should be aesthetically clean, straightforward, and simple to use.

The staff and student user interface is made to make it simple to create an account, log in securely, and submit lost or found item reports. Users may write thorough descriptions, upload pictures of the objects, and monitor the progress of their claims. To make finding reported items quicker and easier, the design also includes search and filter features. The interface guarantees accuracy, increases user trust, and lowers fraudulent claims by including picture proof into the reporting and claiming process.

Administratively speaking, the interface is made to make it easier to examine and verify reported items and claims. Clear dashboards are given to administrators so they may control item statuses, accept or deny claims, and notify users of modifications. To safeguard sensitive user data, security features like role-based access and appropriate data processing are included into the interface design. When combined, these interfaces facilitate easy communication between administrators and users, advancing the system's goal of developing a trustworthy, transparent, and safe lost-and-found platform.

6.2.1 Simulation System Interface

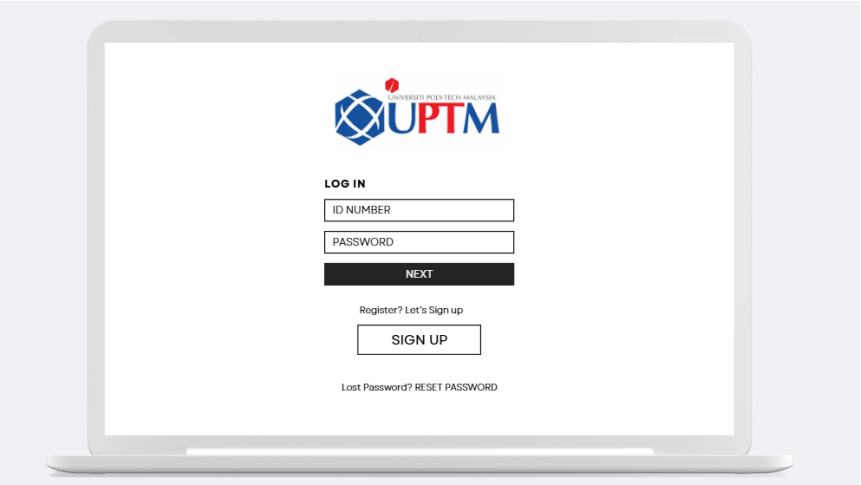


Figure 6.1: Login Page

The login page is the entry point for all users (students, lecturers, and administrative staff). To access the system, users must provide their User ID number and password**.** If user do not have an account yet, they can register/sign up their account by click the sign up button. If the user already have an account but forgot their password, user can reset their password by click the Reset Password.

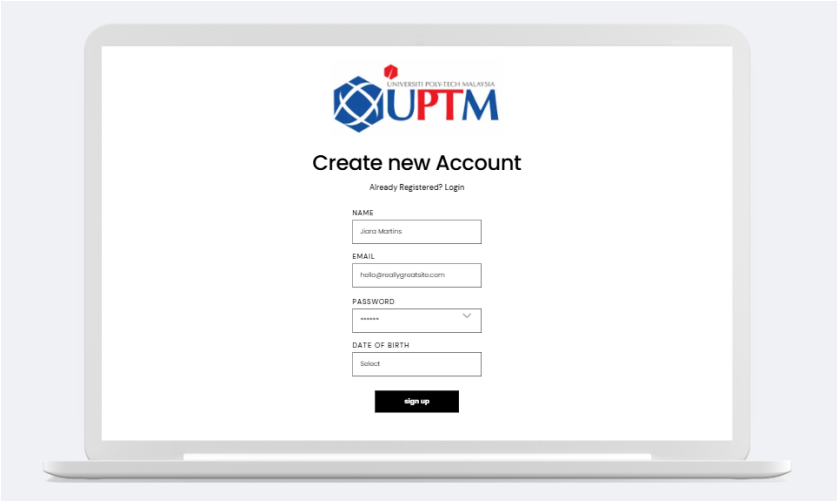


Figure 6.2: Registration Page

The registration page allows new users to create an account before using the system. Users must provide full name, email address, password, and date of birth during registration. This process validates and links accounts to actual UPTM members (students and staff). The importance of registration is to build accountability, as only verified users can report or claim items. For convenience, the page also includes a link to the login form for those who already have an account.

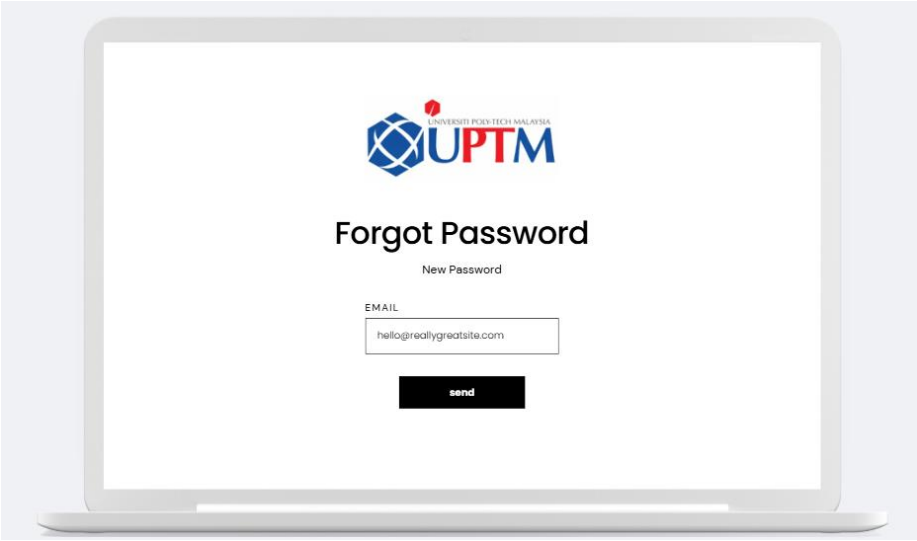


Figure 6.3: Reset Password Page

The system offers a safe password reset function to assist users in recovering access to their accounts in the event that they forget their password. The system will send a password reset link or verification code to the user's registered email address after they have entered it. The user will be sent to a reset page where they may set a new password after confirming their identity with the given code or link.

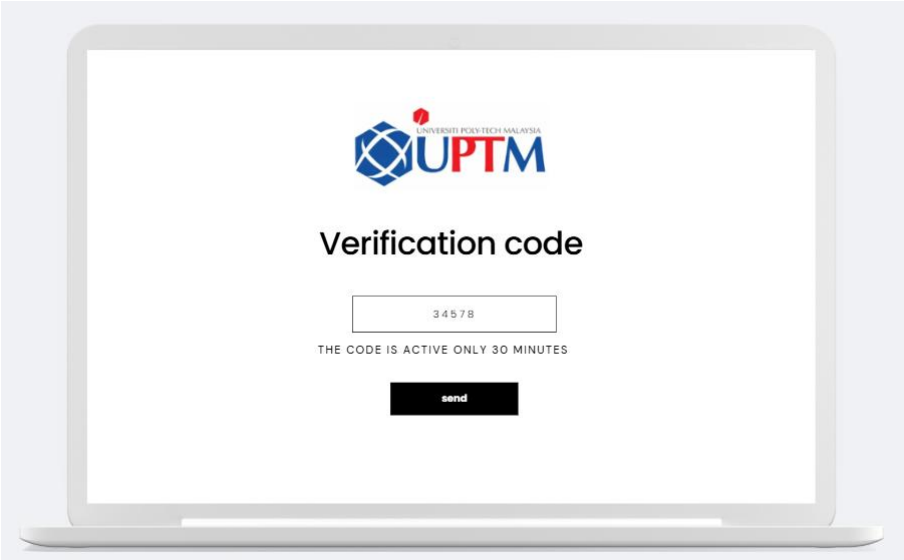


Figure 6.4: OTP page

This page ensures account recovery in a secure manner. Users enter their registered email address and the system sends a verification code that expires within 30 minutes. Once verified, users can reset their password. This protects the system against unauthorized access attempts, while giving legitimate users a safe and controlled way to regain account access. By limiting the code's validity, risks of brute force or phishing attacks are minimized.

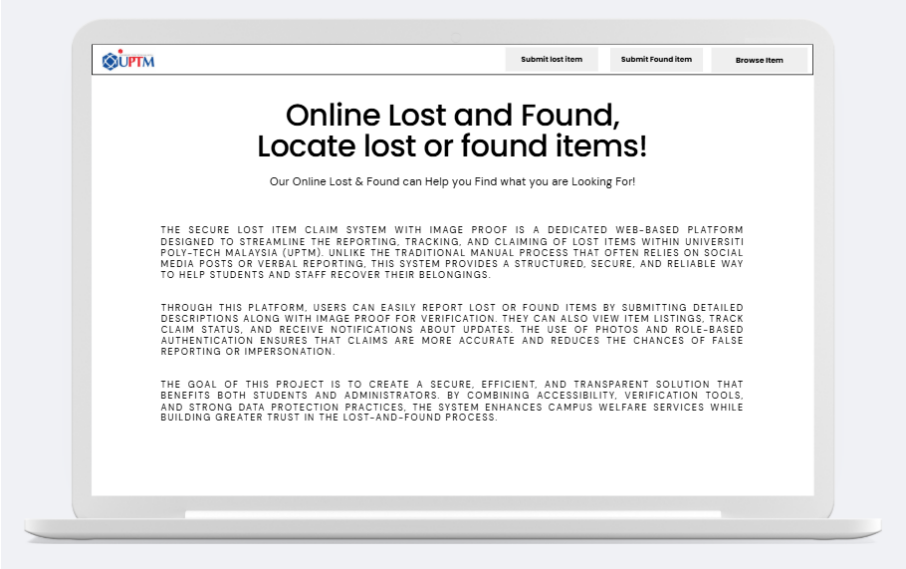


Figure 6.5: Home Page

The homepage serves as the central hub of the system. From here, users can browse reported lost items**,** Submit a lost item report and Submit a found item report. In this page, user can read about this website information and step by step how to use it.

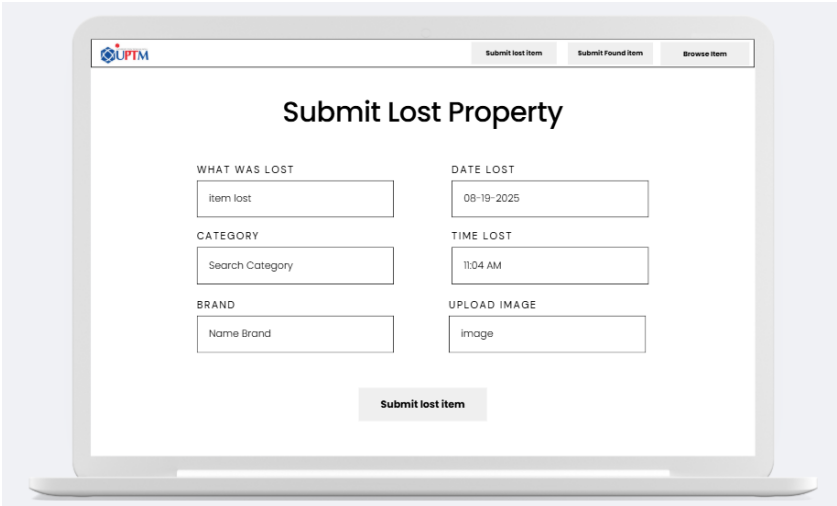


Figure 6.6: Submit Lost Item Page

This page provides a structured form where users can report lost items. Required details include item name, category, brand, date, time, and description of the loss. An image upload feature allows users to attach a photo of the missing item. Image proof is the core feature of this project, as it prevents fraudulent claims and strengthens verification during the matching process. This page ensures that all necessary information is captured, making it easier for admins and other users to identify the lost item.

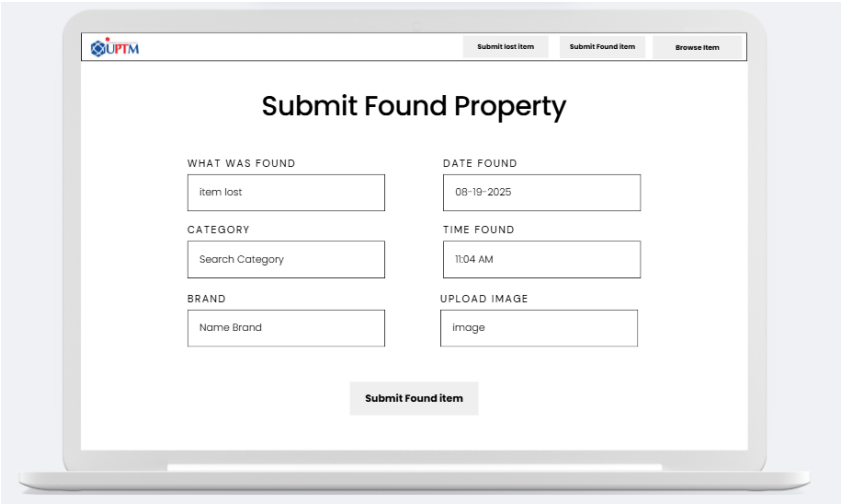


Figure 6.7: Submit Found Item Page

Similar to the lost item form, this page is designed for reporting items that have been found. Users fill in item details, brand, category, date, and time of discovery, and upload a photo of the found item. This page is crucial for creating matches between lost and found items, as both text details and visual proof increase the accuracy of identification. The inclusion of location and description fields further improves matching reliability.

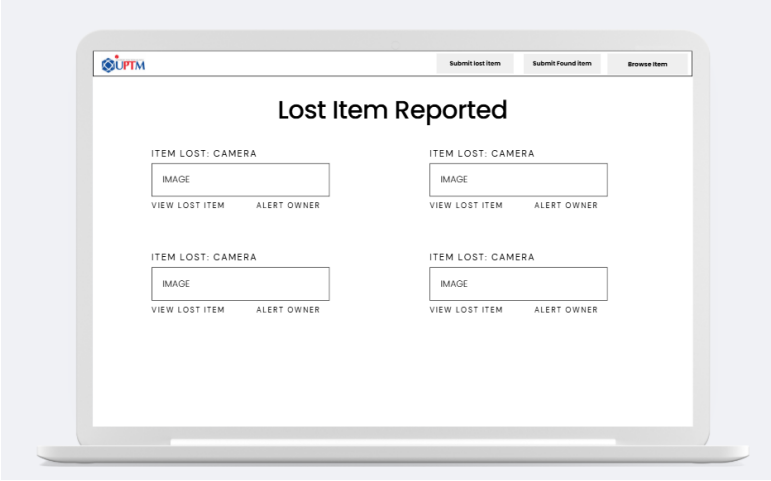


Figure 6.8: Item Listings Page

This page acts as a catalogue of reported items. Users can view a list of lost items uploaded by others, each showing a thumbnail image, item description, and status. Action buttons such as “View Lost Item” or “Alert Owner” allow users to interact with listings directly. This page builds transparency and awareness, allowing the campus community to collectively assist in reuniting owners with their items. It also reduces duplicate reports, since users can check if their item is already listed before submitting a new entry.

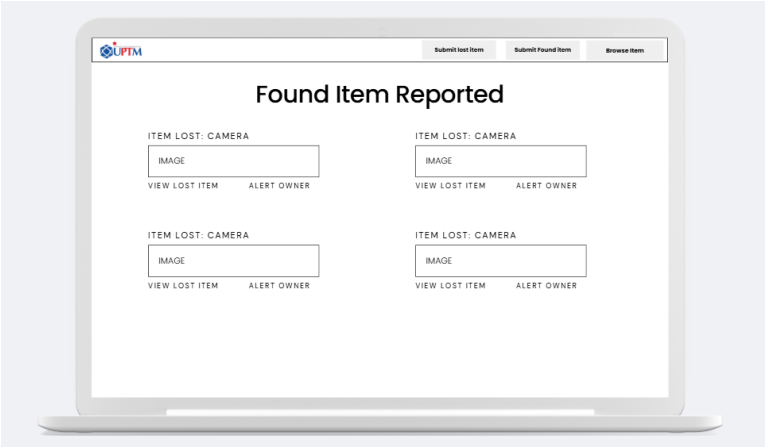


Figure 6.9: Item Found Listing Page

The Found Item Listings Page works similarly, but it focuses on items that have been reported as discovered by other users. Like the lost item listings, each entry includes an image, description, date, and status. This page is especially useful for students or staff who might have misplaced something but are unsure if it has been reported. By browsing found items, users can quickly identify and initiate the claiming process. From the admin’s perspective, this page makes it easier to cross-match lost and found reports, ensuring items are returned to the correct owners.

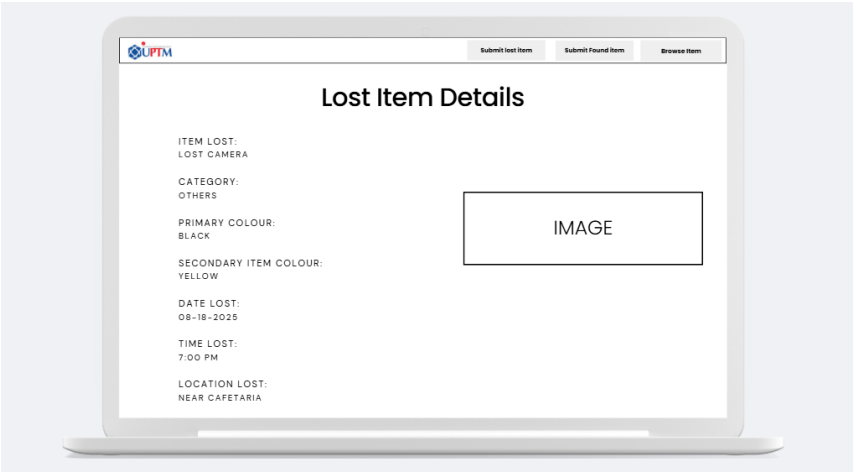


Figure 6.10: Lost Item Details Page

When users click on an item from the listings, they are redirected to the item details page. This page provides a comprehensive breakdown of the item, including: Type and category, Colors and brand, Date and time of loss or discovery, Location information and Full image of the item. The purpose of this page is to allow claim validation. A student who believes the item belongs to them can carefully review the details before filing a claim. At the same time, admins can cross-check claim requests against this information to decide whether to approve or reject them. This page serves as the final verification stage before an item is officially returned.

6.3 Database Design

A key component of the Secure Lost Item Claim System with Image Proof is database design, which dictates how data is organized, saved, and effectively retrieved. The database in this project is made to manage essential functions such secure picture storage, claim verification, lost-and-found reporting, and user administration. In addition to improving system efficiency, a well-structured database guarantees the confidentiality, correctness, and integrity of critical information like user passwords and photographic proof.

Users (students, employees, administrators), lost and found objects, claims, verification records, and alerts are all stored in the database. The system allows administrators to effectively assess claims, stop false reports, and give staff and students timely information by preserving appropriate links between various groups.

An essential part of this architecture is a data dictionary, which records metadata such table names, properties, data types, constraints, and connections. This guarantees that the structure and storage of data throughout the system are well understood. Furthermore, the relationship matrix illustrates how many tables are connected via foreign keys, such as connecting claims to people and goods. Consistency, avoidance of duplication, and seamless information retrieval are all ensured by such mapping.

The database is represented visually by the Entity-Relationship Diagram (ERD), which shows how entities like Users, Items, Claims, and Notifications are related by main and foreign keys. This guarantees effective management of lost-and-found data and acts as a guide for database deployment.

Lastly, the system's information flow is illustrated by the Data Flow Diagram (DFD). It illustrates how user data—such as item reports with images—is handled, validated by administrators, and converted into outputs like alerts and claim status updates. This guarantees that the data management procedure is in line with the main goals of the system, which are transparent verification, safe reporting, and reliable recovery of misplaced objects.

6.3.1 Data Dictionary

No	Field Name	Data Type	Size	Attributes	Null	Default	Key	Extra	Description
1	ID	INT	10		No	None	Primary Key	AUTO_INCREMENT	Unique identifier for each admin record.
2	AdminName	VARCHAR	120	latin1_swedish_ci	Yes	NULL			Full name of the administrator.
3	UserName	VARCHAR	120	latin1_swedish_ci	Yes	NULL			Username used for login.
4	MobileNumber	BIGINT	10		Yes	NULL			Contact number of the administrator.
5	Email	VARCHAR	120	latin1_swedish_ci	Yes	NULL			Email address for admin login & communication.
6	Password	VARCHAR	120	latin1_swedish_ci	Yes	NULL			Encrypted password for login authentication.
7	AdminRegdate	TIMESTAMP			Yes	current_timestamp()			Record creation date and time.

Table 6.1: Data Dictionary of Table “Admin”

The data dictionary for table "admin" is displayed in Table 6.1. The "admin" table is developed in the Secure Lost Item Claim System to handle administrator data. Specific data, like administrator information, login credentials, and registration records, are intended to be stored in each field. While AdminName and UserName are used to record the administrator's complete name and login name, the ID field represents each admin's unique identity. Essential contact details are provided via the Email and MobileNumber sections, guaranteeing safe communication and account recovery in the event of an emergency.

The administrator's encrypted password, which is necessary for authentication upon login, is stored in the Password field for security reasons. To help the system keep track of when each administrator account was established, the AdminRegdate field further automatically logs the date and time of registration. When combined, these parameters guarantee accurate recording of administrative activities inside the system, secure accounts, and appropriate role management.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	ID Primary	int(5)	—	—	No	None	—	AUTO_INCREMENT
2	UserID	int(5)	—	—	Yes	NULL	—	—
3	ProductID	int(5)	—	—	Yes	NULL	—	—
4	ItemIdentification	mediumtext	utf8mb4_general_ci	—	Yes	NULL	—	—
5	ItemDescription	mediumtext	utf8mb4_general_ci	—	Yes	NULL	—	—
6	Status	varchar(250)	utf8mb4_general_ci	—	Yes	NULL	—	—
7	Dateofclaim	timestamp	—	—	Yes	current_timestamp()	—	—

Table 6.2: Data Dictionary of Table “Claim”

The data dictionary for the table "claims" is displayed in Table 6.2. All item claim operations inside the Secure Lost Item Claim System are tracked and managed by this table. Every entry in this table corresponds to a distinct user-submitted claim. Each claim is uniquely identified by its ID Primary, which makes it possible to trace each entry separately.

While the ProductID relates to the missing item being claimed, the UserID column associates the claim with the individual who made it. The ItemIdentification and ItemDescription sections enable users to enter comprehensive information that aids in confirming the item's ownership in order to guarantee correct validation. This facilitates a more accurate and transparent matching procedure between reported and claimed goods.

The Status field gives administrators and users visibility into the claim's status (such as pending, authorized, or denied). Lastly, the system can keep an accurate claim history by automatically recording the date and time of a claim in the Dateofclaim column. When combined, these variables provide the safe storage, verifiability, and effective administration of item claims.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	id Primary	int(11)	—	—	No	None	—	AUTO_INCREMENT
2	claimId	int(11)	—	—	Yes	NULL	—	—
3	claimRemark	mediumtext	utf8mb4_general_ci	—	Yes	NULL	—	—
4	claimStatus	varchar(250)	utf8mb4_general_ci	—	Yes	NULL	—	—
5	postingDate	timestamp	—	—	Yes	current_timestamp()	—	—

Table 6.3: Data Dictionary of Table “claimremark”

The purpose of the claimremark table is to track the statuses and comments on claims that have been submitted. Every comment has a claim (claimId) associated with it. Additional admin remarks are stored in the claimRemark field, and acceptance, rejection, or pending states are tracked by claimStatus. The postingDate records the addition of the comment.

#	Name	Type	Collation	Null	Default	Extra
1	ID Primary	int(5)	—	No	None	AUTO_INCREMENT
2	Userid Index	int(5)	—	Yes	NULL	—
3	ItemType	varchar(250)	utf8mb4_general_ci	Yes	NULL	—
4	ItemName	varchar(250)	utf8mb4_general_ci	Yes	NULL	—
5	ItemDescriptions	mediumtext	utf8mb4_general_ci	Yes	NULL	—
6	Image1	varchar(250)	utf8mb4_general_ci	Yes	NULL	—
7	Image2	varchar(250)	utf8mb4_general_ci	Yes	NULL	—
8	Area	varchar(250)	utf8mb4_general_ci	Yes	NULL	—
9	City	varchar(255)	utf8mb4_general_ci	Yes	NULL	—
10	State	varchar(255)	utf8mb4_general_ci	Yes	NULL	—
11	dateoffound	varchar(255)	utf8mb4_general_ci	Yes	NULL	—
12	KeptAddress	mediumtext	utf8mb4_general_ci	Yes	NULL	—
13	KeptCity	varchar(255)	utf8mb4_general_ci	Yes	NULL	—
14	KeptState	varchar(255)	utf8mb4_general_ci	Yes	NULL	—
15	CPMobilenumber	bigint(11)	—	Yes	NULL	—
16	PostDate	timestamp	—	Yes	current_timestamp()	—
17	Status	varchar(250)	utf8mb4_general_ci	Yes	NULL	—
18	UpdationDate	timestamp	—	Yes	current_timestamp()	—

Table 6.4: Data Dictionary of Table “item”

Detailed records of lost or discovered things are kept in the items table. Together with corroborating information like Images 1 and 2, it records crucial features like ItemType, ItemName, and ItemDescriptions. Area, City, and State are examples of location information that aid in determining the item's reported location. CPMobilenumber contains the contact details, and Status denotes availability or resolution. Proper monitoring of when things are reported and modified is ensured by PostDate and UpdationDate.

#	Name	Type	Collation	Null	Default	Extra
1	ID Primary	int(10)	—	No	None	AUTO_INCREMENT
2	PageType	varchar(120)	latin1_swedish_ci	Yes	NULL	—
3	PageTitle	varchar(200)	latin1_swedish_ci	Yes	NULL	—
4	PageDescription	mediumtext	latin1_swedish_ci	Yes	NULL	—
5	Email	varchar(120)	latin1_swedish_ci	Yes	NULL	—
6	MobileNumber	bigint(10)	—	Yes	NULL	—
7	UpdationDate	timestamp	—	Yes	NULL	ON UPDATE CURRENT_TIMESTAMP()

Table 6.5: Data Dictionary of Table “pages”

The system's static or informative material, such help manuals, announcements, and policy pages, is managed by the pages table. For content details, it contains PageType, PageTitle, and PageDescription; for optional contact information, it includes Email and MobileNumber. The most recent content changes are automatically logged thanks to UpdationDate.

#	Name	Type	Collation	Null	Default	Extra
1	ID Primary	int(10)	—	No	None	AUTO_INCREMENT
2	FullName	varchar(120)	latin1_swedish_ci	Yes	NULL	—
3	Email	varchar(120)	latin1_swedish_ci	Yes	NULL	—
4	MobileNumber	bigint(10)	—	Yes	NULL	—
5	Password	varchar(120)	latin1_swedish_ci	Yes	NULL	—
6	UserRegdate	timestamp	—	Yes	current_timestamp()	—

Table 6.6: Data Dictionary of Table “user”

System users' account information is managed via the users table. Along with secure login credentials in the Password box, it saves personal information like FullName, Email, and MobileNumber. Each account's registration date is automatically recorded in the UserRegdate column. This table facilitates authentication for system access and guarantees appropriate user management.

6.3.2 Relationship Matrix

Parent Table	Child Table	Foreign Key	Cardinality	Description
tbluser	tblclaim	UserID	1-to-many	One user can submit multiple claims. Each claim is linked to a single user.
tbluser	tblfounditem	Userid	1-to-many	One user can report multiple found items. Each found item belongs to one user.
tblclaim	tblclaimhistory	claimId	1-to-many	A single claim can have multiple history records (remarks, status updates). Each history entry refers to one claim.
tblfounditem	tblclaim	ProductID	1-to-many	A found item can be linked to multiple claims (different users may claim the same item). Each claim references one found item.
tbladmin	tblclaimhistory	(implicit, via claim management)	many-to-1	Multiple claim history updates can be managed by different admins. Each update is tied to one admin.
tblpage	—	—	Independent	The pages table is standalone for static content management, not directly linked to other tables.

Table 6.6: relationship matrix of the Secure Lost Item Claim System database

The Secure Lost Item Claim System database's relationship matrix is displayed in Table 6.6. This matrix shows the relationships between the database's tables, with the child table referencing the parent table's main key as a foreign key. A single record in a parent database may correspond to many records in the child table, as explained by cardinality across tables, which guarantees appropriate data flow and dependency management.

For example, since each claim and discovered item needs to be produced by a registered user, the tbluser table serves as a parent to both tblclaim and tblfounditem. Similar to this, the tblclaim table and tblclaimhistory are connected, demonstrating that a single claim may have several status changes or comments over time. Users can make several claims against the same found item while guaranteeing that each claim stays linked to a single item thanks to the ProductID relationship between the tblfounditem table and tblclaim.

The tbladmin table also facilitates administrative tasks like keeping track of claim histories and managing user activity. The tblpage table, on the other hand, is standalone and stores static material, such as policy or informational pages, without any direct relationship connections. While administrators retain complete control and verification, this relational structure guarantees that user behaviors, claims, and finding objects are well-integrated, promoting accountability and transparency across the system.

6.3.3 Entity Relationship Diagram (ERD)

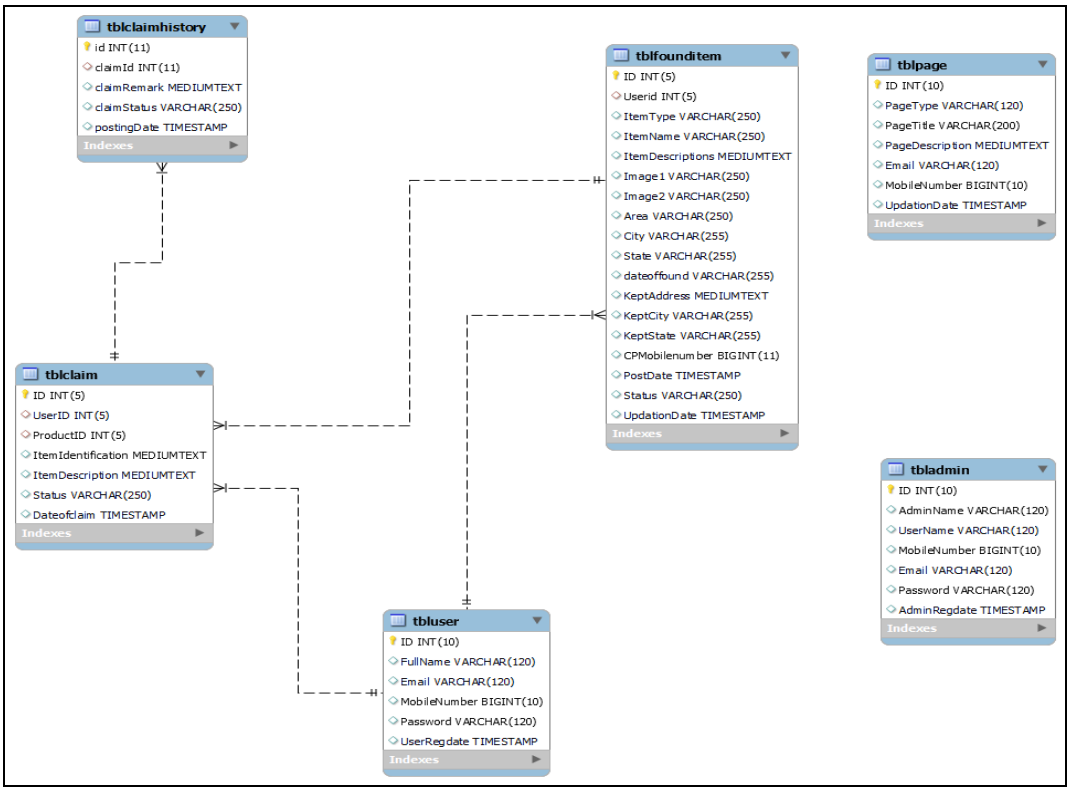


Table 6.7: Entity Relationship Diagram (ERD) of the Secure Lost And Found Item Claim System with Image Proof

The ERD uses six main tables—tbluser, tblfounditem, tblclaim, tblclaimhistory, tblpage, and tbladmin—to simulate a found-item and claim management system. Tbluser serves as the owner or agent for reported objects and claims and keeps track of account information (ID, FullName, Email, MobileNumber, Password, and UserRegdate). The item information and location characteristics (ItemType, ItemName, ItemDescriptions, Image1–Image2, Area, City, State, DateFound, KeepAddress, KeepCity, KeepState, CPMobileNumber, PostDate, Status, UpdateDate) are captured by tblfounditem, which also makes reference to the reporting user. TBLclaim links claimants to particular detected things and logs claims against items (ItemID, UserID, ItemIdentification, ItemDescription, Status, DateofClaim). ClaimID, ClaimRemark, ClaimStatus, and PostingDate are the chronological audit records for claim occurrences that are stored in tblclaimhistory. While tbladmin contains administrator accounts and metadata (AdminName, UserName, MobileNumber, Email, Password, AdminRegdate), tblpage contains public content/page records (PageType, PageTitle, PageDescription, Email, MobileNumber, UpdateDate).

The diagram's relationships show common foreign-key associations: tblclaim relates to both tblfounditem and tbluser (claimant and target item), tblclaimhistory references tblclaim for audit trail entries, and tblfounditem is linked to tbluser (reporting user). One user may report several discovered objects, one found item may have numerous claims, and one claim may have numerous history/audit records. These referential linkages are indicated by dashed lines, which also suggest one-to-many cardinalities. Timestamp columns (PostDate, UpdateDate, DateofClaim, UserRegdate, AdminRegdate) facilitate temporal tracking of activities and state changes, and each table has indexes or ID PKs (ID fields).

Suggestions and assumptions: For clarity, the Status fields in tblfounditem and tblclaim should be limited to enumerated values or a separate lookup table, as they indicate lifecycle management (e.g., reported, claimed, resolved). For example, founditem.ReportedBy -> tbluser.ID, claim.ItemID -> tblfounditem.ID, claim.UserID -> tbluser.ID, and claimhistory.ClaimID -> tblclaim.ID are examples of explicit foreign-key names and constraints in the schema that are used to ensure referential integrity. Add an image-processing pipeline for validation and resizing, as well as an image-storage strategy (file store vs. blob) if pictures are saved as file paths (Image1/Image 2). In order to improve searches and browse operations, include audit fields (CreatedBy, UpdatedBy) where applicable and think about indexing commonly searched columns (ItemType, City, Status, PostDate).

6.3.4 Data Flow Diagram (DFD)

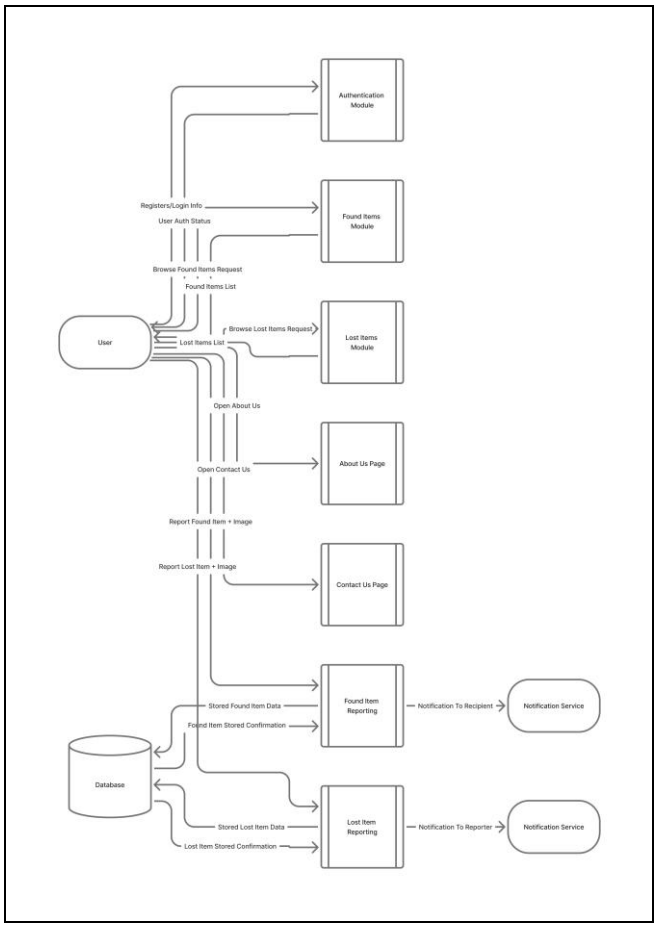


Table 6.8: Data Flow Diagram (DFD) of the Secure Lost Item Claim System

The diagram discusses a Lost and Found Management System in which you can perform such operations as logging in, searching lost or found, reporting that you have lost something and reading about the place. Everything begins with you clicking the authentication module either the register or the login button. That is checking your user name and password and informs you on whether you are logged in. After you are in, then you can search through lists of lost or found items by submitting a request to the Lost Items Module or Found Items Module. The modules draw out the data directly out of the database and transfer it back to you. In addition to searching, the Other pages that you can have a click on are the About Us or Contact Us pages. Among the cool features presented is the possibility of reporting an item: fill in the details and add a picture.

The Found item report is sent to the Found item Reporting module or the Lost item Reporting module. They steal your information, insert it into the database and you are assured. Both modules are connected to a Notification Service which issues notifications either to you or to the owner of the item so you can always be aware of status or any updates. The database is the primary storage center, where all lost and found items are recorded and the information is sent to search and report functions. In general, the flow provides a clear understanding of the way everything works: searches begin with you and end when the database provides the results; reports begin with your input and end with a message and a notification; and authentication is what helps you use all the features. The diagram is effective to demonstrate how the user activity, back-end processing and database collaborate to operate a complete lost -and-found system..

6.4 Security Framework Diagram

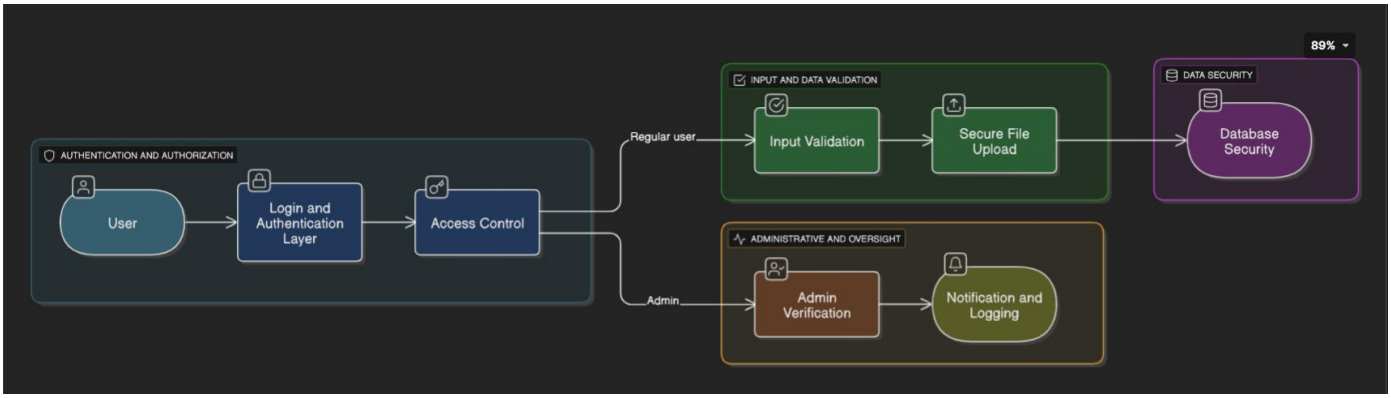


Table 6.9: Security Framework Diagram of the Secure Lost And Found Item Claim System

The Secure Lost and Found Item Claim System with Image Proof's security process starts with user authentication, where staff, instructors, and students must utilize hashed passwords, secure session management, and optional multi-factor authentication to get access. Role-based access control (RBAC), which is implemented by the system after authentication, makes sure that administrators and users may only access the features that are pertinent to their responsibilities. To sanitize inputs and defend against SQL injection, cross-site scripting (XSS), and cross-site request forgery (CSRF) threats, input validation and security guards are implemented for each activity.

The safe file upload system verifies the file type and size, looks for harmful material, and securely saves data when users upload proof photos. Database security methods, such as least-privilege

access, encryption at rest, frequent backups, and stringent access control lists (ACLs), safeguard data inside the system. By confirming statements, accepting or rejecting submissions, and keeping an eye on questionable activity, administrators play a critical role. The logging and notification module records all important events, including login attempts, claim submissions, and database modifications. This information is used to create audit trails for system accountability and email or in-app notifications for users. This process guarantees the platform's availability, confidentiality, and integrity while upholding user confidence and data security.

6.5 Conclusion

This chapter concluded with outlining the Secure Lost Item Claim System's whole architecture, with an emphasis on how system requirements and user demands were converted into technical blueprints. From user identification, item reporting, and claim filing to admin verification and notifications, the ERD, DFD, and System Flow Diagram show the information's logical progression. All information is structured, safe, and available to administrators and users thanks to the database design, appropriate data dictionaries, and relationship matrices.

By including role-based access, input validation, secure file management, and appropriate logging systems, the design also prioritizes usability and security. These components guarantee that the system is dependable in safeguarding private data and avoiding vulnerabilities in addition to being operational. With this design phase serving as the cornerstone, the project is ready to proceed with development and execution, advancing its goal of improving student welfare and expediting campus lost and found procedures.

7 Design

7.1 Introduction

The move from system design to an operational and functioning system is represented by the implementation phase. In order to solve typical issues with traditional manual lost and found procedures, including lost records, human error, unverified claims, and sluggish item recovery, a Secure Lost & Found Item Claim System with Image Proof was created for this project. In order to offer a safe, effective, and user-friendly system for administrators and users alike, this phase concentrates on turning theoretical design models into functional components.

To guarantee accuracy, performance, and dependability, every system function including user registration, item reporting, claim filing, picture upload and verification, and administrator approval was carefully designed and tested during implementation. Security elements received particular attention because the system's goal is to stop fraudulent claims and illegal access. These consist of user identification, picture upload verification, and accurate database record keeping.

Setting up the system environment, choosing the right hardware and software, and creating interfaces for back-end and web-based interactions were all part of the implementation phase. To guarantee effective data administration and retrieval, all components were combined into a single MySQL database. The solution effectively provided a secure digital platform that enhanced the whole lost and found procedure while guaranteeing responsibility, transparency, and an improved user experience thanks to this methodical approach.

7.2 Execution Platform

The whole hardware and software environment used for system development, testing, and deployment is referred to as an Execution platform. The operating system, developer tools, database servers, programming language compilers, and hosting infrastructure are all necessary for the application to run correctly. Selecting the appropriate implementation platform for a Secure Lost & Found Item Claim System with Image Proof guarantees that the system operates effectively, safely, and continues to be compatible with all necessary tools.

Building a web-based system that handles user claims, uploads picture proof, and oversees the administrative verification process requires a robust implementation platform. The platforms utilized for development and deployment are covered in depth in the sections that follow.

7.2.1 Development Platform

Figure 7.1: Window 11

The Secure Lost & Found Item Claim System with Image Evidence is primarily developed on the Windows 11 interface, which is seen in Figure 7.1. Because of its enhanced performance, contemporary UI, and strong compatibility with programming tools like Visual Studio Code, XAMPP, phpMyAdmin, and Google Chrome, Windows 11 was selected.

Without requiring complicated settings, Windows 11 offers a reliable and easy-to-use environment that supports PHP, MySQL, HTML, CSS, and JavaScript. It is perfect for coding and database administration activities because of features like improved multitasking, an updated Task Manager, integrated security improvements, and improved system performance.

Windows 11 makes it easy to install and deploy XAMPP in this project, together with the Apache server and MySQL database, which are essential parts needed to construct and test the system. Additionally, it facilitates quick debugging, quick browser system preview, and smooth module implementation, including uploading images and submitting claims.

All things considered, Windows 11 provides a dependable, safe, and effective platform for the full system development process.

7.2.2 Hosting Platform

Figure 7.2: Xampp

The Secure Lost & Found Item Claim System's XAMPP hosting setup during development and testing is depicted in Figure 7.2. With an Apache web server, a MySQL database server, a PHP interpreter, and phpMyAdmin for database administration, XAMPP offers a full local server solution.

PHP file execution, routing methods, user login sessions, and the complete claim submission procedure are all made possible by the system's local Apache deployment. All of the necessary system data, including user records, lost and found item information, picture file, and claim details, is stored in MySQL. Tables can be managed, database problems can be resolved, and accurate data entry and updating can be confirmed with phpMyAdmin.

XAMPP is perfect for testing systems prior to future deployment to online servers since it offers a lightweight, reliable environment that replicates the behavior of actual web hosting. Its Windows 11 compatibility guarantees seamless operation with little setup needed.

With this hosting configuration, developers may completely test system functionalities like user verification, listing of lost and found items, uploading visual proof, filing of a claim request, and as well as administrator approval.

7.3 Implementation Tools

The hardware, software, and programming languages utilized in the creation of the Secure Lost & Found Item Claim System with Image Evidence are all covered in this section. Every tool is essential to coding, testing, data storage, and making sure the system functions properly throughout the implementation stage.

7.3.1 Software

7.3.1.1 Xampp

The local server set up we use in order to test and run our entire web application is XAMPP. It is a combination of MySQL, PHP and Apache - three important components that are essential in the creation of dynamic web sites. All the PHP code is executed by Apache and in your browser you are presented with the web pages. It also deals with HTTP requests, ensures that URLs are routed appropriately and ensures the back-end is running in a healthy state when you post forms, sessions and do CRUD operations.

The server side language of choice is PHP. All large functions such as login, access to the administration, item reporting, submitting claims in the database are coded in PHP. MySQL contains data: user accounts, item details, the logs of the administrators, records of claims, etc. We also generate numerous SQLs to add, update, query, or delete data. phpMyAdmin can also help in making tables and making changes to them, querying the database, identifying uploads or claims, and a backup database where necessary. In general, XAMPP provides a reasonable, consistent development setup.

7.3.1.2 Visual Studio Code (VS Code)

Visual Studio Code (VS Code) is our primary editor since it is fast, customizable, and has many extensions supporting web development. It allows us to work with the PHP scripts, HTML templates, CSS files and JavaScript files efficiently. Philosophies such as PHP IntelliSense, Prettier, and Live Server improve our workflow by providing smart autocomplete, auto-format, and instantly previewing in the browser. The in-built terminal implies that there will be no need to change tools to run scripts and Git commands. VS Code also possesses excellent navigation, highlighting of errors and debugging, which assists us in identifying the issues as soon as possible and maintain the productivity.

7.3.1.3 Google Chrome Web Browser

Our interface is mostly tested and validated in Google Chrome. The DevTools of Chrome are required to debug the front-end: you can inspect and edit HTML, adjust your CSS layouts, your responsive design, and JavaScript testing, as well as network traffic such as API responses and load times. Chrome has the rapid rendering technology and strong debugging, which ensure that our system appears good and works well on laptops, tablets, and phones.

7.3.1.4 Programming Languages

The front-end and back-end were constructed using an amalgamation of languages and tools, both of which had their own roles to play in ensuring that the app was secure and helpful.

1. HTML5

We have built all our pages using HTML5 including item reporting form, admin dashboard, claim check interface, photo upload section. It ensures that all the UI elements are compatible with modern browsers and can be read with ease.

2. CSS3

CSS is used to make the layouts clean and user-friendly. All the buttons, containers, forms, and tables are styled, as well as photo preview boxes. The lost and found system appears professional with the maintenance of color patterns and designs.

3. JavaScript

JavaScripts are used to take care of the dynamic elements: responsive UI, form checking, previews of photos before uploading, and page redirect. It enhances usability by allowing users to get a confirmation of their photo in real time.

4. PHP

Our primary back-end language is PHP, which is used in:
- filing item reports,
- processing claim requests,
- ensuring the security of uploaded pictures,
- talking to MySQL,
- protecting private data,
- implementing secure login.

We selected PHP due to its reliability, supportiveness and compatibility with MySQL and XAMPP.

5. SQL (MySQL Query Language)

Under SQL it is possible to create, read, update and delete data. It associates images with their item records, claim tracking, user account management and item information storage. SQL queries ensure that sensitive information is maintained as long as it is being accessed or altered.

7.3.2 Hardware

Figure 7.3: Acer Nitro 5 (Acer Malaysia, 2024)

The laptop model used during the development of the Secure Lost & Found Item Claim System with Image Proof is seen in Figure 7.3. The Acer Nitro 5, a dependable mid-range performance laptop renowned for its strong processing capabilities and great durability, was used to design the system. For coding, database testing, image processing, and generating the system's user interface, the device offered a reliable and effective environment.

Specification	Description
Model	Acer Nitro 5 (AN515 Series)
Processor	Intel® Core™ i7
RAM	16GB DDR4
Storage	512GB NVMe SSD
Graphics	NVIDIA GeForce GTX Series
Operating System	Windows 11 (64-bit)
Display	15.6” FHD IPS

Table 7.1: Hardware Specification

I developed the Secure Lost & Found Item Claim System with Image Proof using an Acer Nitro 5 laptop which had solid and reliable hardware performance throughout the project. Having an Intel Core i7 and about 16GB RAM is good laptop to execute with little to no lag while using multitasking or executing development tools like VS Code, XAMPP and PHPMyAdmin which are good for backend processes and database transactions. While the system used image-proof files, the laptop's speed and performance ranged from great especially with the 512GB NVMe SSD.

Development was also supported with Windows 11 as it was compatible while using PHP, MySQL, HTML, CSS, and JavaScript and had good performance for testing the local server. Since the project had little graphics, the NVIDIA GPU was still useful when rendering the UI and processing high resolution images of the items. Overall, the Acer Nitro 5 was great to use when doing all the system's development, testing and debugging.

7.4 System Interface

Users primarily interact with the features, pages, and elements of our system via the system or application interface. No matter the system or application, having a user friendly interface that is seamless, and intuitive is key. Every major component of our system has an interface specifically constructed to promote effective interaction and operation. Interfaces are of utmost importance as they enhance the overall user experience and allow seamless navigation through system functionalities. This allows users to access instruments, perform tasks, and retrieve data without confusion and annoyance.

7.4.1 Simulation System Interface

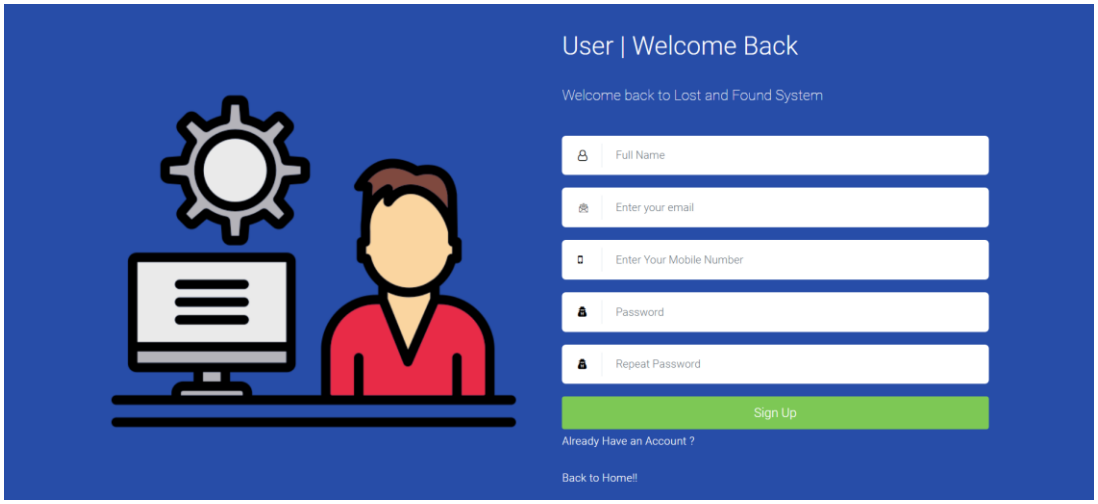


Figure 7.4: Register page

The primary purpose of the page is to allow prospective users of the `Lost and Found System` to register and create system accounts by entering and securely submitting their full name and contact email, mobile phone number, and a new password, which is to be repeated twice, for verification purposes. Each new customer is enrolled into the system upon hitting the `Register` button. Furthermore, the user will be enrolled in the system and will be able to start using the lost and found services right away. There is also a navigation button to the home page of the system, and if users have left the page to be logged in to their accounts in the system, they will be able to navigate back directly to this page.

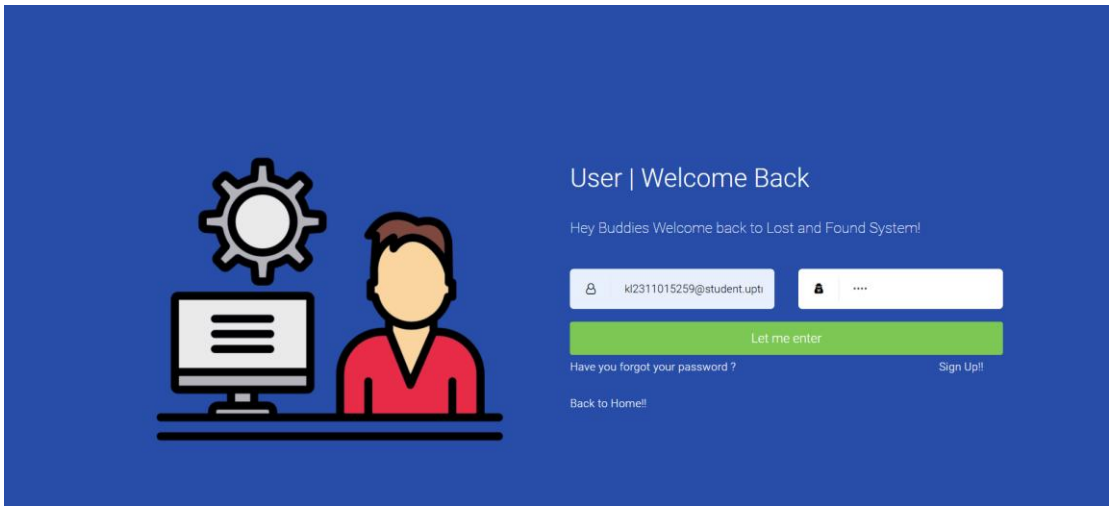


Figure 7.5: login page as User

When returning users access the password-protected portion of the website, they are required to provide their registered email address (or user id) and password. After they click on the “Let me enter”, the system checks their credentials and, if valid, sends the user a one-time passcode (OTP). The system takes the users to the OTP verification page next. There are also hyperlinks to recover the password, register a new account, and return home, if needed.

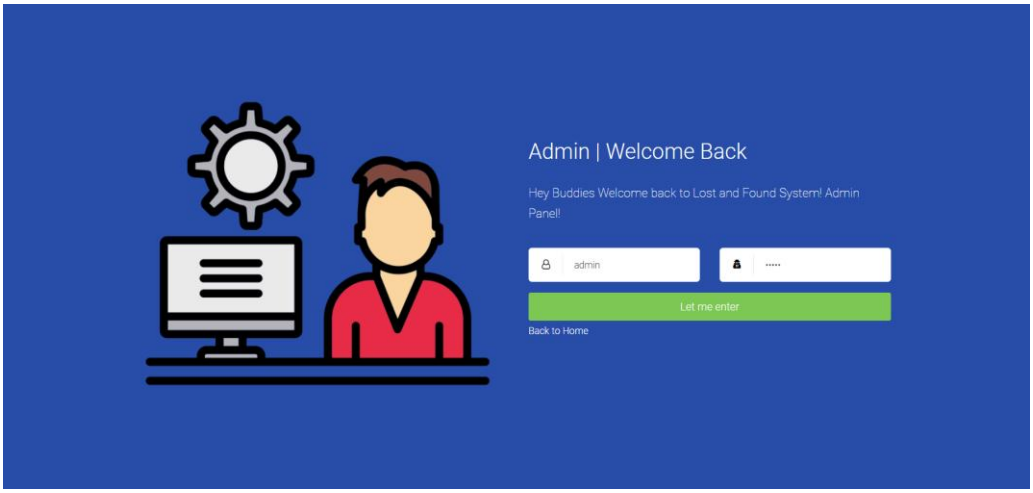


Figure 7.6: login page as Admin

The admin login page prompts administrators to enter their username and password and, upon clicking “Let me enter,” validates those credentials and if correct sends a one-time passcode (OTP) to their registered contact before redirecting them to the OTP verification page.

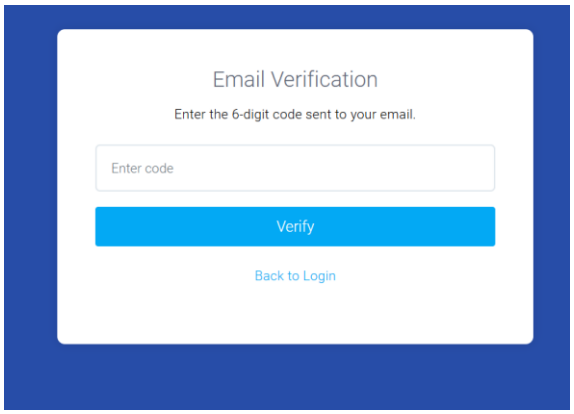


Figure 7.7: Email Verification User and Admin

It is merely a precaution to ensure that everybody has a valid email address when they are either logging in or registering an account, to users and the administrators. You have to input the 6-digit coding that was sent to you. It is a major safety precaution that we not only know who you are, but that you are the right individual in charge of that mailbox before granting access to the system itself. In essence, we are just trying to lock out bad people, check whether you really have the correct credentials and ensuring that only the actual account owner is able to complete the logging in or signing up by entering such a special code.

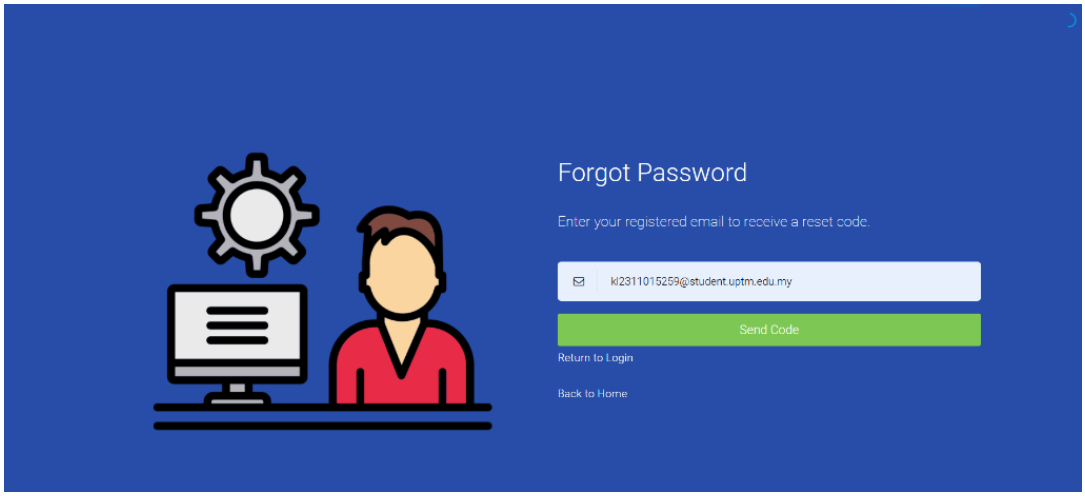


Figure 7.8: Forgot Password Page

To facilitate secure account recovery, customers can rely on the ‘Forgot Password’ page by entering their email addresses. If a user cannot access their account, he or she can use the interface on the password recovery page to request a unique identifier, which is emailed to the user. Thus, the user can access their account again. The page is easy to use. Apart from the email address entry and a ‘Send Code’ button, the

user can also choose to ‘Return to Login’ or ‘Back to Home’ options to gain access to their account using different user pathways.

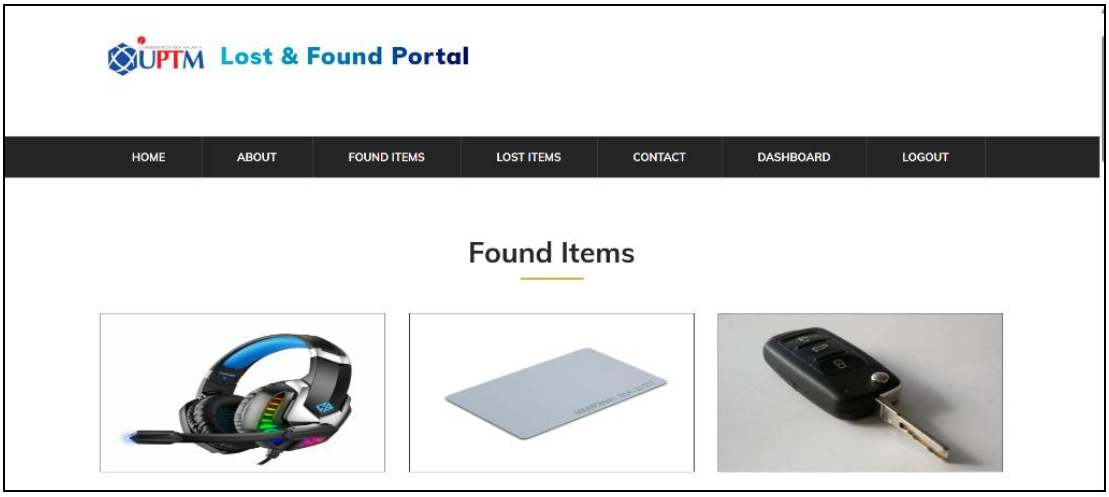


Figure 7.9: Home page

The UPTM Lost & Found Portal is the first purpose built electronic solution for reporting, monitoring, and returning lost items to their rightful owners. The portal features an integrated interface where users can view items that have been reported found, post lost item reports, and access different menu items. The menu items include Home, About, Found Items, Lost Items, Contact, and Dashboard.

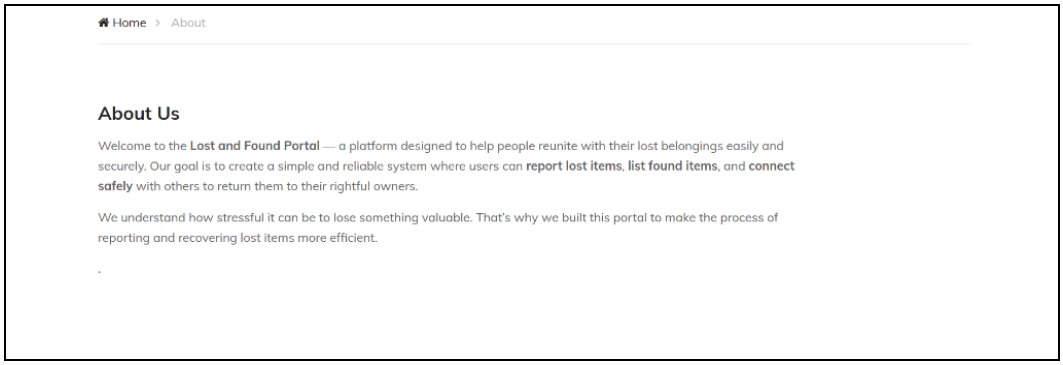


Figure 7.10: About Us Pages

The Lost and Found Portal offers an extensive overview of the functions and offerings of the platform on the “About Us” page. The portal seeks to aid users in reuniting with their misplaced belongings in a safe, responsive, and accessible manner. The page thoroughly details the platform’s functions which include received reports on lost items, the ability to report items that have been found, and the ability to connect for the safe return of lost items to their owners. By offering a solution to a problem many face, the portal

offers an innovative and effective response to the frustration of recovering lost belongings in a more efficient manner.

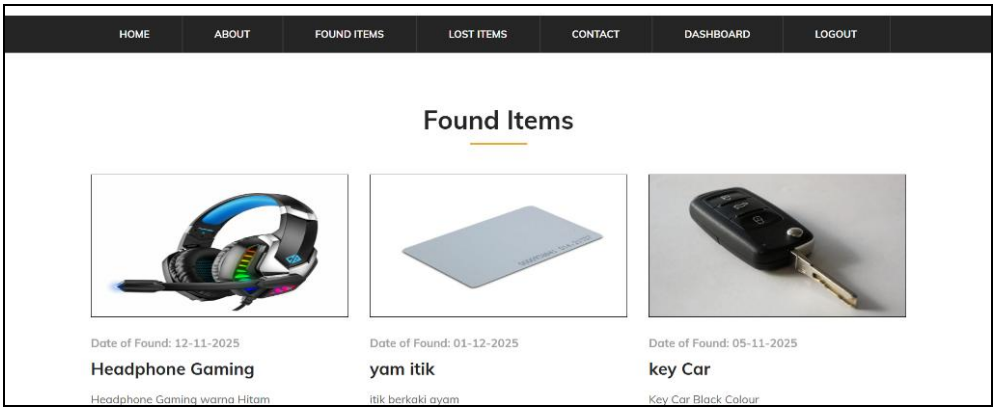


Figure 7.11: Found Items Page

The Found Items section of Lost and Found portal is a section containing and showcasing different the items that have been lost by people in the organizations and are collected and submitted by people in the organization. This section creates a catalog of lost items such as gaming headphones, id cards, car keys, and the date each of these items was found, and provides a picture and description of the lost items. This section aims at reuniting people with their lost belongings by providing an organized and easy to use catalogue with pictures and descriptions of the lost items. This improves the lost item retrieval process and improves the chances of their successful recovery.

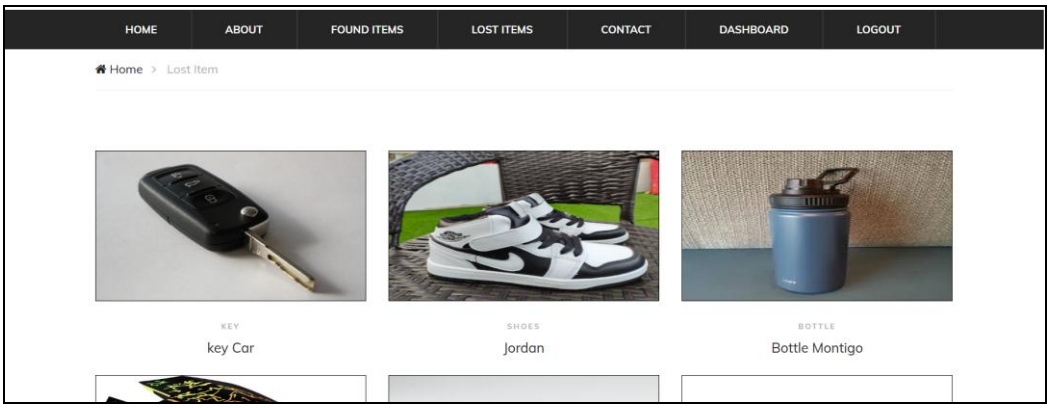


Figure 7.12: Lost items Page

The ‘Lost Items’ section of the Lost and Found Portal provides users with the ability to view a digital collection of belongings that have been reported missing. Users can view a collection of images displaying lost items such as a car key, a pair of Jordan shoes, and a Montigo bottle. Users can quickly and visually

search for items that may have been lost. The purpose of this page is to make the process of losing items more user-efficient, active, and convenient, thus minimizing the difficulties and concerns of losing personal items with the organization.

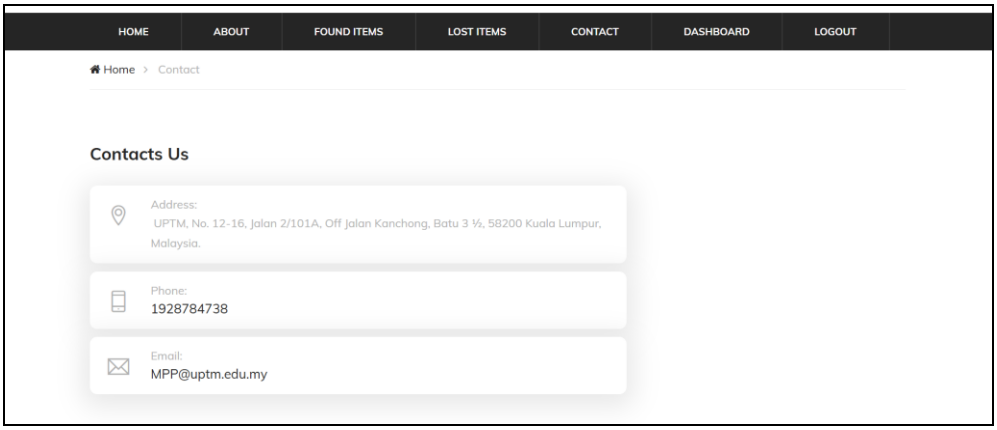


Figure 7.13: Contact Us Page

The Contact Us section of the Lost and Found Portal gives users important contact information that allows them to communicate with the organization. Here the users can find the organization's physical address, which is UPTM, No. 12-16, Jalan 2/101A, Off Jalan Kanchong, Batu 3 ½, 58200 Kuala Lumpur, Malaysia, direct telephone number 1928784738 and an official email address which is MPP@uptm.cdu.my. The purpose of this section is to give users the ability to communicate with the managers of the portal. It helps to give users a direct way to get in touch with the portal managers to answer questions and provide assistance and information on a direct, easy to use way to communicate to a person on the other end regarding the lost and found activities they need help with, or other related questions regarding the portal.

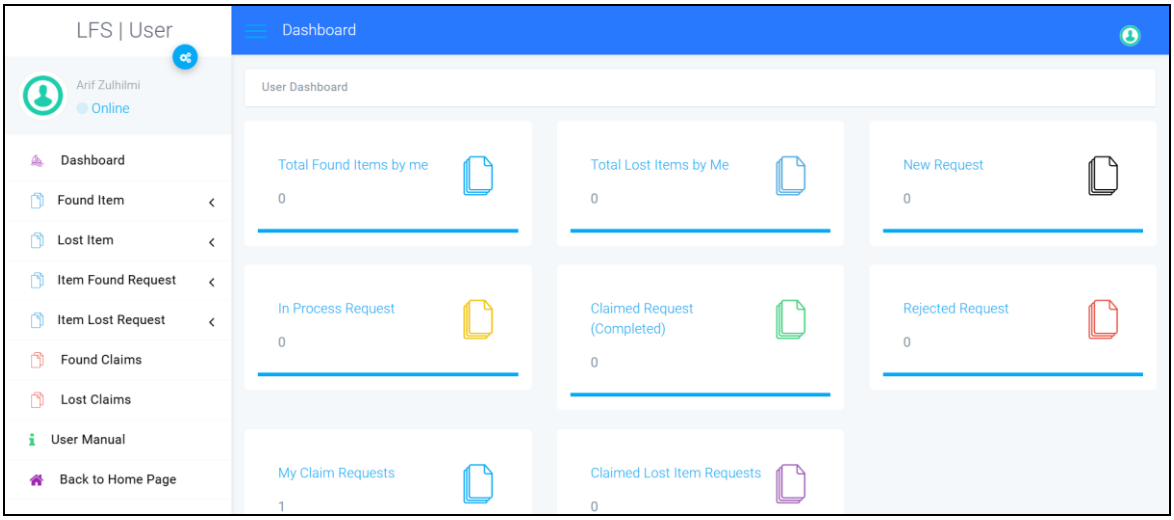


Figure 7.14: Dashboard Page

The Lost and Found Portal features a Dashboard that consolidates all of a user's actions in the system through a user management module. There are a number of metrics that are shown and updated in real-time, particularly when the user submits new information, and the metrics measure total number of found items, total number of lost items, new requests, requests lost, requests completed, requests claimed, and requests claimed but rejected (all of which are shown as zero values for (Arif Zulhimi)). This dashboard is meant to elucidate the lost and found system, and helps users quickly summarize their system interactions and summarize their lost claim and request history, as well as system usage found item peripherals, lost items, requests, found item claims, and lost item claims. Lastly, the Dashboard aids, in peripheral services system, lost and found items, and portal home functions, that provide pointers to a user manual and home page as a command center.

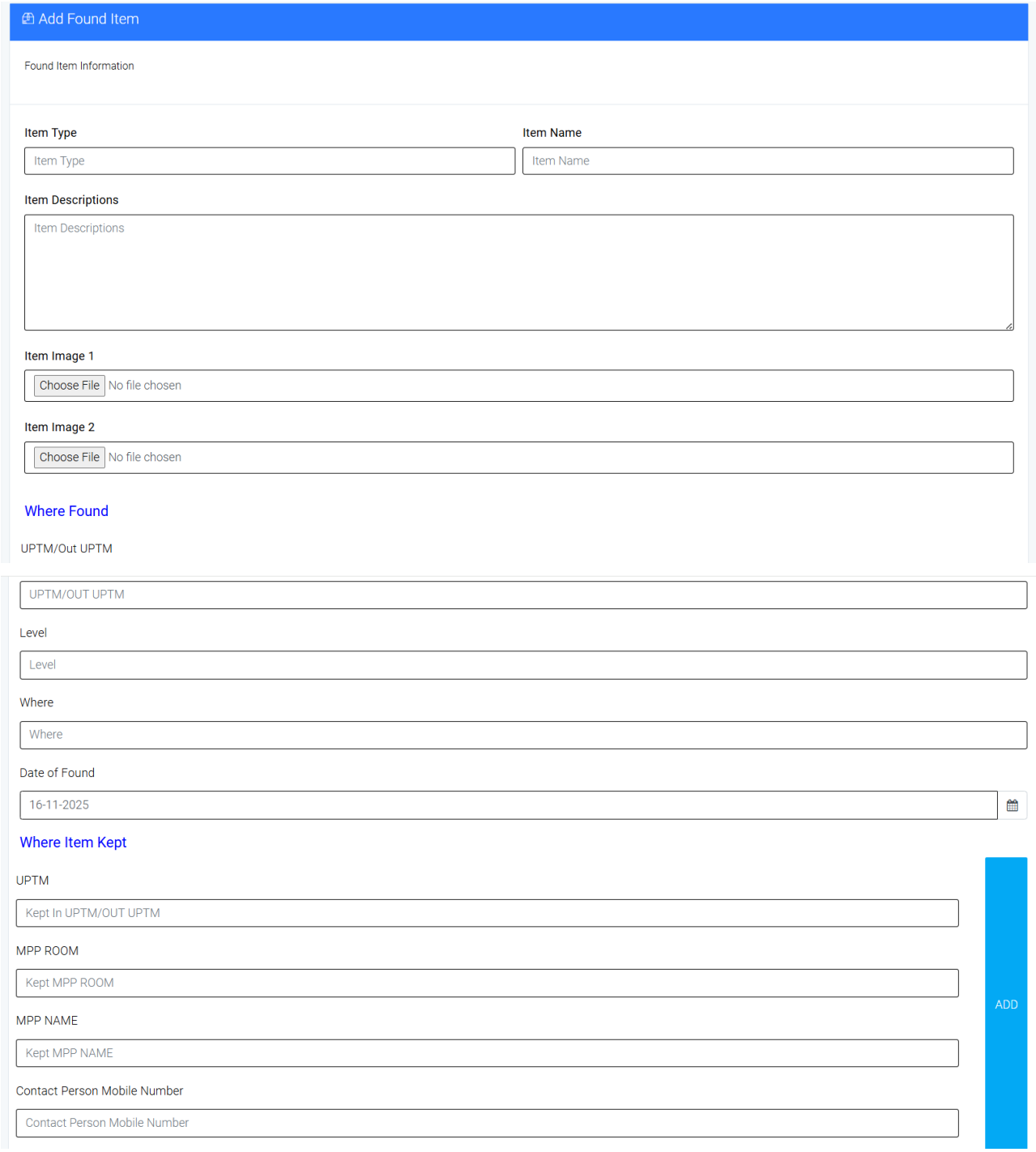
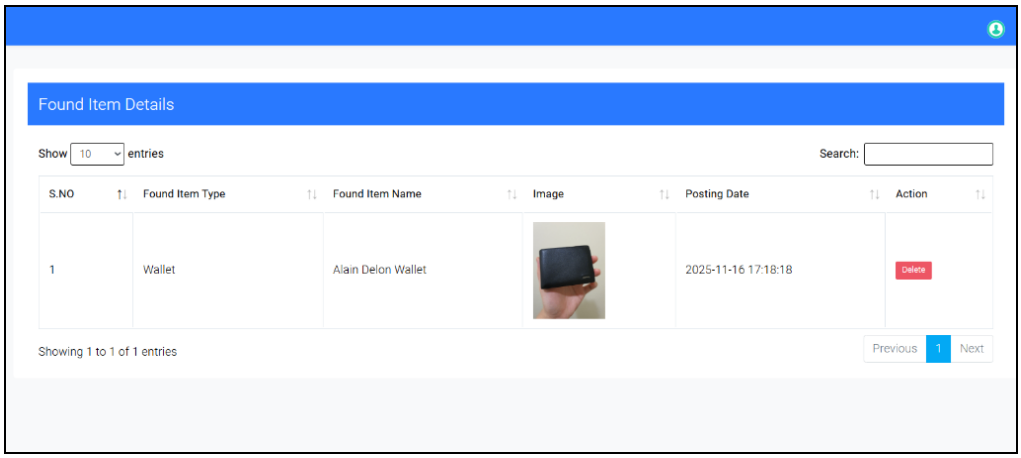


Figure 7.15: Add Found Item Page

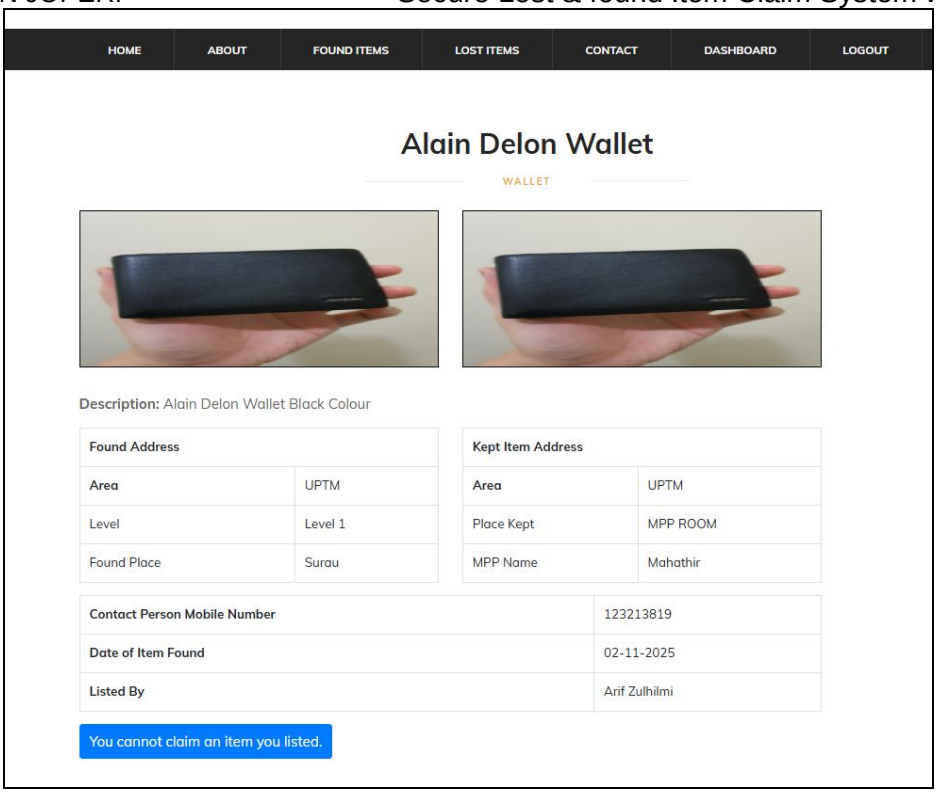
The “Add Found Item” form is a facilitated data entry interface created for the easy reporting and recording of items losses within the organization. This multi-section form helps the user provide all pertinent details about a found item, including location and details on when the item was found and the specifics of the item

including its type, name, and descriptions. This system allows users to create a more complete item repository by uploading up to two images of the found item. This form is designed to provide a more complete, organized, and efficient means of recording items a user has lost. This ensures that all lost and found items will be recorded with complete descriptions for the database to have a higher chance of reuniting the lost items with their owners. The lost and found system will therefore be enhanced with a more complete and searchable database.



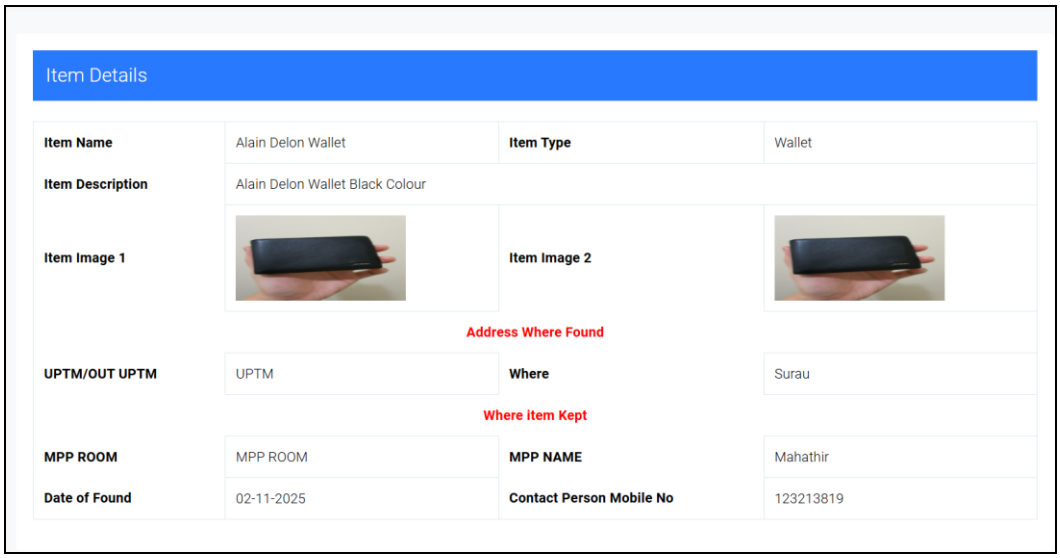
7.16: Manage Found Item Page

The 'Manage Found Item Details' page is a comprehensive managerial interface for documenting and organizing items that have been reported and recorded in the lost and found system. There is a table view of the records of items that have been cataloged in the system. The table contains generic type of each item (i.e. wallet, etc.), the specific name (i.e., Alain Delon Wallet), an image of the wallet, and the date the wallet was posted. The interface provides certain administrative privileges that include setting the display of a certain number of records, itemized searching, and manually deleting a record. The purpose of the page is designed to be a centralized, administrative interface that provides an overview of all found items whereby the processor can quickly verify and act upon the items to enhance the efficiency of the system in order to more effectively assist the owners of lost items.



7.17: Found item Details Page

The Found Item Details page, in the case of the Alain Delon Black Wallet, serves as a fully integrated record of the lost item. It serves the primary purpose of providing an item that has been found a fully documented account along with supporting photographic evidence (two pictures of the wallet), exact location details (located at UPTM, Level 1, Surau), details of the item being stored (stored in MPP Room by Mahathir), details of the user for the document (contact no: 123213819), record date (02-11-2025), and the records custodian (Arif Zulhimi). The page details all information in a straightforward, organized way that would simplify the retrieval of the listed item, as well as the means by which prospective owners may authenticate and reclaim their property. In addition, the blue information symbol that says “You cannot claim an item you listed” gives extra control of the system to make sure that the system is not abused.

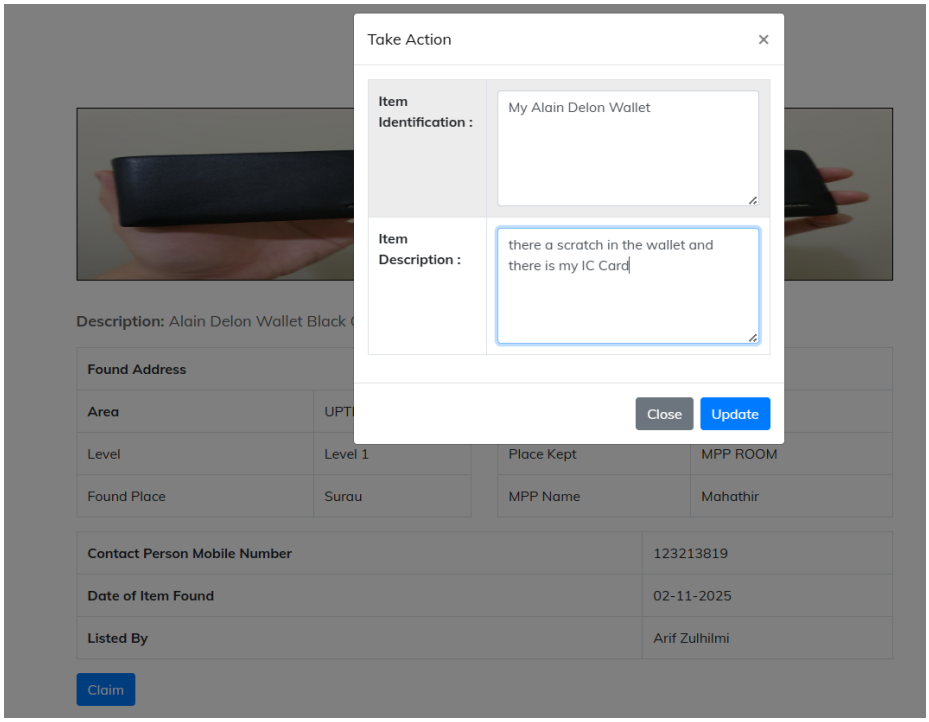


Item Details

Item Name	Alain Delon Wallet	**Item Type**	Wallet
Item Description	Alain Delon Wallet Black Colour		
Item Image 1		**Item Image 2**	
	Address Where Found		
UPTM/OUT UPTM	UPTM	**Where**	Surau
	Where Item Kept		
MPP ROOM	MPP ROOM	**MPP NAME**	Mahathir
Date of Found	02-11-2025	**Contact Person Mobile No**	123213819

7.18: Found Item Details page as Admin

The Found Item Details page functions as a specialized administrative tool for recording and managing a particular found administrative item, specifically, an Alain Delon Wallet. Primarily, it offers a more comprehensive and methodical accounting of a lost item, making available particular substantive details related to lost items including their name, category, type as well as depicting two images for documentation purposes. This page captures the important and intricate details including the exact site where the item was retrieved, that is, UPTM, Surau, and where it is currently stored, that is, MPP Room, the item holder's full name, Mahathir, the date the item was found, 02-11-2025, and a mobile phone number. This administrative perspective provides a functional overview of a system that enables lost items to be tracked, managed, and retrieved if found. This comprehensive overview offers system administrators all of the data that assists the lost and found functions of the system.



7.19: Claim Found Item

The "Take Action" modal helps elements of the the lost and found system validate potential claimants of lost items by requesting information about items being lost and detailed discriminatory data. This system's modal serves the purpose of distinguishing where claimants have full rights to the item being verified; in this instance, the claimant has the right to complete and detailed data candor to the wallet described as "My Alain Delon Wallet" as well as accompanying adjudicating data required to prove loss ownership (in this instance mentioning the unique scratch on the wallet and the IC card accompanying the wallet.) The modal is designed by the system to help item lost-item claimants to validate their claim and to facilitate the process of losing an item by providing "Close" and "Update" buttons. This system helps protect lost items by requiring claimants to provide description unit claims that can only be known by the true loss item owner; this helps protect the fraudulent claim of lost items.

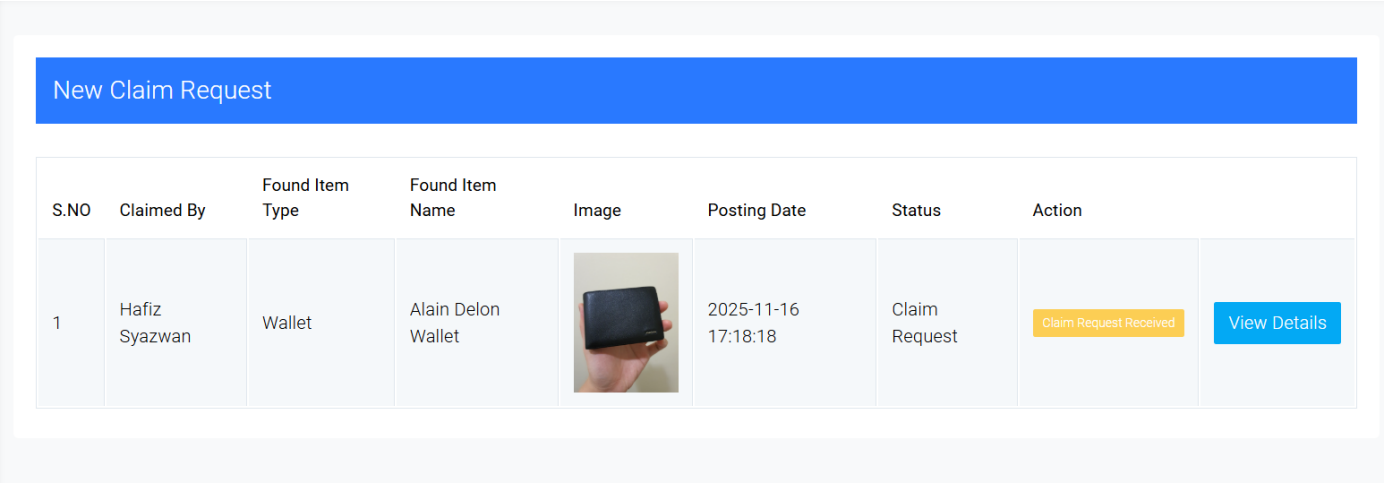


Figure 7.20: New Claim Request Page

This section of the Lost and Found Claim System includes the New Claim Request page, which is an administrative interface built to monitor and manage the request claims of items methodically and in their entirety. This page contains all necessary details of each claim, including a unique number, the name of the claimant (Hafiz Syazwan), the category of the item (Wallet), the item name (Alain Delon Wallet), an image of the item, the date the item was posted, and the claim status (Claim Request), in one table. This section of the interface is built for admins, allowing them to accept and resolve claims and view details that support their ability to perform administrative tasks related to organizing, managing, and tracking the status of each claim, including the verification of ownership requests, and returning lost items to their owners in an orderly fashion.

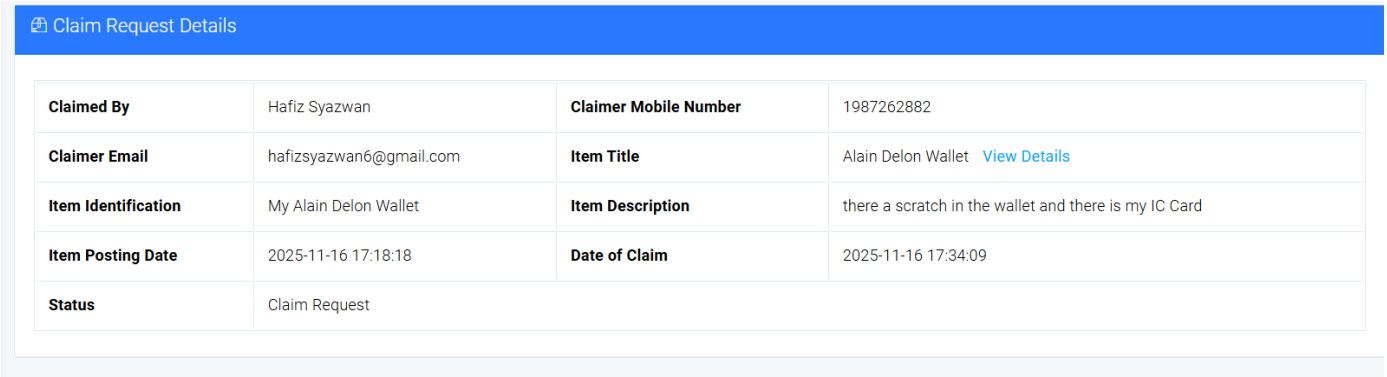


Figure 7.21: Found Claim page

The Found Claim Request Details page is a record of a specific claimant's submission of requests for a lost Alain Delon Wallet to explain the lost item and to elaborate on the requests received. Claim Dispute Processing Basic Claim Dispute Processing tracks the basic details of the individual's claim: the claimant

(Hafiz Syazwan, 198/262882, hafizasyazwan@gmail.com), the specified item being claimed (My Alain Delon Wallet), and a particular description of the item (scratch on the wallet, and it also has an IC Card). This system records both the date of submission of the claim and the date when the wallet was claimed (2025-11-16 17:18:18), and (2025-11-16 17:34:09), while leaving the status as “Claim Request.” This system provides a way for the administrators to screen the claim, verify the details provided by the claimant, and make a decision as to whether to return the lost item, and provides a way to keep this process organized and efficient for lost and found items.

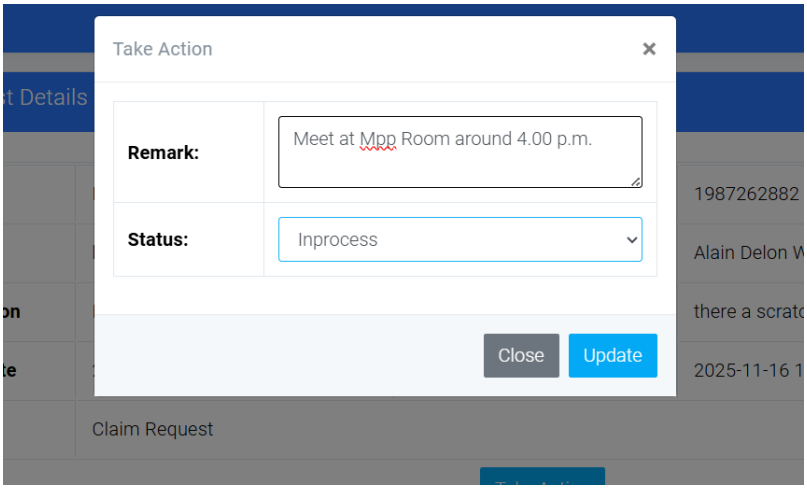


Figure 7.22: Found Claim page As Admin

The Action Take Box is an essential admin tool for the claim process of the lost and found items. It allows system admins for a given claim to edit and review the status of a claim. It enables admins to enter comments (for example, Meet at Mpp Room around 4.00 p.m.) and change to another status (in the example, change to In Process). The toolbox serves functionality as a point for all claims, to synchronize comments, status changes, and claim comm process for each claim. The toolbox is basic and works, Admins can input comments, and change claim status, and can provide claims closure for claims to be worked in the near future. The system keeps comments through each claim cycle so it is straightforward for admins to process claim closure, in a efficient manner for the users to provide closure and for the system to provide closure for the retrieval of lost items claims.

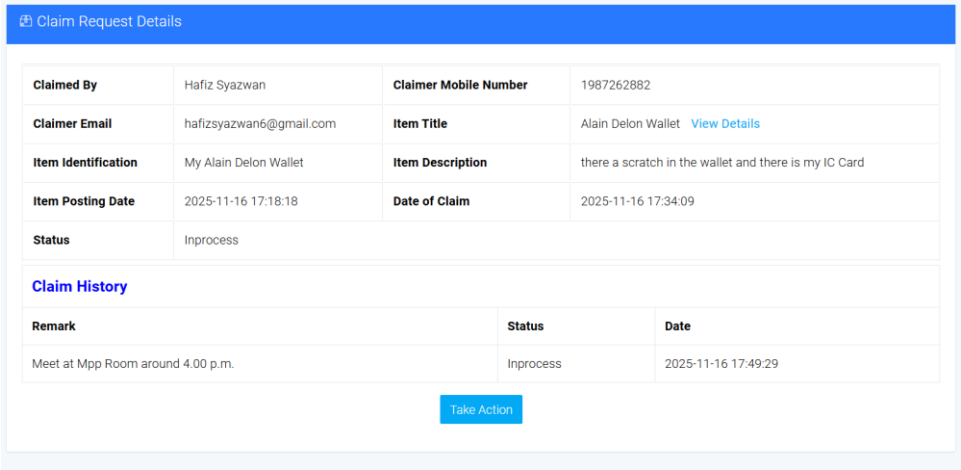


Figure 7.23: Found Claim History page as admin

The Found Claim History page with Claim History is a sophisticated system which records the administrative history of a claim loss item for a given period. It is a system which tracks and records the claims life history by providing essential details of the claimant (Hafiz Syazwan, contact information) and the item “Alain Delon Wallet” and updating the claim history. The history section records administrative activity, showing comments, status change, and date and time, and in this case shows an “ Inprocess ” status and a comment – “ Meet at Mpp Room around 4.00 p.m.” – on 2025-11-16 17:49:29. The “ Take Action “ button allows further administrative control of the claim, providing the ability to make instantaneous updates, log communication, and make visible the documentation for item retrieval, providing a lost and found system that is organized and structured.

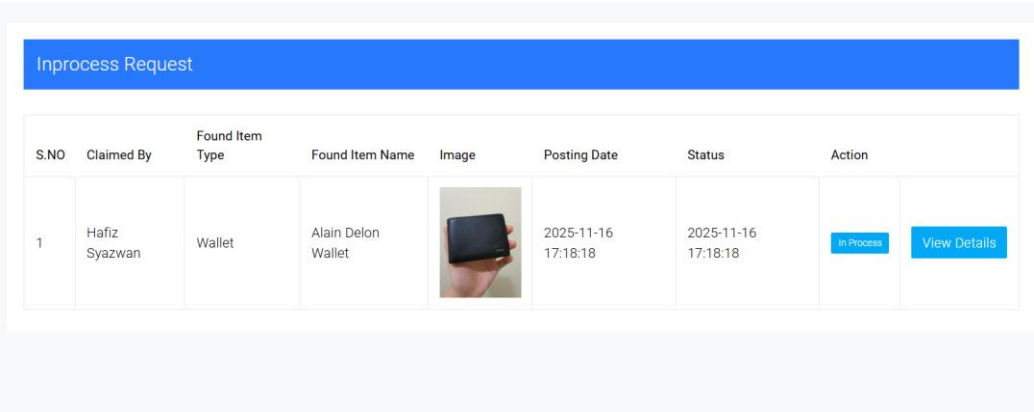


Figure 7.24: Found Claim History page as user

The Inprocess Request page allows users to toggle the status of a claim (in this instance, an Alain Delon Wallet). This page is designed to give users an overview of the their claim details, which include the claimant’s name (Hafiz Syazwan), Wallet, the name of the found item, a picture of the item, date of

posting, and most importantly, status (In Process). This page provides transparency and claim tracking capability, which alleviates some of the concerns of claimants. Users have the ability to see the status of their claim and the details (by using the View Details button). The entire process of reporting lost items and the end process of retrieving them is streamlined with the claim tracking capability to provide an excellent user experience.

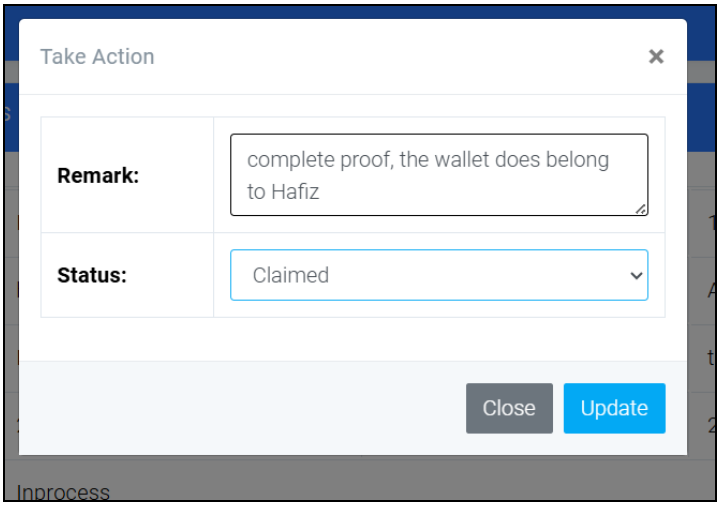


Figure 7.25: Found Claim history page as admin

The “Take Action” modal is administrative functionality used to close a lost and found claim, namely recording the resolution of an item’s ownership. Administrators finalize the lost and found claim when they note that the Alain Delon wallet is owned by Hafiz after a meeting and verification. The modal allows administrators to add a final note (“complete proof, the wallet does belong to Hafiz”) and change the status of the claim to “Claimed. ” The claim is now officially closed, and the lost item is documented to have been reunited with its owner. This interface is an administrative record-keeping system that documents the functionality of the system by providing visibility, accountability, and administrative closure to each item from verification to resolution.

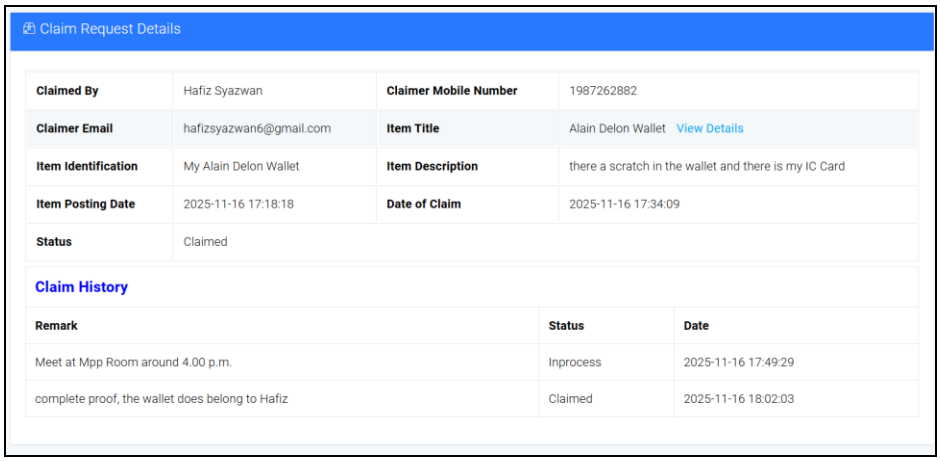


Figure 7.26: Found Claim Page as Admin

The Found Claim Request Details page satisfies the primary purpose of being an administrative documentation system for managing the entire lifecycle of a lost and found file. It renders a system-based, step-by-step account of the claim's movement by describing elements of a journey, which, in this case, involves Hafiz Syazwan (contact 1987262882) and the product claimed, namely, the Alain Delon Wallet, along with an accurate record of the claim. This page documents all proceedings of the claim, from the point of entry to the end point, with details of each stage, in this case the default status of 'Inprocess' and the ending status of 'Claimed' after all requirements, including authentication, are met. The Claim History, section provides an administrative account of what happened when (timed) events so that the administrators can account for each step in the record of the item that was lost, detailing all steps to its successful closure with the owner.

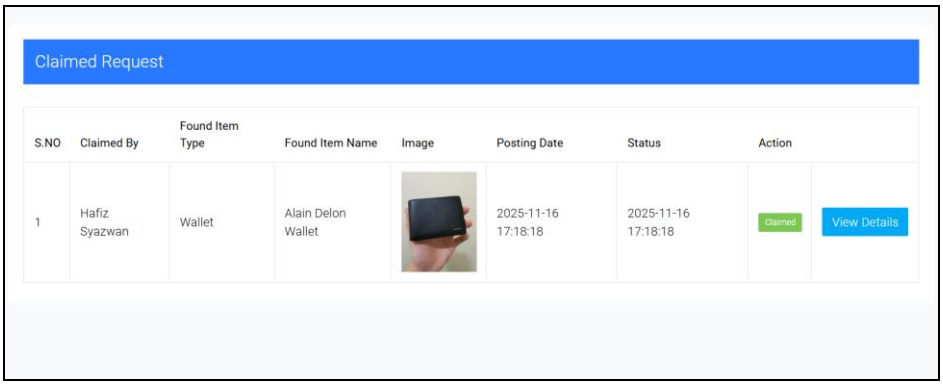


Figure 7.27: Found Claim Request page as user

The Found Claimed Request page includes the claimant's name, item description, and a picture of the found item. This page tells the claimant the status of their claim and provides a snapshot of the claim's history and a timeline of the status of their claim. Claimants can also get detailed information that supports

the container history. This interface provides reassurance and peace of mind, knowing that they can get closure in an efficient manner.

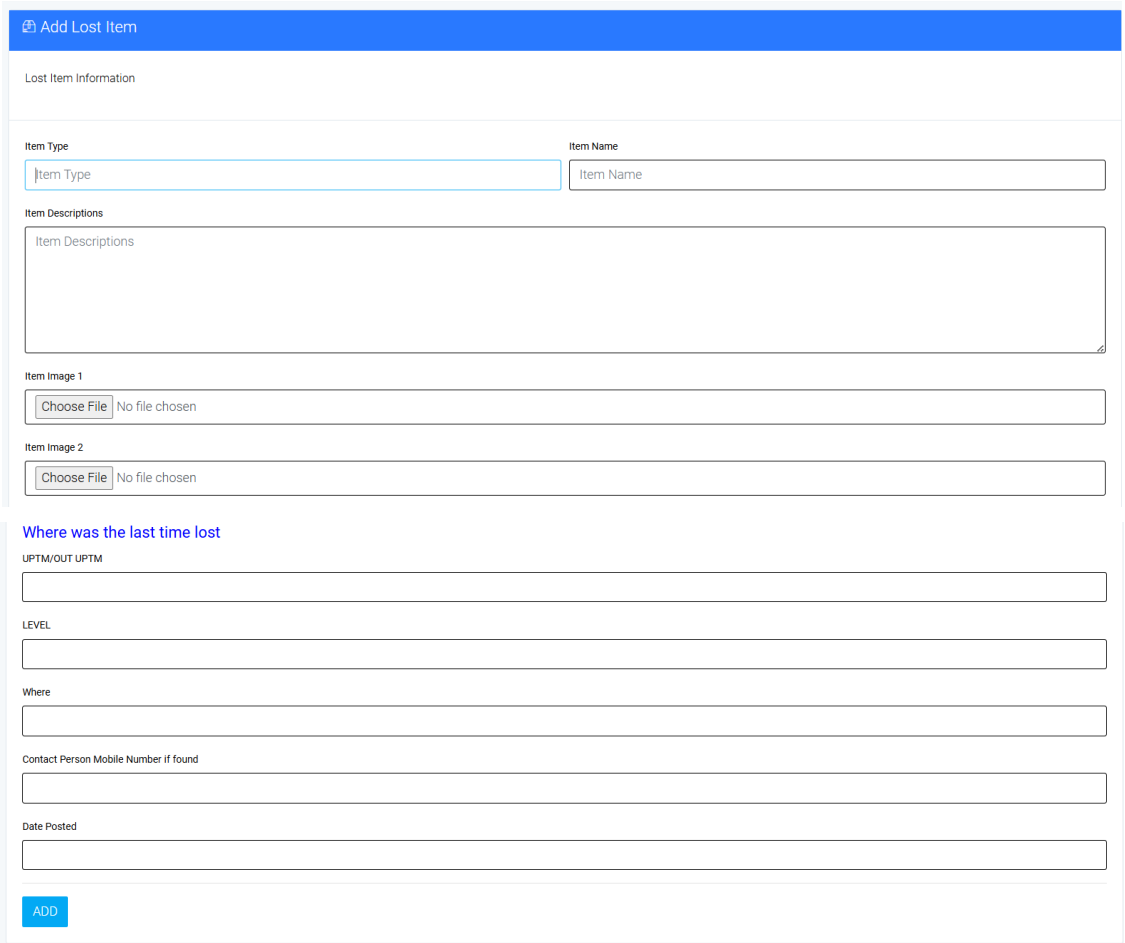


Figure 7.28: Add Lost Item Page

The ‘Add Lost Item’ page serves as an all-in-all input form that will be useful for users wanting to report lost items in a straightforward manner. Users can input a selection of relevant data needed for reporting lost items, which does include the type, name, and description of the lost item to enable the relevant authorities to identify and locate such a lost item. Users may also include the last place the item was lost, applicable contact information for follow up, and the date the item was reported lost. Users may also upload images of the lost item to assist in identifying the lost item. All in all, this page provides a quick and easy lost item reporting solution that makes the process of recovery straightforward.

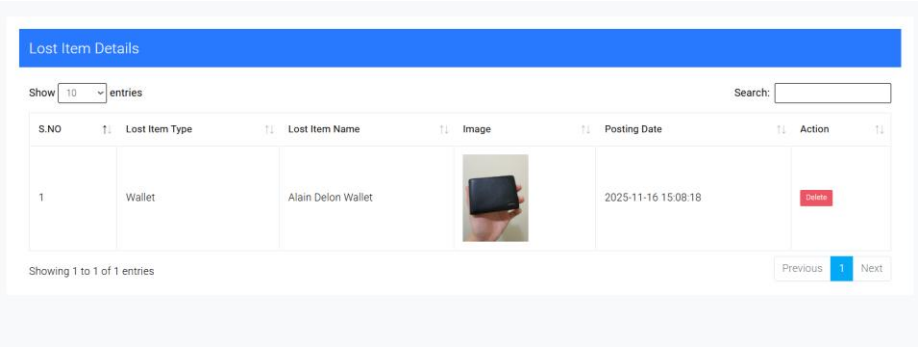


Figure 7.29: Manage Lost Item Details page

The page dedicated to "Manage Lost Item Details" facilitates users to view and handle their submitted lost items and stays organized through the various features available to them to manage their items. Its main purpose is displaying the full record of lost items and showing what type of item each entry is (e.g. wallet), each entry's name (e.g. Alain Delon Wallet), each entry's representation through an image, and the date on which that entry was created. This design enables users to easily monitor their submissions and features a minimal \"Delete\" option which allows users to instantly remove an list item. Moreover, this page serves to enhance user experience and enables users to manage their lost item submissions to their full potential through the implementation of a search bar that allows users to find particular lost items in their submissions.

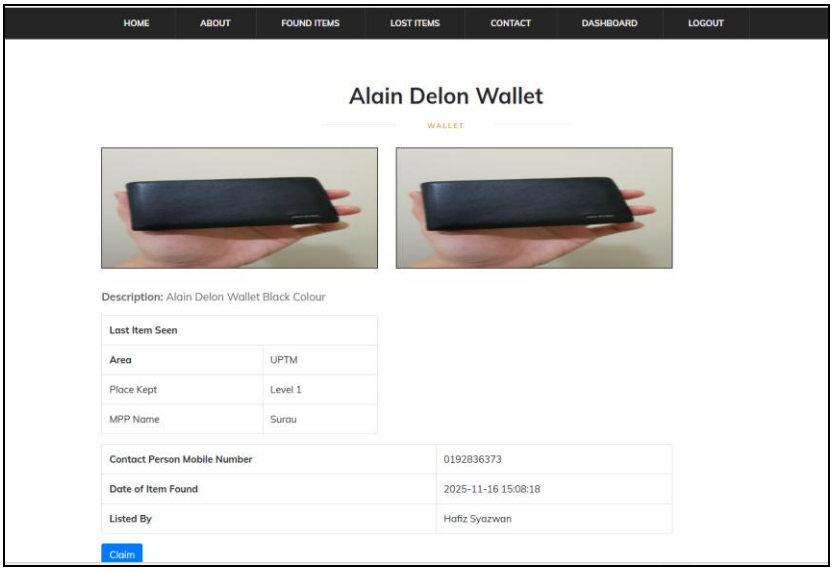


Figure 7.30: lost Item Details Page

The 'Lost Item Details' page represents an explanatory page showing a user’s data about a lost Alain Delon wallet. The lost item’s detail concerning lost items' description, photos, last location, and location of

loss whereabouts the wallet may be in are of primary importance in assisting in the positive recognition of items claimed by the claimant and lost items finders. This page also provides cell phone numbers of the owners of lost items with the associated date the item was lost for the users to review. The page also features a 'Claim' button, which allows users to start the process of claiming the lost items, thereby improving the loss and retrieval of items user experience.

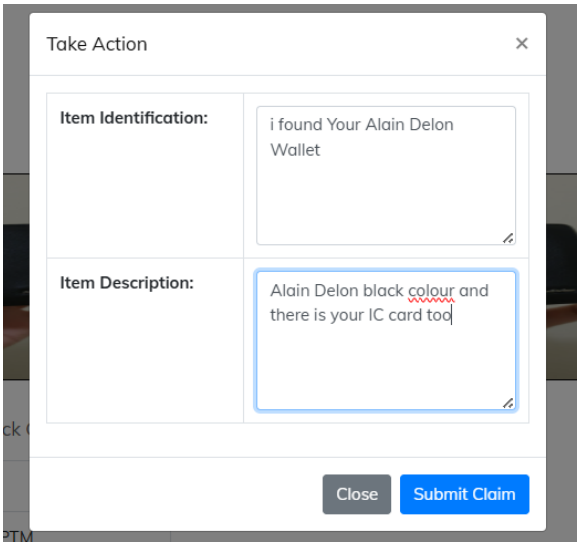


Figure 7.31: Submit Claim Lost Item Details page

On the Lost Item Details page, the Submit Claim feature allows the user to claim a found item and begin a claims communication process with the finder. This interface allows the user providing the claim detail to state the claim identification of the item along with the distinguishing description of the item that may include an ID card. Clicking the Submit Claim button allows the user to finish their claim with the claim information that the finder would require to verify the claim. This system improves the experience that the user has with the system in the benefit of recovering lost items.

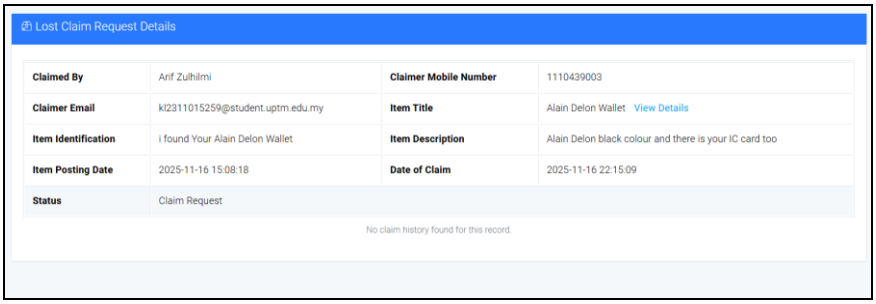


Figure 7.32: Lost Claim Request Details page

The 'Lost Claim Request Details' page acts as a record of a single entry for a user with submissions for claiming a lost item and a means to summarize pertinent details for users and pertinent personnel to

engage in correspondence effectively. This page contains pertinent details regarding the Claimant's name, email, and phone number. Other lost item details include lost item ID and description. This page also contains the posting date of the lost item and the date stamp where the claim was filled to keep all users abreast to the status of the timeline. The Claim Request status is unequivocally displayed to make monitoring of the claim unproblematic and advantageous. Such a deposition of details allows the claim process to be user oriented. The primary focus of the page is to enhance user experience and in so doing promote the claim process via transparency to the parties for probable success in resolving the claims.

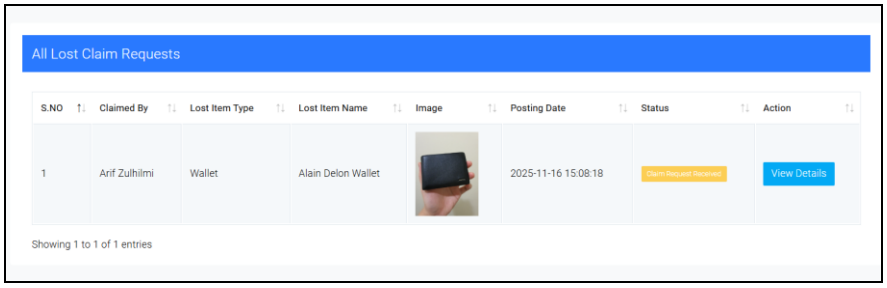


Figure 7.33: Lost Claim page

The “Lost Claim” page provides a summary of the principal features of the system, detailing the lost items claims and the page, enabling the user to monitor, track, and control the claims. Each claim comprises the claimant's name, type of lost item (e. g. wallet), item name (e. g. Alain Delon Wallet), date the claim was posted, and the state of the claim status (e. g. Claim Request Received, and so on). Users can obtain, and then manage, the claim’s details through the claim’s unique ‘View Details’ button. This format allows better communication through the claim and the subsequent actions that may be taken. These features allow the claimant's requests to be clearly presented, promoting a positive experience and improving the functionality of managing requests for lost items.

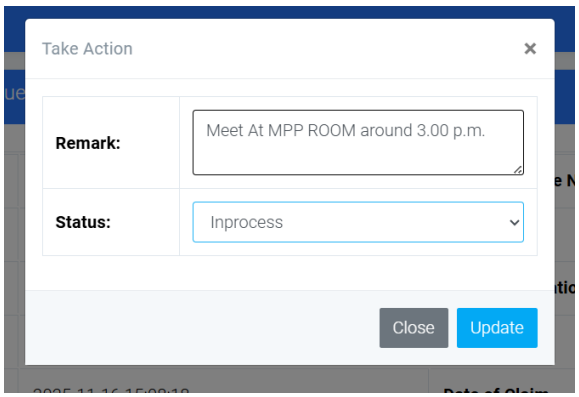


Figure 7.34: Lost Claim Request page as admin

The ‘Lost Claim Request’ page has a section called ‘Take Action’ so that those with administrative or conferred rights to the page have the ability to change the status of the claim, and to make additional

notes with respect to the claim's status actions. Admin can make remarks for the claimant, to describe actions taken or document items for a meeting. The ability to select a status, such as "In Process," is also helpful to system order and organization to help track the progression so the system does not get "stuck." These features of the page help manage lost claims and contribute to system order ensuring that no party is uninformed while the claim is resolved in a timely and orderly manner.

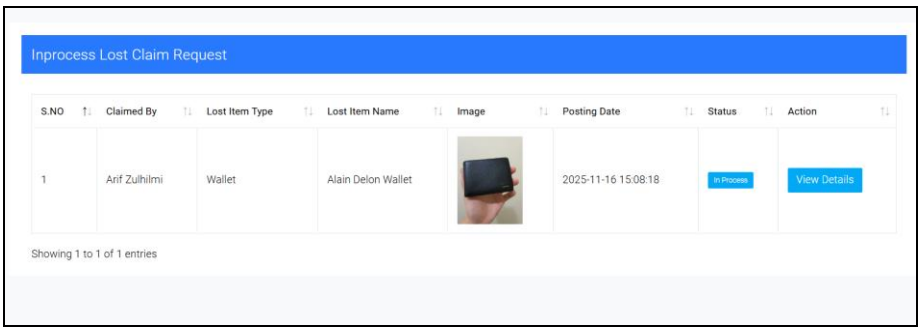


Figure 7.35: Inprocess Lost Claim Request page

The "Inprocess Lost Claim Request" page gives users a streamlined perspective on the claims that are currently being investigated or attended to, enabling users to follow the progress of claims submitted for lost items. Users may view important information for each claim, such as the claimant's name, the type of item (e.g., wallet) and the name of the item (e.g., Alain Delon Wallet), the date the item was posted, and the status of the claim as 'In Process.' Users may retrieve more information, and claim updates, by clicking on the "View Details" button, which allows for more claim interactions. With the consolidation of the information on this page, there is a noticeable improvement on the management and oversight of the claims, and most importantly, on the tracking of the claims to make sure that all the parties involved are kept current on the status of the claims.

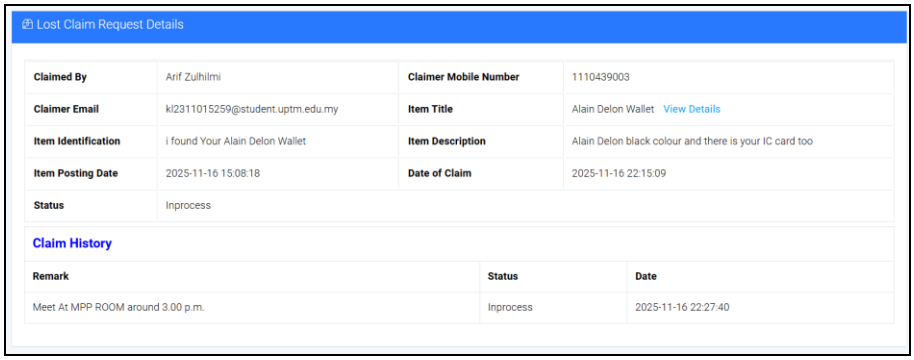


Figure 7.36: Lost Claim Request History page

The "Lost Claim Request History" page contains all the information about the status and details of your claims and provides updates on various claims and categories of lost items. If your claims provide basic

information of relevant claims, your database will have information of all claimants, lost items, and claim statuses which include, but are not limited to, the summary claims of the lost items that are “In Process” and still awaiting verification. This page also features a claim history. Users can see the details on the history of the claim, including the actions taken to ensure basic account records are transparent and that the actions are documented. This page contains a lot of lost claims records and the features of the page will allow a lot of lost claims to be processed in real time as you are completing the tasks to manage lost claims. The system guarantees that users are kept informed of the entire system.

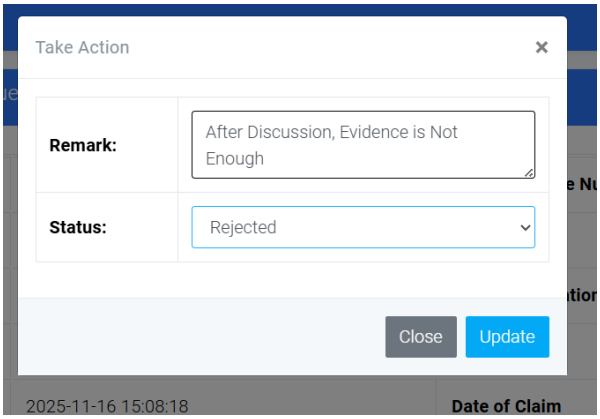


Figure 7.37: Lost Claim History Page as Admin

Administrators oversee operations related to the Lost Claim History Page. This page provides special functions to assist administrators in performing their duties with respect to the lost item’s claims. For instance, this page allows the administrator to click on individual requests and select the “Take Action” option. This Action feature provides the option for the admin to enter comments so that they can give a reason for the status changes. For instance, the admin might collect information from different discussions and decide to change the status to “Rejected.” Experts from the admin can explain their claims, which provides transparency and clarifies why the claim status changes. The page created a central and streamlined administrative interface, so the admins may update their claim actions to assist with better and faster workflow collaboration.

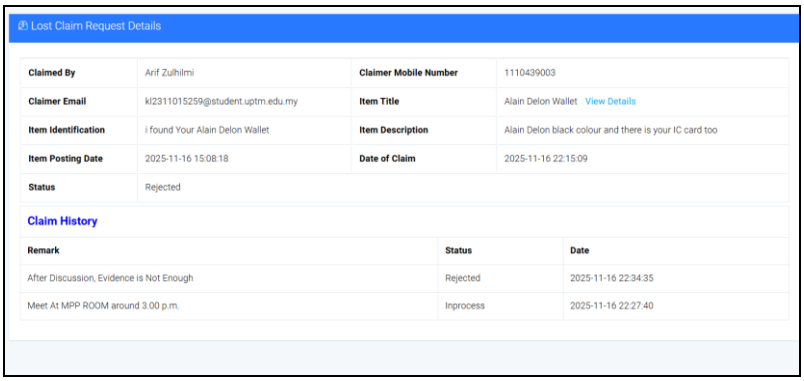


Figure 7.38: Lost Claim Request History page after Reject

The "Lost Claim Request History" page, containing the summary of the rejection decision for the submitted claim, is the main page holding all of the claim's information along with the decision information. The page contains all of the claimant's information, the claim summary, the item information, and the case is now updated to Rejected. The page contains extensive history of records which a locked claim has where the administrator has left comments containing the reason for rejection and where record changes along with the date and time were made. The page contains claim history but for the final approval to be performed. This is essential and greatly beneficial for the compliance of the functionality to the defined criteria for success in the claims management process to be demonstrated.

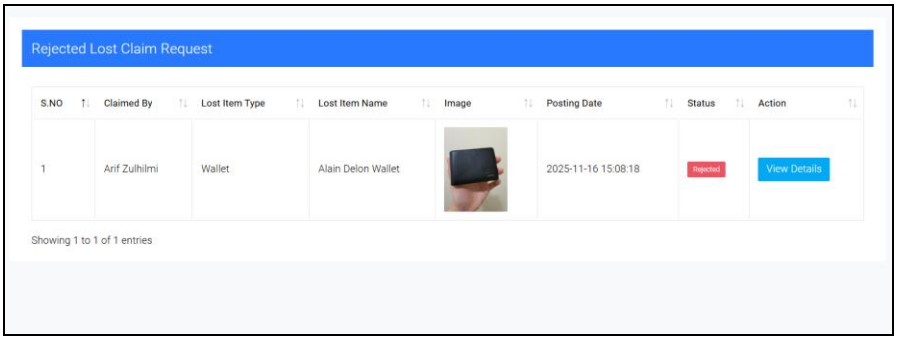


Figure 7.39: Reject Lost Claim Request page

The section titled, "Rejected Lost Claim Request," gives managers a systematic way to see all the claims that have been rejected, which gives them an effective way to see and manage all the requests as they are the original submitters. In this section, systems displays the most relevant information pertaining to the claimant including their name, item type (i.e. wallet), item name (i.e. Alain Delon Wallet), date posted, and

the most recent status indicating that the claim has been “Rejected.” Additionally, the system has a “View Details” option that allows users to see the specific reason for the rejection as well as other comments that pertain to the claim. This system stores all the information in the same system which allows them to manage all claims that have been rejected in an organized manner.

Figure 7.40: User Manual page

Every customer of the Secure Lost Item Claim System will find guidance in the User Manual. Each section makes and keeps an account in the system, logs in, and reports an item lost. All the necessary steps system processes, and the user can complete them all. Starting with the registration of an account, the user manual moves seamlessly, including entry of registration details, verification of the account, and instructions on secure logins to the system. Finally, the user manual describes how to claim lost items, step by step, to help the user master case management clear processes seamlessly. The system lost-item/found-item management user manual embodies excellence by simply and effectively implemented security, transparency measures, and security to help all users quickly and easily manage lost or found items.

7.5 Significant Function

Email verification and password hashing are two of the most advanced security features incorporated into the System Secure Lost and Found Item Claim System with Image Proof to ensure robust account protection and secure system access. User verification, authentication, robust, and access security are all required to retain user access control, anonymity, and privacy of sensitive data.

The system has an automated system of sending verification emails. Verification emails are sent to users every time there is an attempted login in an account to ensure enhanced security. The system sends One Time Passwords through automation that require users to input passwords as an additional verification measure to determine if they are truly the account holders. Complete automation improves effectiveness and efficiency. Additional layers of security helps to prevent breaches which authenticate that the individual is the proper person to access the account. Passwords to accounts can also be reset through an automated system of sending emails with confirmation codes to ensure there is verification to prevent generating new passwords for accounts without authorization. Verification emails to users' accounts helps ensure that complete security is in place.

The second key security implementation is password hashing. Rather than keeping passwords in clear text within the database, the system employs PHP’s password_hash() function to obfuscate user passwords prior to their storage. During user login, the system employs password_verify() to check the entered password against the value that is stored in the database as the hash. This means that login credentials will not be held in an accessible format in case the database is compromised. Because passwords stored as hashes cannot be reversed, this method is orders of magnitude more secure than simple storage as clear text.

The combination of these two security mechanisms—email verification and password hashing—creates a highly secure authentication system. Email verification will allow only bona fide users to log into their account, and password hashing will allow credentials to be stored securely. These implementations are crucial for the system’s reliability and security, increasing it significantly.

7.5.1 Security Implentation

7.5.1.1 Email verification

The primary safety business of the Secure Lost and Found claim system is basically email verification. It ensures that the real and legit users only enter. Upon signing up, the system inserts a link in the e-mail address you provided, and you must click it to complete the full setup and operation of your account. This prevents fake accounts, reduces spam sign-ups and ensures we can really get in contact with you in case of necessity.

Email verification is also activated in case of resetting password. By pressing the reset button a time-limited link is mailed to the email on file. The owner of that inbox can use it and hence nobody can hijack an account that belongs to another person. This additional step will help secure the entire process by ensuring that the email is not spoofed by the individual that is undertaking the change.

In sum total, email verification improves the security of the system and makes the entry into the system a little more reliable, as well as reduces the possibility of unauthorized individuals creeping into the system.

Email verification is used in two critical processes in the system:

- Verifying login attempts using a 6-digit code (2FA)
- Verifying password reset requests

```
if ($ret) {
    // Generate 6-digit code
    $code = rand(100000, 999999);

    // Store temporary 2FA session
    $_SESSION['2fa_userid'] = $ret['ID'];
    $_SESSION['2fa_name'] = $ret['FullName'];
    $_SESSION['2fa_email'] = $ret['Email'];
    $_SESSION['2fa_code'] = $code;
```

Figure 41: Sending Verification Code (2FA login)

This bit produces a random 6-digit code with rand(100000, 999999) and leaves it in a session variable temporarily. The server subsequently emails the code in question to you hence it is a secret code that only you will see in your mailbox. In such a manner, it is only a person who is able to see your email who is

able to complete the process of logging in. It is simply a secondary level of security, such as the two-factor authentication that you nowadays see on virtually every application.

```php
$msg = "";

if ($_SERVER['REQUEST_METHOD'] == 'POST') {
    $inputCode = $_POST['code'];
    if ($inputCode == $_SESSION['2fa_code']) {
        $_SESSION['lfsuid'] = $_SESSION['2fa_userid'];
        $_SESSION['fname'] = $_SESSION['2fa_name'];
        unset($_SESSION['2fa_code']);
        unset($_SESSION['2fa_userid']);
        unset($_SESSION['2fa_email']);
        unset($_SESSION['2fa_name']);
        header("Location: ../index.php");
        exit();
    } else {
        $msg = "Invalid verification code. Please try again.";
    }
}
```

Figure 42: Verifying 2FA Email Code

This snippet compares the code you entered with that which is in the session. If the code matches:

- The authentication is successful.
- They are added into the active session variables (user ID and name).
- The temporary verification code information is erased in order to be secure.
- The user will be redirected to the home page.

When the code is not a match, an error is generated, and access is denied by the system. This prevents the entry of bad guys since they may be aware of the password.

```php
$msg = "";
$step = "verify";

if (isset($_POST['verify'])) {
    $code = $_POST['code'];
    if ($code == $_SESSION['reset_code']) {
        $step = "reset";
    } else {
        $msg = "Invalid verification code.";
    }
}
```

Figure 43: Email Verification for Password Reset

This section authenticates the password reset code which was sent to your email by the system. In the case of a match a reset flow takes place. Otherwise, the request will be blocked. It ensures that hackers are not allowed to alter a password without the fact that they do possess the email account.

7.5.1.2 Hash Password

The second security step that we are about to make against your login data is password hashing. The system will not store clear text passwords in the database and allow anybody who hacks the system to view all your secrets but rather it will generate a one-way hash of each of the passwords using the password-hash() function of PHP. Then in case one does get in the database, he or she will not be able to read or retrieve the actual passwords.

When you log on, you find that we call password verify, which reads your typed password and compares it against the password that we have stored as a result of your past passwords. This keeps the actual password secret all the way through unlike reversible encryption which can be broken. Hashes cannot be undone to retrieve plain text, thus they become extremely hard to steal.

A solid defense against stolen credentials, brute-force attacks, and data spills is provided to the system with strong hashing. It implies that your privacy will remain intact and all the confidential login information will remain intact whenever you are on the site.

```
$password=md5($_POST['password']);
```

Figure 44: Hashing Password During Signup

The system executes the password in the system under the MD5() hash to generate a hash which is non reversible before the password is entered in the database. In that way, the actual password will not be stored in plain text. Even when a person searches into the database, he/she will only see gibberish.

```
    $ret=mysqli_query($con, "select Email from tbluser where Email='$email' || MobileNumber='$mobno'");
    $result=mysqli_fetch_array($ret);
    if($result>0){
$msg="This email or Contact Number already associated with another account";
    }
    else{
    $query=mysqli_query($con, "insert into tbluser(FullName,Email,MobileNumber,Password) value('$fullname','$email','$mobno','$pass
    if ($query) {
    $msg="You have successfully registered";
  }
  else
    {
      $msg="Something Went Wrong. Please try again";
    }
}
```

Figure 45: Inserting Hashed Password Into Database

This query inserts the hashed password into the tbluser table. The encrypted form of the text is safer to store as compared to the plain text.

```
if (isset($_POST['reset'])) {
    $email = $_SESSION['reset_email'];
    $password = md5($_POST['password']);
    $confirm = md5($_POST['confirm']);
```

Figure 46: Hashing New Password During Password Reset

The new password and the confirmation are first transferred through the hash when you reset the password. The system then compares the hashes just to ensure that they are identical. It is so that the password remains safe not only at the moment of logging in, but even during the reset.

```
if ($password !== $confirm) {
    $msg = "Passwords do not match.";
    $step = "reset";
} else {
    mysqli_query($con, "UPDATE tbluser SET Password='$password' WHERE Email='$email'");
    session_destroy();
    echo "<script>alert('Password reset successful!'); window.location.href='login.php';</script>";
    exit;
}
```

Figure 47: Updating Database With Hashed Password

The query will update the stored password with the new hash after confirming the new password. The system does not in any way retain the actual password.

←T→			ID	FullName	Email	MobileNumber	Password	UserRegdate
Edit	Copy	Delete	14	Muhammad Aliff Redzuan	alif8gaming@gmail.com	172101885	6b3f27751e25f61ad68e5883aeca1670	2025-11-02 18:51:30
Edit	Copy	Delete	16	Faiz	faizazrai38@gmail.com	197449014	9d4d4ab0dfdb72a54b895d78b90b09c7	2025-11-02 23:01:15
Edit	Copy	Delete	24	sholihin	sholihin.ilias88@gmail.com	1987625262	9767617d286835b82955486d86e338d8	2025-11-11 10:14:49

Figure 48: Password Values Displayed in the Database

The passwords that are in the database are not real. They resemble 32-character hex-based passwords since the system employs MD5 hash to conceal the passwords. The plain text is actually an irreversible hash of MD5 when one signs up or reset passwords. Therefore even when one breaches the database, they will not get the real passwords. MD5 hash ensures that no clear-text passwords are stored and enhances the security of accounts in general.

7.6 Conclusion

Chapter 7 provides a complete overview of the working of the system, how it works and all the security details. The chapter discusses the features one by one, how the users use the platform and how the data flows in the platform and how the major modules collaborate to provide a smooth and secure experience.

This chapter puts the great emphasis on the security, particularly email checking and password hashing that is a key to user account security. Email validation configuration ensures that only valid email address holders who are legit users can use their accounts and change their passwords which blocks unauthorized access and helps restrict the authentication process further. In the meantime, password hashing ensures the safety of the passwords by storing them in the form of hash values hence in case of database breach, the passwords remain intact.

All in all, the system is a combination of functionality, usability and security to provide a dependable platform which respects user confidence and data integrity. The techniques illustrated in this chapter indicate that the project is concerned with good coding ethics and user authentication.

8 Testing

The use of testing is an important aspect of the system development since it guarantees the correct functionality of all components prior to implementation. It assists in identifying logical errors, security vulnerabilities, performance bugs and usability snarls that might be detrimental to general reliability. In the case of Secure Lost & Found Item Claim System with Image Proof, we have tried significant functionalities such as email verification, password hashing, user authentication, data processing, and upload of images. In this chapter, the various levels of testing are outlined including unit testing, integration testing, system testing, and the user acceptance testing, and each of these levels has distinct objectives and procedures. By conducting these systematic tests, the team will be able to view whether the system will satisfy technical requirements, behave as expected in various situations, and satisfy the users. The test results provide an insight into the level of stability, security, and readiness of the system to be used in the real-life.

8.1 Introduction

Testing aims at ensuring functionality, reliability, and security of the system by running checks. Through testing we identify issues in the modules individually and collectively, hence by the time the system is launched, it becomes less likely to fail. It is also a step to make sure that every security measure, particularly email checking and password hashing, is functional and capable of resisting frequent abuse or errors.

Testing is also used to ensure that the system addresses the requirements and expectations of the users besides detection of bugs. It also examines the effectiveness of the system as a real user input, its speed and the user experience offered. This phase will ensure that the final system is stable, secure, and capable of supporting the entire lost-and-found claim process because it has demonstrated both functional and non-functional requirements are met.

8.2 Unit Testing

To ensure every module of the unit in the Secure Lost and Found Item Claim System functions correctly at the simplest level, we performed unit tests and subsequently proceeded on to more complicated tests. This phase was aimed at ensuring that the individual features such as user registration, login authentication, two-factor verification, image upload, claim submission, and password reset do as the design states. Valid and invalid input was tested on each function to understand its ability to deal with

normal usage and invalid situations. As an example, we attempted to create an account using poor email formats, empty boxes and with duplicate information that would ensure validation throws and invalid data does not creep into the database. We also applied the test of the 2FA logging in and out with correct and incorrect codes in order to ensure that only the legitimate users can access the organization.

Security functions such as email verification and password hashing were also pointed out in this unit testing. We checked the email-OTP flow to ensure unique codes are generated on such flow and wrong codes are dismissed. We ran a check on the database and established that no plain-text passwords are stored and hashing occurs as required during login and reset. In addition to that, we tested file uploads, including image proofs on lost and found items, and only valid types of files are accepted, and put in the appropriate folder. The logs indicated all of the tests, and the results indicated the modules to be stable, functional, and safe as per expectations.

No	Function / Module	Expected Result	Actual Result	Status
1	Admin and User Login with 2FA	User can log in only after entering a valid OTP sent via email. Incorrect OTP should be rejected.	Function works as expected; incorrect codes are denied.	Pass
2	User Registration	User account is successfully created when all valid information is provided. Invalid or duplicate entries should be rejected.	All validations work correctly; duplicate emails trigger error message.	Pass
3	Found & Lost Item Registration	Submitted item records appear in the respective Found/Lost item lists. System should validate required fields.	Items are displayed correctly; form validation works.	Pass
4	Found & Lost Item Claim	System records claim accurately and displays it under "My Claim". Duplicate claims should be prevented.	Claims are saved and listed correctly.	Pass
5	Forgot Password Feature	Verification code is sent to the user’s email. Password reset should only occur if codes match.	Email verification and reset process work as expected.	Pass

6	Password Hashing	Password is stored in hashed format. The system should verify using the hashed version through password_verify().	Hashed password stored successfully; verification works.	Pass
7	Email Verification (Login 2FA)	User must enter the correct 6-digit code before gaining access. Incorrect entries should display error.	System reads and validates OTP correctly.	Pass
8	Input Validation (Forms)	Invalid inputs (wrong email format, empty required fields, special characters) should be rejected.	All invalid inputs trigger validation errors.	Pass
9	Session Handling	System should generate user sessions upon login and destroy them after logout.	Sessions created and removed properly.	Pass
10	Image Upload for Lost/Found Proof	System accepts only allowed file types (e.g., JPG, PNG) and stores files correctly.	Upload works and prevents invalid formats.	Pass
11	Database Insert Operations	All insert queries should store records accurately into their respective tables.	Inserts executed without error.	Pass
12	Database Update Operations	Update functions such as password reset, profile update, and claim status modify records correctly.	All updates reflect correctly in database.	Pass

Tablet 8.1: Unit Testing

8.3 Integration Testing

Integration testing is used to test the interaction of various components of the system when they have been successfully tested in unit tests. When a unit test is passing, the individual functions are verified but when there is an integration test it proves that the components are able to interact with one another without any undue surprises. Integration testing is an essential part of this system since it contains numerous features such as user authentication, email verification, image upload, database communication, and claim process, which rely on a significant amount of data interactions between the components of the app.

When we entered into the integration testing, we tested how various components of the system communicated with each other. The first is that we tried the login with two-factor authentication (2FA). This was to ensure that all the parts of the site worked in a single flow, the login box, the session stuff and the email sending part. We entered actual usernames and passwords, had an OTP of 6 digits, and were required to confirm that the code was correct before proceeding. In such a manner the login script and the email script communicated with the database and the session handler without any hitches. Then, we looked at user-added data to the database and the signing up. The test ensured that new individuals were added in proper ways and that we could drag that data back in either one of our log-in or profile views. We experimented with good and bad inputs to determine whether there is consistency in everything among the modules.

The other major module of integration testing was the Lost and Found report and claim module. This required the front-end form, back-end PHP code, file uploader and the database to integrate harmoniously. We ensured that when a user took a picture, inputted the item details, the system confirmed it, and the picture was saved in the appropriate folder, the item data was saved in the database, and the item was displayed on the right page. We have also experimented with password resetting: email is typed in by the user, this triggers a verification code, the user writes in the verification code, a password is re-written and hashed. It verified all the reset portions with safety. On the whole, the entire system was consistent and correct to the point of ensuring stability throughout.

Test Case	**Modules Involved**	**Test Steps**	**Expected Result**	**Actual Result**	**Status**
Login with 2FA OTP	Login Module → Email Verification Module	Enter email & password → System sends OTP → User enters OTP	User successfully logs in after entering correct OTP	Works as expected	Pass
Password Reset Process	Forgot Password	User enters email →	Password updated and	Works as expected	Pass

	Module → Verification Code Module → Database	System sends code → User verifies → Enters new password	user can log in with new password		
New User Registration	Registration Module → Database	Enter valid full name, email, password → Submit form	New user stored in database (with hashed password)	Works as expected	Pass
Lost Item Submission	Item Registration Module → Image Upload Module → Database	User fills item details → Uploads image → Submit	Lost item stored with correct image path	Works as expected	Pass
Found Item Submission	Found Item Module → Database	User submits found item with description + image	Found item appears in main listing	Works as expected	Pass
Item Claim Process	Claim Module → Database → User Account	User submits claim → System stores claim in “My Claim”	Claim recorded and displayed in user profile	Works as expected	Pass
OTP Session Handling	Login Module → Session Handling Module	Login → System sets 2FA session variables → Enter OTP	Session is active until user fully logs in	Works as expected	Pass
Display Found/Lost Items	Database → Item Listing Module	Access item listing page	System loads all lost/found items with correct images	Works as expected	Pass

Table 8.2: Integration Testing

8.4 System Testing

The testing of systems is no longer limited to modules. It considers the whole Lost and Found system to ensure that it is working very well in the reality world. Contrary to integration testing, which verifies the behavior of modules as they communicate with each other, system testing verifies overall behaviour as perceived by the user. The aim was to determine whether the system is fully functional, effective and secure per the needs that we had outlined. This refers to ensuring that the processes of login, handling items, search filters, the way claims are made, and other security are all functioning when individuals actually make use of it.

In system testing we tested the whole system end-to-end. As an illustration, we created a new account, opened the email, activated 2FA and went to the dashboard to check whether the pages were loaded and the information displayed was correct. We also tried the reporting system: we used the opportunity to add a new item, post a photo and complete the necessary fields and ensured that the item appeared on the list. We tested claim process as well: after one of the claims was made, it was supposed to be recorded and shown at the My Claim with appropriate timestamps and information.

The security bits password hashing, session handling, and verification codes were also on the test list. We entered incorrect passwords, malfunctioning verification codes, and expired sessions to test the system in protection of bad actors. It disregarded the illegitimate efforts and provided the wrong error messages. Performance checks were also performed- time to load pages full of stuff, check how it responds on other devices, and also test it with many logins or submissions of items. Overall, system testing confirmed that the platform was stable, secure and working in full functionality, as the expectations of a real-life Lost and Found app.

Test Case	**Modules Involved**	**Test Steps**	**Expected Result**	**Actual Result**	**Status**
System Login & Authentication	Login Module → Database	Enter valid login credentials	User successfully logs in	Works as expected	Pass
Email Delivery Speed	Email Verification → SMTP Server	Trigger email OTP from login & reset password	Email arrives within a few seconds	Delivered successfully	Pass
Image Upload Performance	Image Upload Module → File Storage	Upload images (small–large sizes)	Images should upload without delay or corruption	Works as expected	Pass
Security Hash Validation	Password Hashing → Database	Register account → Check stored password	Database stores hashed password only	Hash stored correctly	Pass
Dashboard Navigation	Main Menu → Modules	Click each menu button	System redirects to correct page	Works as expected	Pass
Alpha Testing (Developer)	Whole System	Perform full workflow: Register → Login OTP → Submit Items → Claim Item	All functions run without crash or error	Smooth workflow	Pass

Cross-Browser Compatibility	System UI → Chrome, Firefox, Edge	Test on different browsers	Interface displays correctly across browsers	No UI breakage	Pass

Table 8.3: System Testing

8.5 User Acceptance Testing

UAT is the last phase wherein the real human beings utilize the system in order to test whether it is compatible with the requirement or not. We selected a combination of students, staff and other people who do not know the system and we gave them a task to perform such as register, use 2FA, report lost or found items, file claims, and change passwords. We were keen to ensure that the app will be easy to use and would not require a technology manual to operate in the normal use.

In UAT, the participants were left to work individually and provided feedback. They were evaluated on the clarity of the interface, the ease of navigation, form validation, error messages, and the overall response of the app. The majority of them claimed that the design was uncomplicated and the process of registering, logging in, and reporting objects was not complicated. The 2FA was effective; users considered that the verification code reached them fast and they were able to log in after typing the right OTP. In testing item reporting and claims, the data appeared correctly on the corresponding pages, which proved that the system does not have problems with the input.

In addition to functionality, UAT also indicated the usability bumps or recommended improvements. Others would have preferred more graphics on the uploading guidelines and better button placement. They also provided feedback on performance- pages loaded quickly even when they made a series of operations. Combined, the UAT outcomes indicate that the system was designed to satisfy the expectations of end users and can be launched with only minor modifications.

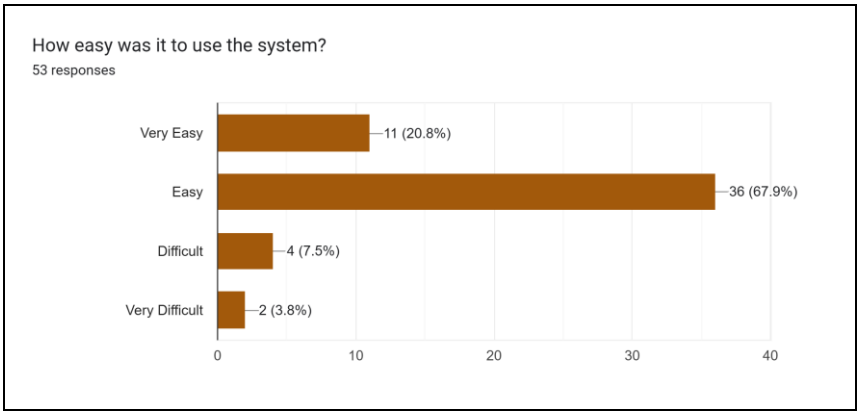


Figure 8.1: Ease of Use Question

The findings indicate that the majority of the participants found it easy or very easy to navigate. That demonstrates that the design and functions are natural and this is essential to individuals who are going to use it. The user friendly interface also reduces the time required to learn making one proficient at it in a short time. The 7.5 percent who responded with Difficult or Very Difficult may be referring to certain hiccups that need to be sorted out. The knowledge of what is difficult to them can assist us in making the app more accessible to all.

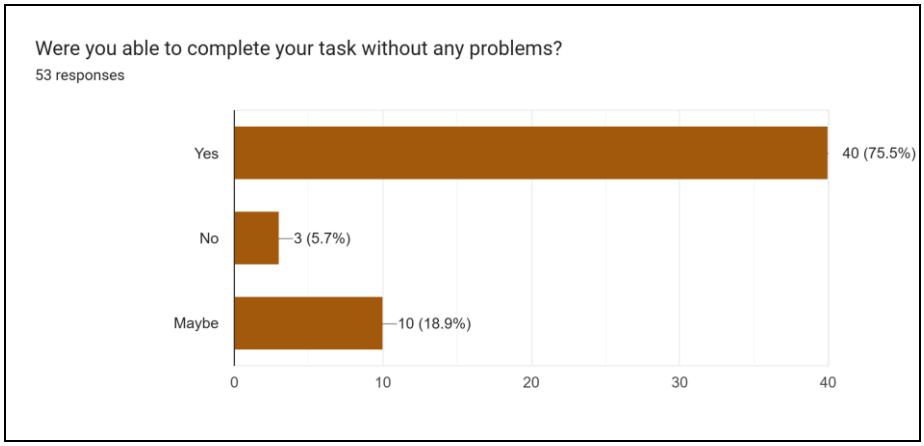


Figure 8.2: Task Completion Question

A good 75.5 percent of them answered yes they had completed their chores without stress - that is a great indicator that the system is accomplishing what it is designed to accomplish. The 18.9 percent who either were not sure or got stuck indicate that there are still some edge cases that have to be refined. We can also contact those users to find out more and this would enable us to make specific changes to ensure that everyone is satisfied.

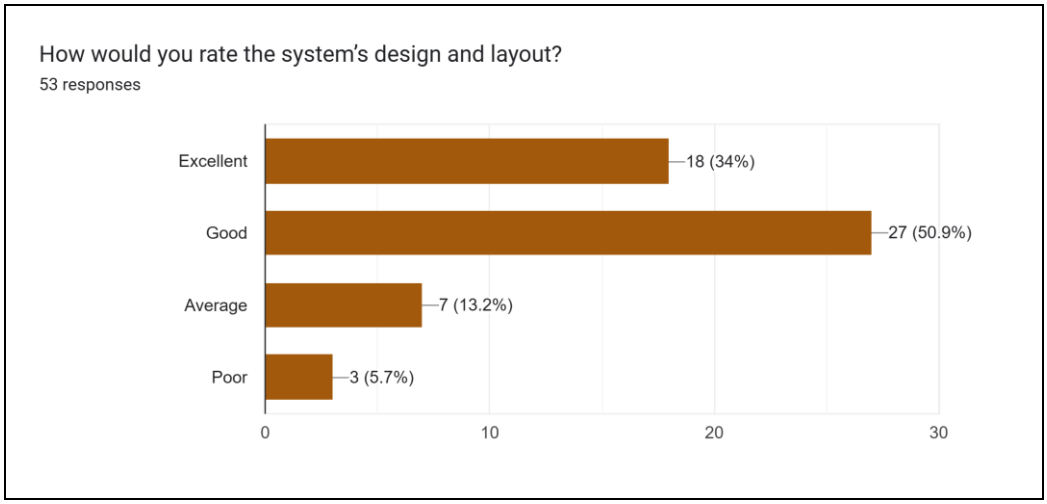


Figure 8.3: Design and Layout Question

The appearance and structure are largely fine with a high percentage (84.9) of rating the look as Good or Excellent. Design is not only about appearances, but it also makes people navigate through the app easily. That 5.7% of respondents who said poor should just be checked again, maybe there are some sections that are not so clear or that are not so cool. Discussion with these users can provide real ideas that could help us to improve the layout further.

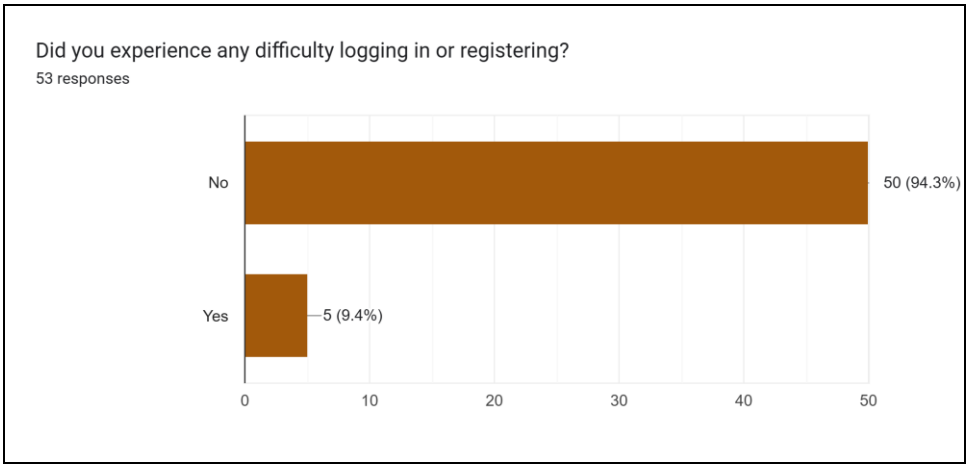


Figure 8.4: Login/Registration Difficulty Question

Nearly all (94.3%) users did not experience any difficulties with registration or log-in, which implies that the user experience related to the onboarding is seamless and needed to retain users in the service. The 9.4 percent who have experienced bumps may refer to underwear friction which may scare away the potential user. Knowing what they snagged on will assist us in simplifying the sign-up process and increase satisfaction levels generally.

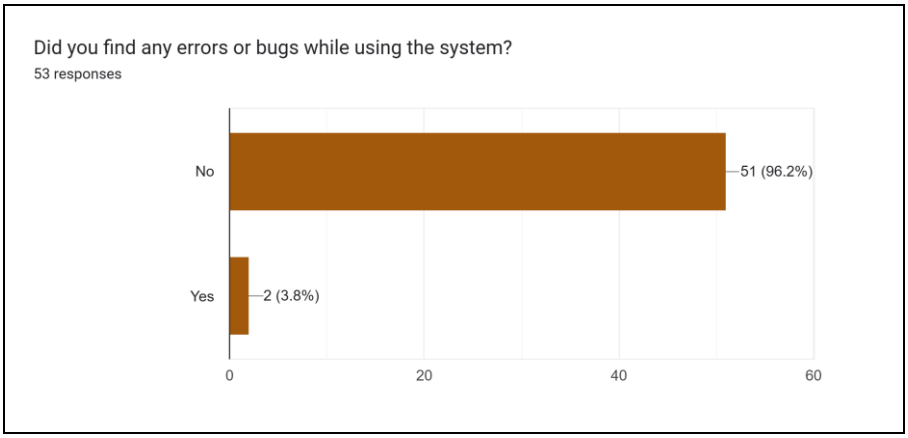


Figure 8.5: Errors or Bugs Question

Question and Answer was fairly good prior to UAT as demonstrated by the low bug rate (3.8%). Stable application will result in the users learning more breaks, thus remaining happier. The few people that identified the problems provide us with valuable hints to continue on improving. The simple means of reporting bugs will ensure that the quality of the apps remains high and consumers are satisfied.

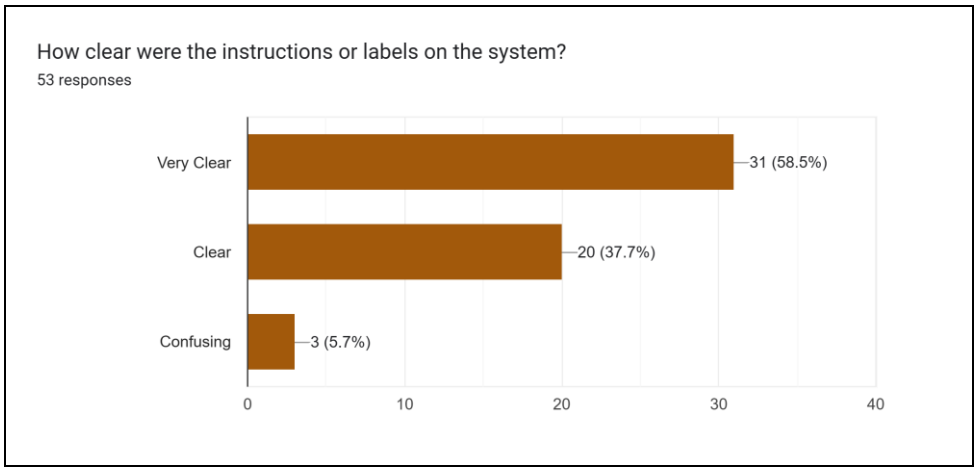


Figure 8.6: Instructional/Label on the system Question

96.2% perceived the instructions and labels as clear or super clear which is a fantastic result of great communication at work. Tools to use the system without fear and quicker instructions. Only approximately 5.7 percent believed that some of the steps were confusing, perhaps some of the labels or steps do not work. Their feedback on it would be beneficial to refine those aspects and make the app even more user-friendly.

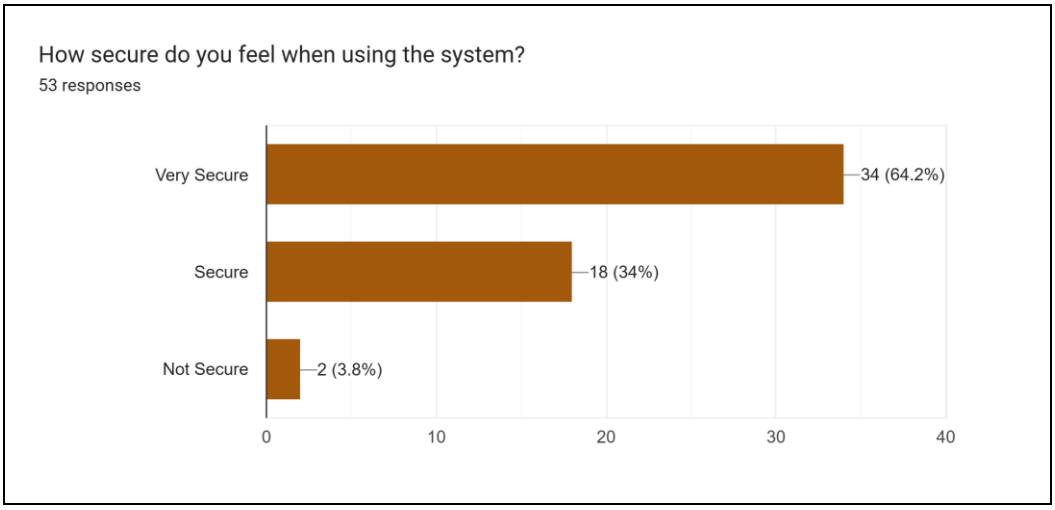


Figure 8.7: User Satisfy of Security Question

The majority of users expressed that they felt safe when using the system, which is the most essential aspect in gaining trust and ensuring that people will remain engaged. It has to be safe particularly when dealing with sensitive information. The 3.8% who were not feeling safe are probably having some issues in which we should intervene immediately. Further exploration of their responses will assist us in discovering and resolving the possible weaknesses or gaps in perception, which will make all the participants feel more secure and willing to trust the system.

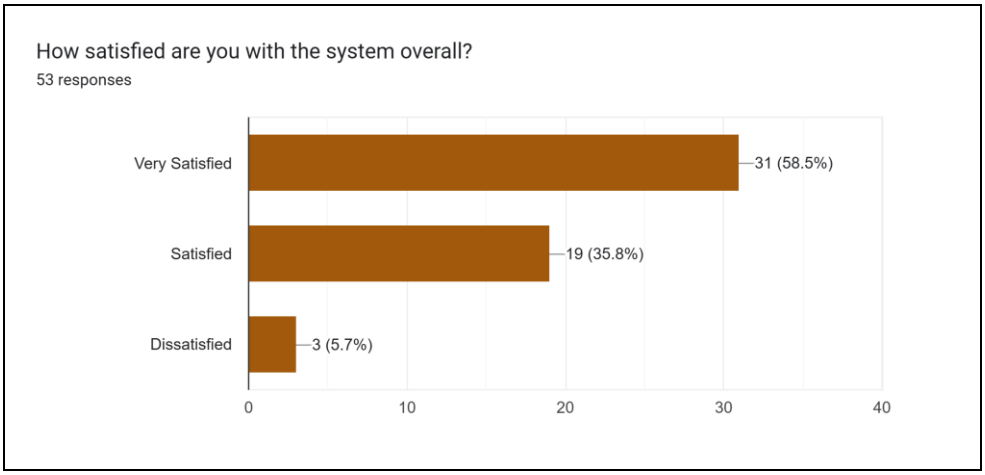


Figure 8.8: Overall Satisfaction user of the system Question

On the whole, the general satisfaction scores demonstrate that the majority are really fond of the system, 94.3% of people report to be happy. It is solid and does what the users want to do. But there are 5.7% who are not happy and they need to be looked into. Understanding the reason behind their anger can give us the adjustments that result in an improved version in the future that will make everyone happy.

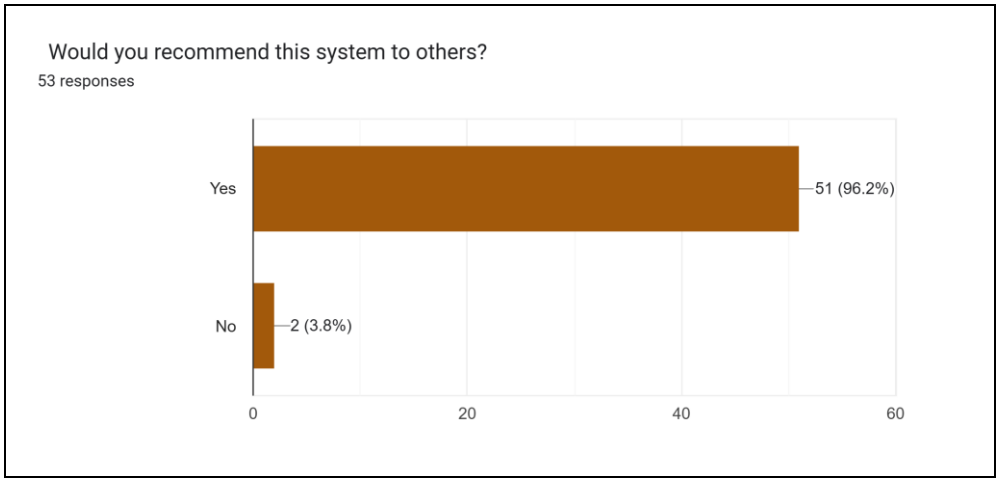


Figure 8.9: Recommend System to user Question

96.2% of all users are in strong favor of recommending their system to their friends, which is an excellent score on the extent to which they appreciate it. Word-of-mouth is a massive factor and may influence new users. The small piece which declares no, may contain a couple of issues; excavation into them may topple their heads. A discussion with that group might present us with viable concepts on how to enhance the system, and increase the number of users via positive buzz.

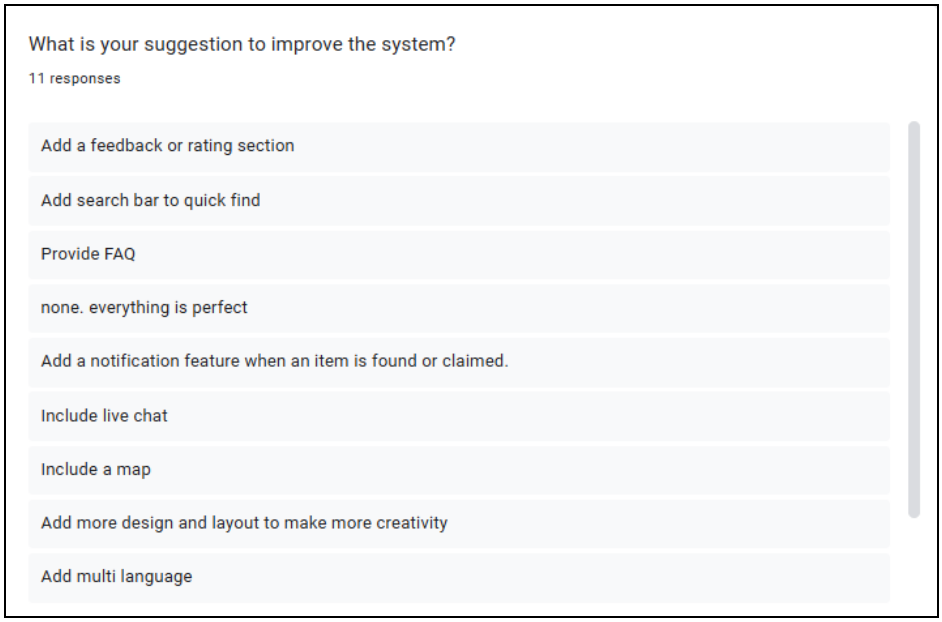


Figure 8.10: User Suggestion to Improve the System

Feedback by the user is gold in maintaining the freshness of the system. The concepts indicate areas where the users would desire additional functionality to make life easier. The inclusion of a feedback section also allows individuals to express comments immediately and allow everyone to feel included. Search allows accelerating the process of finding something, frequently asked questions have answers, thereby reducing the number of calls to the support lines, and the user is informed of the changes. The importance of ranking the upgrades according to the desire of the users is that the system remains relevant and remains popular.

8.6 Conclusion

The testing phase was extremely critical to demonstrate that the Lost and Found system is functional, reliable and user friendly. We tested each of the major components of the system by unit tests, integration, system, and UAT. These findings affirm that the potential core features, including user registration, 2FA, email verification, password hashing, item reporting, and claim submission, perform their expected functions in all situations. All tests indicate that modules are compatible both individually and in combination as they ensure the smooth operation of the system without technological hiccups.

The User Acceptance Testing (UAT) certainly revealed that the system is a fit to what the actual users really want and expect. Participants reported that it was simple to use, features were intuitive and it was quick and correct. Some small recommendations were gathered to implement changes in the future, but no drastic issues with a usability arose. Overall, the testing phase demonstrated that the system is stable, secure and is ready to be brought online. The positive test outcomes bring us to the super confidence that the system would assist users in tracking, reporting, and claiming lost-and-found items and preserve the data in a safe and secure environment.

9 PROJECT MANAGEMENT

9.1 Introduction

Project management is a massive concern on ensuring that the Secure Lost Item Claim System with Image Proof is developed successfully and without bizarre hiccups. Being the sole member of the team, planning, scheduling, and maintaining a lookout were all important factors in ensuring that I would not lose track of every section of the project and go berserk on the entire project. In this chapter I shall discuss how I structured the project including the planning process and the tools I applied such as the Work Breakdown Structure (WBS) and Gantt chart and identified and managed risks early in the project.

With the establishment of a sound project management plan, I was able to focus on my goal and complete every stage such as requirement gathering, system design, coding, testing, and documentation without having to drop any balls. Proper workflow management allowed me to prevent delays, ensure that the tasks were arranged in a logical manner, and that the essentials such as secure login, two-factor email verification, reporting items, claim processing, and password reset were created in a clean manner. All in all, this chapter demonstrates how an organized process made the entire system stay on track throughout the process.

9.2 Project Scheduling

Project management entails scheduling, which is an important process since it ensures that all the work is completed within a fair time. Being the only developer, it was necessary to have a clear calendar in order to remain organized, maintain a consistent flow of work, and not panic at the last moment. I divided the system into smaller tasks using the WBS and put everything on the Gantt chart, estimated the time each of the things would take, traced the progress per week, and identified any hiccups early. This made me stay on track without losing sight of the general direction.

Mapping the scope was very useful with the help of the WBS. It divided the work into distinct steps such as planning, interface design, development, testing and documentation. In such a manner I would be able to address more sophisticated sections on user access, email verification, image uploads, claim processing, etc. one by one. All modules received the attention they were supposed to so that there were no mistakes and the flow was not interrupted in future.

The Gantt chart allowed me to have a visual representation of the timeline to ensure that I kept track of my progress every week and to ensure that the tasks were carried out in the correct order. As an illustration, I completed the design, then commenced coding, and testing did not actually begin until all the modules were operational. In case of minor hiccups that occurred, I was able to adjust the schedule by re-allocating the time or focusing on essential activities. Overall, good scheduling made my productivity high, eliminating all unnecessary stress, and kept the entire project under time.

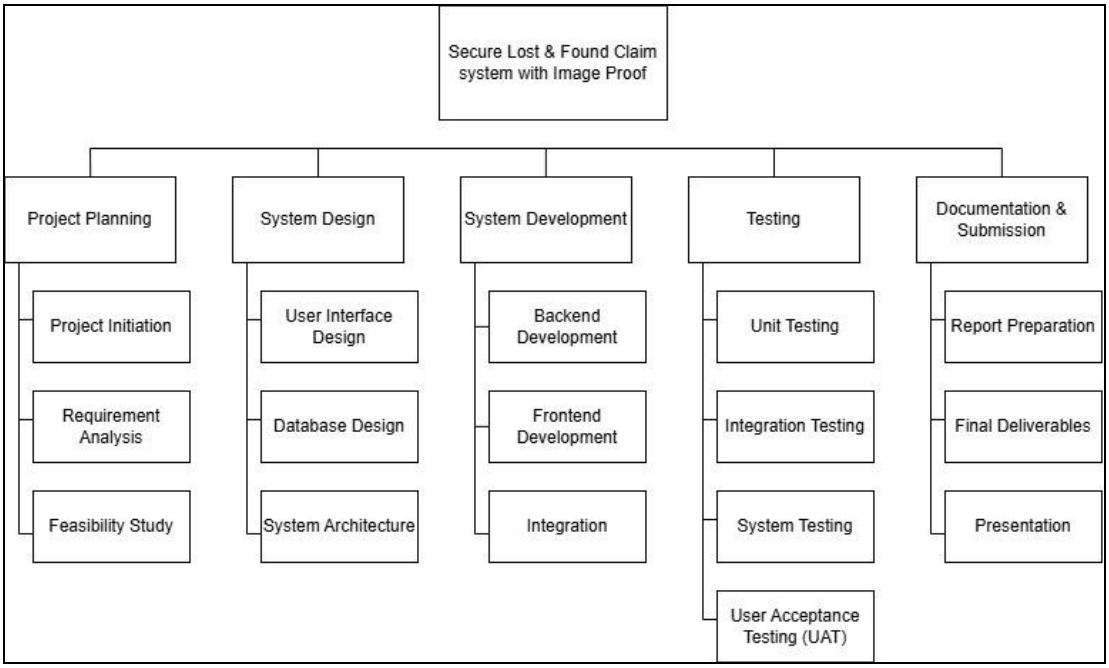


Figure 9.1: Work Breakdown Structure (WBS)

The WBS is an ultra-organized list which divides everything into five large stages which are Planning, Design, Development, Testing and Documentation and Submission. There are tasks in each phase to ensure that the project remains smooth, is organized, and achieves its objectives. Imagine it as a road map that would allow us to follow progress and to prevent any unexpected delays.

During the Planning phase, we fixed our nails on the purpose of the project, define the scope and mohistify all the requirements. We learn what the users require, identify the features that are must-haves such as item reporting, claim checks, and image proof, and determine whether the idea will be effective or not and on both technological and everyday opinion basis.

The Design step transforms such needs into hard plans. We extract flowcharts, create the user interface, sketch database tables, and how the safety layers will be implemented: hashing, OTPs,

and the means of safely uploaded files. This is aimed at producing a clean, user-friendly, and safe system blueprint.

In the Development phase, we construct all that on the basis of those designs. It implies writing the code to the login and sign-up pages, implementing two-factor authentication, the lost-and-found file reporting with image submission, and connecting the claim process. Frontend and backend are coded and then connected together to create a complete working application.

Testing phase ensures all the pieces are functioning properly and the system is also fast and secure. Each part is tested by a unit test, data flow is tested by integration tests and the whole system is tested by a full system test to ensure that performance and safety are validated. Next we conduct User Acceptance Testing (UAT) so that it is user-friendly and in accordance with user expectations.

Conclusively, is the Documentation and Submission phase that is all about tying up everything. We prepare the entire project report, prepare test results, complete the system documentation and complete all deliverables. We also make the presentation slides to final review as well in order to demonstrate what we put together.

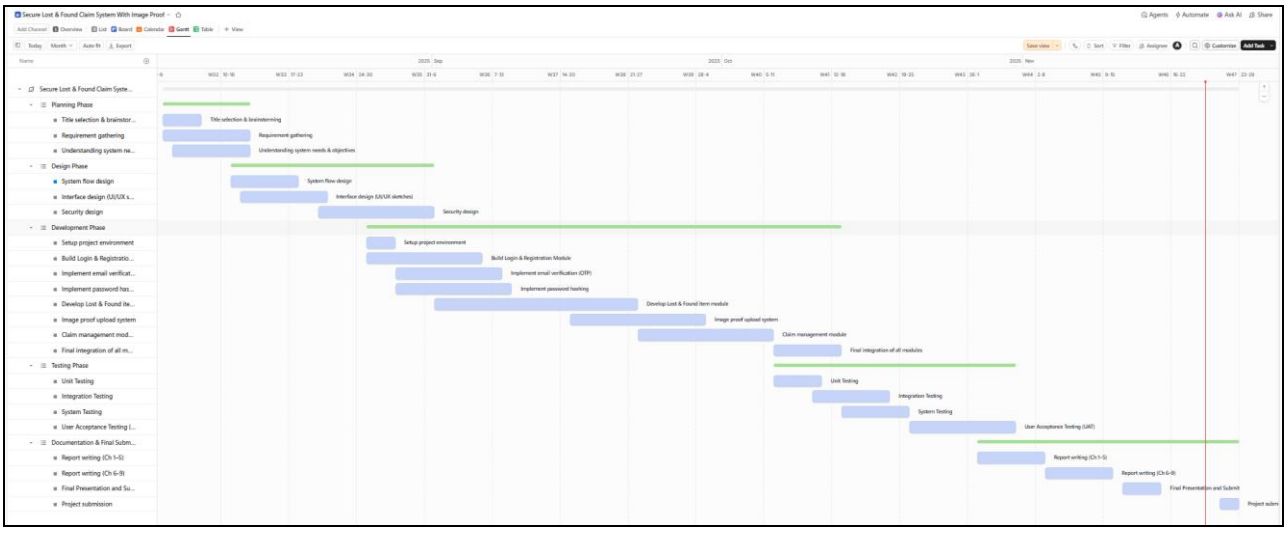


Figure 9.2: Gantt Chart of the project

The Gantt chart of the project is presented below (Figure 9.2). This chart will map the plan since the beginning of planning up to the finish line. The project commences on 4 August 2025 and is scheduled to conclude on 14 November 2025 which equals around 14 weeks in total. Each task is sequenced in terms of phase and dependencies among the tasks thus the workflow remains flat and easy to follow.

The project will consist of six major phases, the first being Planning that will require 21 days and involve brainstorming, scope writing, gathering requirements, and setting the schedule. The second is the Design phase, lasting and taking 14 days to sketch interface concepts, create data flow diagrams, and design the structure. The duration that takes the longest is development which will span 31 days; this will include front-end, back-end, integration, and upgrades to the system.

Testing then follows Testing after this period of Development, and it lasts a period of 21 days, where it will concentrate on functional checks, usability tests, debugging and verification of entire system. Deployment, configuration, and preparation of the system to be used by the users requires implementation of 10 days. Lastly is Review and Documentation, which will also require 15 days and this is whereby the user feedbacks will be examined, the system will be refined, the final report will be prepared and submitted.

This schedule keeps all the activities in schedule hence preventing any slip-ups. Table 9.1 below shows all the tasks dates and lengths per phase.

ID	Name	Start	Finish	Duration
1	**Planning Phase**	4/8/2025	17/8/2025	14 days
2	Title selection & brainstorming	4/8/2025	7/8/2025	4 days
3	Requirement gathering	4/8/2025	12/8/2025	9 days
4	Understanding system needs & objectives	5/8/2025	12/8/2025	8 days
5	Finalize functional & non-functional requirements	11/8/2025	17/8/2025	7 days
6	Design Phase	11/8/2025	31/8/2025	21 days
7	System flow design	11/8/2025	17/8/2025	7 days
8	Interface design (UI/UX sketches)	12/8/2025	20/8/2025	9 days
9	Database schema design	18/8/2025	24/8/2025	7 days

10	Security design (hashing, OTP, roles)	20/8/2025	31/8/2025	12 days
11	Full system architecture design	18/8/2025	31/8/2025	14 days
12	Development Phase	25/8/2025	12/10/2025	49 days
13	Setup project environment	25/8/2025	27/8/2025	3 days
14	Build Login & Registration Module	25/8/2025	5/9/2025	12 days
15	Implement email verification (OTP)	28/8/2025	7/9/2025	11 days
16	Implement password hashing	28/8/2025	7/9/2025	11 days
17	Develop Lost & Found item module	1/9/2025	21/9/2025	21 days
18	Image proof upload system	15/9/2025	28/9/2025	14 days
19	Claim management module	22/9/2025	5/10/2025	14 days
20	Admin panel	29/9/2025	12/10/2025	14 days
21	Final integration of all modules	6/10/2025	12/10/2025	7 days
22	Testing Phase	6/10/2025	2/11/2025	28 days
23	Unit Testing	6/10/2025	10/10/2025	5 days
24	Integration Testing	10/10/2025	17/10/2025	8 days
25	System Testing	13/10/2025	19/10/2025	7 days
26	User Acceptance Testing (UAT)	20/10/2025	30/10/2025	11 days
27	Bug fixing & improvements	20/10/2025	2/11/2025	14 days
28	Documentation & Final Submission	27/10/2025	14/11/2025	19 days
29	Report writing (Chapters 1–5)	27/10/2025	2/11/2025	7 days
30	Report writing (Chapters 6–9)	3/11/2025	9/11/2025	7 days
31	Final proofreading & editing	10/11/2025	12/11/2025	3 days
32	System finalization	10/11/2025	13/11/2025	4 days
33	Project submission	14/11/2025	14/11/2025	1 day

Table 9.1: Project Schedule Timetable

9.3 Risk Management

The importance of risk management on any software project is that it allows you to identify the possible issues, the extent of their potential severity, and how one can address such issues. Being a solo dev, it was necessary to be especially attentive since everything was dependent on my time, abilities, and choices. I have enumerated some of the risk categories at the beginning and they included technical challenges, time constraints, security vulnerabilities and performance problems. Addressing these prematurely made the development easier and reduced the risk of a big roadblock.

The largest deal was technical risks as the system is based on such vital security mechanisms as password hashing, email validation, two-factor authentication, and secure file uploading. Errors such as incorrect hashing, unsecure queries, and databases crashes might destroy the system. To alleviate this, I would debug as much as possible, ensure all the inputs were validated and every feature was tested individually before I would combine it. I also maintained close version control to ensure that I did not go back.

The other concern was time risks since I could get distracted in the research and coding, testing and writing the docs all at the same time. I used realistic deadlines to maintain a schedule, allowed a margin of unexpected things, and focused on tasks that other sections relied on. This implied that I completed key modules in time to allow me time to relax in testing.

There were also security threats that required additional attention since user data is sensitive. The user trust can be compromised by poor password management, poor session management or insecure storage. I countered this by using hashed passwords, entered verification codes and did comprehensive input checks. The usability threats were also on my list and I needed to ensure that the interface was kept as easy as possible such that the user could find what he wanted in the shortest time possible. Subsequently, it was the user acceptance testing that enabled confirmation of the practicability and usability of the system.

In general, risk management allowed me to maintain a steady flow, prevent expensive errors, and ensure that the system remained secure and reliable.

Risk	Analysis	Mitigation
Incorrect image upload / file format error	Users may upload unsupported file types or images that are too large, causing the system to reject claims or slow down processing.	Implement file validation (size, format), compress images automatically, and display clear upload instructions.

Database connection failure	Server downtime, misconfiguration, or network issues can interrupt login, claim submission, or admin operations.	Regularly monitor server, perform backups, use stable hosting, and configure auto-reconnect for database services.
Low user engagement with the system	Students or staff might not actively submit lost items or check claims, resulting in low system usage.	Promote the system during orientation, send reminders, and make the interface simple and mobile-friendly.
Image proof misuse	Users may upload irrelevant, unclear, or fake images that may affect verification accuracy.	Add guidelines for “valid image proof,” enforce minimum clarity checks, and allow admin manual verification.
Security vulnerabilities (password, injection, weak authentication)	Improper validation or weak hashing may compromise user accounts or sensitive claim information.	Use secure password hashing, input validation, OTP verification, and frequent security testing.
Feature bugs in claim or item modules	The Lost & Found module, claim checking, or admin approval features may behave incorrectly or crash.	Conduct unit, integration, and system testing; perform continuous debugging; gather feedback.
Data loss or corruption	Stored claims, images, or user profiles may be lost due to system failure or mistakes.	Implement daily backups, secure storage, and version-controlled updates.
Performance issues with image upload	Uploading multiple high-quality images may slow down the system or cause timeout errors.	Optimize storage, compress images on upload, and use efficient server configurations.
Unfamiliarity with the system (users/admin)	Users or admin may not understand how to navigate the system or process claims correctly.	Provide tutorials, tooltips, simple UI design, and a help page.
Incorrect claim matching (false match / mismatch)	System or admin may match a lost item with the wrong owner due to unclear item details or proof.	Use descriptive fields, require multiple verification points, and allow admin to request additional proof.
Deadline pressure during development	Developing alone may cause delays in implementing modules, testing, and writing documentation.	Use a detailed Gantt chart, set realistic tasks, follow daily progress tracking, and prioritize essential features.
System not ready for final submission	Bugs or incomplete documentation may delay the final submission date.	Start testing early, finalize main features before Week 10, and allocate buffer time before submission.

Table 9.2: Risk Management for Secure Lost & Found Item with image Proof

Table 9.2 presents the risk management of the secure lost item claim system project. A number of risks were observed, which might interfere with the accuracy and security of the system and its overall efficiency. The ability of the user to post the wrong/incompatible image format was one of the most prevalent risks, and it could interfere with the verification of the claims. The other technical issue was the possibility of failure in connecting to the database which could cause a disruption in the process of logging

in, reporting items or approving activities of administrators. There were also risks associated with the user that include low participation or inability to navigate the system.

Also, bugs might be found in the significant modules of the system, which can influence a proper functioning of the system, e.g., the claim management feature or the image upload feature. Sensitive nature of user information also made security risks such as weak authentication or mishandling of data to be considered. The other risks involved were that there could be performance problems when uploading of images, mismatches when validating claims and tight development schedule because the project was created single-handedly. In a bid to overcome such problems, mitigation solutions that included thorough testing, secure hashing modes, appropriate validations, user guides, data backups, and application of systematic development schedule as mitigation solutions had been adopted. These plans served to assuage the smooth sailing of the project and make it dependable enough to present it at the end.

9.4 Conclusion

To the point, the project-management strategies that I adopted in the case of the Secure Lost Item Claim System with Image Proof were very essential in ensuring that the job was done properly. Through such tools as the WBS and Gantt chart, I was able to plan and manage every phase step-by-step, meet my deadlines, and have a clear overview of the entire project. This ensured that all the key activities such as requirement gathering up to final testing were completed with ease.

Risk management also contributed largely towards the success of the project. Specifically, locating potential issues in the initial stages, such as vulnerability to security threats, code-related issues, and deadlines enabled me to develop effective solutions. Snag checks, debugging, and adjustments on a continuous basis ensured that risks did not spiral out of control and maintained the progress.

All in all, solo work required discipline, planning and significant decision making. Good scheduling and active risk management resulted in a well-defined workflow that ensured that I created a safe, functional, and easy-to-use system. Such practices demonstrate the value of being smart with planning and offering risks a head-on when you need good outcomes.

10 Conclusion

10.1 Introduction

This chapter is aimed at reflecting on the general progression of the Secure Lost & Found Item Claim System with Image Proof and appraising the level to which the project goals have been met. The problems that were addressed by this project were the general problems that were experienced in the current manual lost and found system at UPTM, which included slow verification of claims, poor record keeping and the possibility of unauthorized claims. During the process of development, some of the features were introduced, including secure authentication, central storage of items and verification of images, among others, to develop a more consistent and effective solution.

Also, this chapter details the challenges and constraints that affected the project such as technical constraints, time constraints, and system scope constraints. It also shows future enhancements that can be incorporated to make the systems work and experience better. The chapter ends by giving the general summative analysis of the effects of the project, the success, and the prospects of further development within the context of UPTM.

10.2 Achievement

We have already struck down several significant milestones. The system converted the previously paper intensive lost and found system into an oily touch screen system thus we are much more efficient and the administration guys do not need to handle heaps of forms. The inclusion of the secure log in with hashed passwords and email verification ensure that no one can falsely identify or employ hacking tactics to access any item on the site, which increases trust.

In addition, we achieved our target of maintaining a record of lost and found items in an orderly and traceable way. The system is not only modernized with such features as posting photos as evidence, a history of claims, and a status of items, it is also more precise and transparent. Overall, we are on track and proving to UPTM that this might become the default solution.

10.2.1 To create a digital platform that replaces the manual lost and found process at UPTM

This was correctly implemented by creating a web based system whereby consumers will be able to report the lost or found items in detail and images. The online system removes the wastage of the old paperwork and manual record keeping. It enables quick listing of items, organized storage of data and easy access by the user as well as administrator. Consequently, the system elevates the flow of the operation and minimizes chances of misplaced or irregular information.

10.2.2 To develop a secure user authentication to prevent fake or unauthorized claims.

The system has a number of security measures to make sure that only the legitimate users can access or make the claims. The hashing algorithms are used to encrypt passwords and email verification is applied so that only valid accounts can exist. These characteristics go a long way in minimizing the threat of fraudulent accounts and unauthorized claims. The extra security measures make the system appear more reliable and trustworthy and prevent the loss of users and the integrity of the lost-and-found procedures.

10.2.3 To impliment a system that can manage lost and found records for easy tracking and management.

It contains a structured database which contains all the records and claim activities and user records of the items. These records are easily viewable, filtered and managed by the administrators. The user can also monitor the status of his claims, see the uploaded proof, and see whether items were approved or rejected. It is an orderly system, which enhances more effective communication, reduces misunderstanding, and all items are well documented and handled until they are resolved.

10.3 Constraints and Limitation

During the creation of the Secure Lost & Found Item Claim System With Image Proof, a number of constraints and restrictions affected the final results. The lack of time to develop the project was one of the most significant limitations that did not allow more sophisticated options like real-time notification, automatic verification of claims, or even interconnection with third-party systems. Consequently, the project concerned primary functionalities to maintain the stable performance throughout the period.

The other constraint was associated with technical resources. Limited scalability of this system was because of the limitations on hosting options, security tools, and test environment. Limited penetration testing, large-scale load testing and multi-device compatibility testing. This has an impact on whether the system can completely forecast performance with high traffic or campus deployment conditions.

Also, input and feedback of the users were restricted during the development stage since limited number of testers were used. Had the real students and staff been more actively involved, it would have been possible to polish the system, particularly the interface design, usability, and efficiency of workflow. Such a weakness can result in some features needing changes in subsequent releases.

And the last, the system is currently a system on its own without being integrated with the current systems of UPTM like the student portal and the campus database. This limits automation like checking the validity of students or accessing campus wide reports. The accuracy and administrative convenience on the system would become much more convenient in the future with enhanced integration.

10.4 Future works and Recommendation

Despite the fact that the modern variant of the Secure Lost & Found Item Claim System with Image Proof achieves the primary goals of the process digitalization at UPTM, various improvements could be still made to make the system efficient, usable, and scalable. Further growth is to be directed to add more sophisticated features that make the user more interested, simplify the administration process, and enhance the level of security as a whole. The recommendations are meant to transform the system to a more holistic campus-wide solution that is in line with contemporary standards of digital.

10.4.1 Implement a notification system.

The next update must be done automatically with the use of email, SMS, or even pop-ups in the app. Users would receive a notification whenever a new item is on auction, when the status of their claim is changed, or when a manager requires something to be approved. That will make communication faster and make everything faster.

10.4.2 Permit multi-language support.

This would enable the addition of other languages, which would be more friendly to international students. English, Malay, Arabic, Mandarin, etc. may be included so that all people feel a part of the app and will be able to use it with ease.

10.4.3 Integrate university student portal.

Integrating the system with the official student portal of UPTM would allow students to use the Single Sign-On feature to log in with their existing accounts. It would increase user authentication, reduce the number of counterfeit accounts, and simplify the work of the administration since the student information is automatically synchronized.

10.5 Conclusion

Ultimately, the Secure Lost Item Claim System with Image Proof is the complete overhaul of the UPTM lost-and-found. The site is safe, structured, and easy to use in management of reports and claims. Although there are several drawbacks, it has good chances of official usage and its future enhancement.

The system can be expanded to the actual campus requirements with the addition of other capabilities such as notifications, portal integration, and language support. All in all, it is a good project with good planning, coding skills, and problem-solving, which puts both users and admins in a good position.

Appendix A – Questionnaire (User requirement + Testing)

Student Feedback on Lost and Found Management System at UPTM

This questionnaire is part of a Final Year Project (FYP) titled **"Secure Lost and Found Item Claim System with Image Proof"**, conducted by **Arif Zulhilmi Bin Joperi**, a final-year student of **Bachelor of Information Technology (Hons) in Cyber Security** at **Universiti Poly-Tech Malaysia (UPTM)**.

The purpose of this survey is to gather feedback from UPTM students and staff about their experiences and opinions on the lost-and-found process within the campus. Your responses will help improve and refine the proposed system to make it more secure, efficient, and user-friendly.

All responses are **anonymous** and **confidential**, and the collected data will be used **solely for academic purposes**. Your honest feedback is greatly appreciated.

* Indicates required question

How easy was it to use the system? *

- [ ] Very Easy
- [ ] Easy
- [ ] Difficult
- [ ] Very Difficult

Were you able to complete your task without any problems? *

- [ ] Yes
- [ ] No
- [ ] Maybe

How would you rate the system's design and layout? *

- [ ] Excellent
- [ ] Good
- [ ] Average
- [ ] Poor

Did you experience any difficulty logging in or registering? *

- [ ] No
- [ ] Yes

Did you find any errors or bugs while using the system? *

- [ ] No
- [ ] Yes

How clear were the instructions or labels on the system? *

- [ ] Very Clear
- [ ] Clear
- [ ] Confusing

How secure do you feel when using the system? *

- [ ] Very Secure
- [ ] Secure
- [ ] Not Secure

How satisfied are you with the system overall? *

- [ ] Very Satisfied
- [ ] Satisfied
- [ ] Dissatisfied

Would you recommend this system to others? *

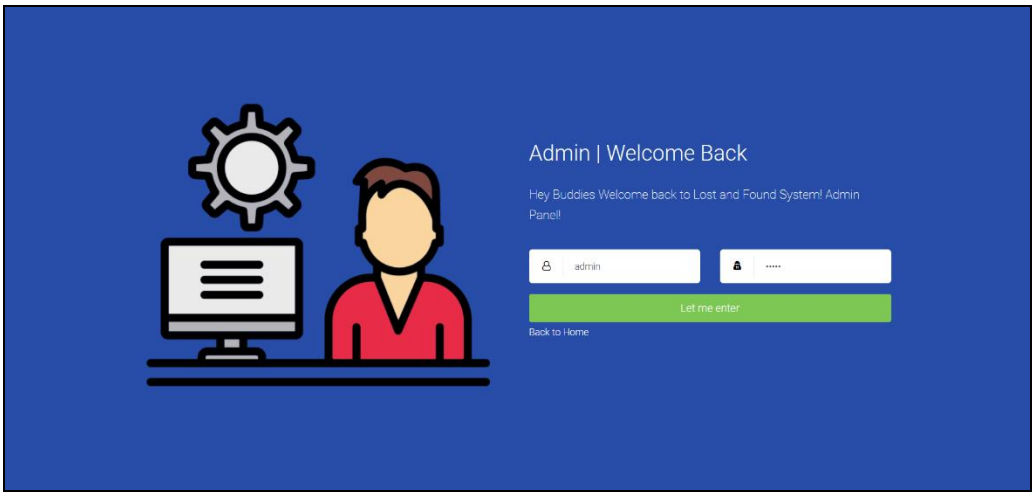
- [ ] Yes
- [ ] No

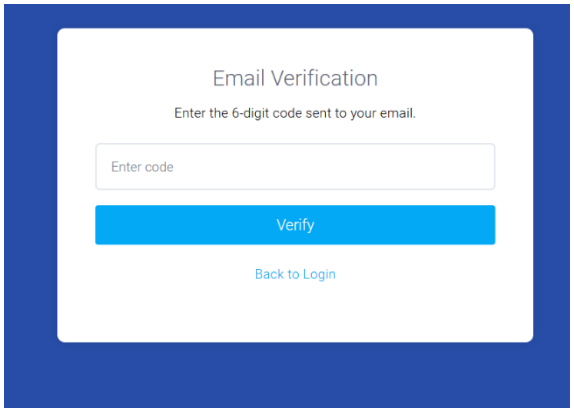
What is your suggestion to improve the system?

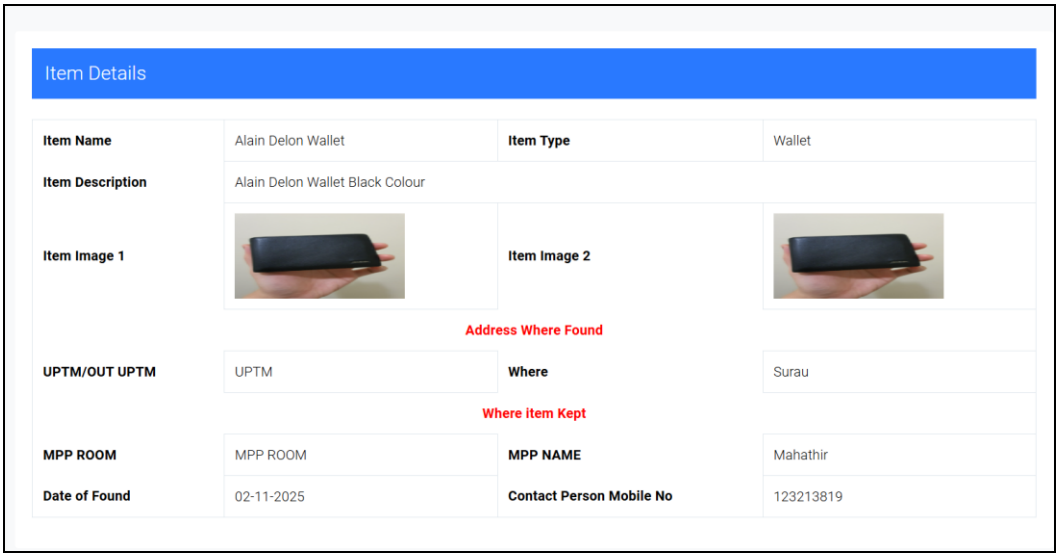
Your answer

Appendix B – User Manual

I – User Manual For Admin

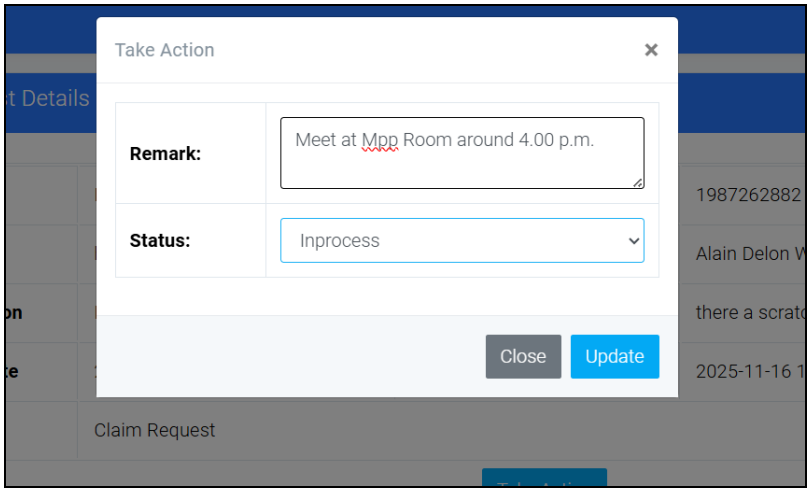


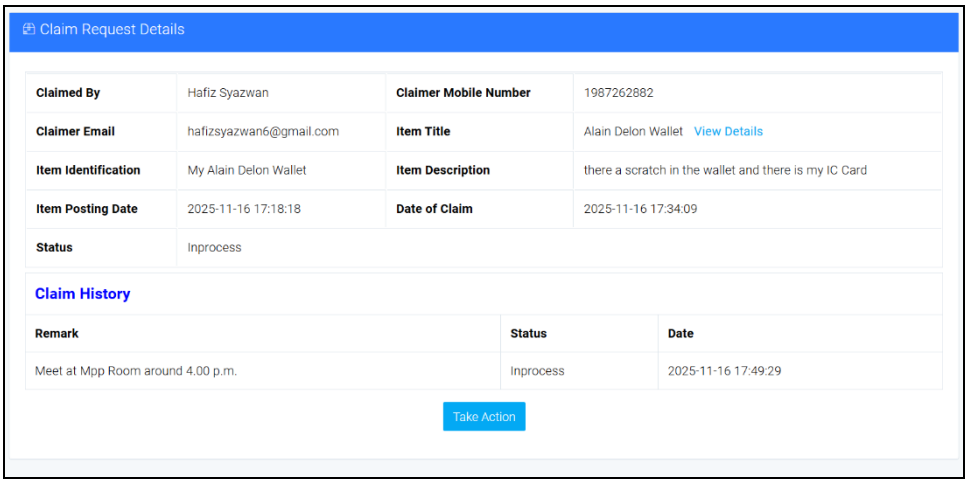


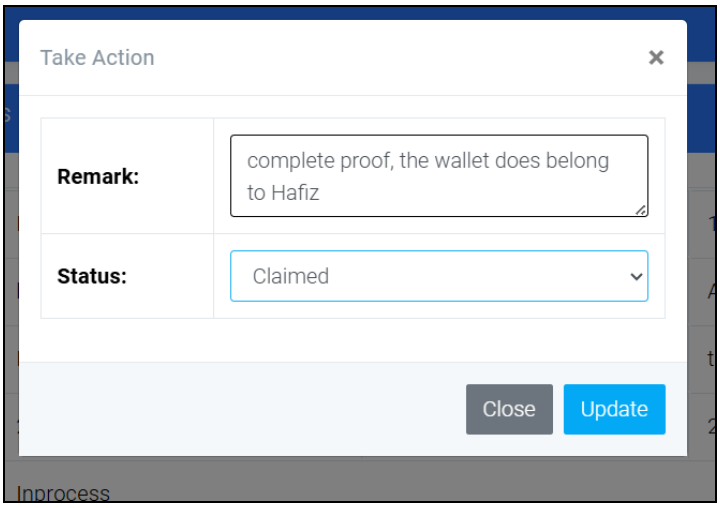


Item Details

Item Name	Alain Delon Wallet	**Item Type**	Wallet
Item Description	Alain Delon Wallet Black Colour		
Item Image 1		**Item Image 2**	
	Address Where Found		
UPTM/OUT UPTM	UPTM	**Where**	Surau
	Where item Kept		
MPP ROOM	MPP ROOM	**MPP NAME**	Mahathir
Date of Found	02-11-2025	**Contact Person Mobile No**	123213819


Take Action
Remark:
Meet at Mpp Room around 4.00 p.m.
Status:
Inprocess
Close
Update
1987262882
Alain Delon W
there a scratc
2025-11-16 1
Claim Request


Claim Request Details
Claimed By
Hafiz Syazwan
Claimer Mobile Number
1987262882
Claimer Email
hafizsyazwan6@gmail.com
Item Title
Alain Delon Wallet View Details
Item Identification
My Alain Delon Wallet
Item Description
there a scratch in the wallet and there is my IC Card
Item Posting Date
2025-11-16 17:18:18
Date of Claim
2025-11-16 17:34:09
Status
Inprocess
Claim History
Remark
Status
Date
Meet at Mpp Room around 4.00 p.m.
Inprocess
2025-11-16 17:49:29
Take Action

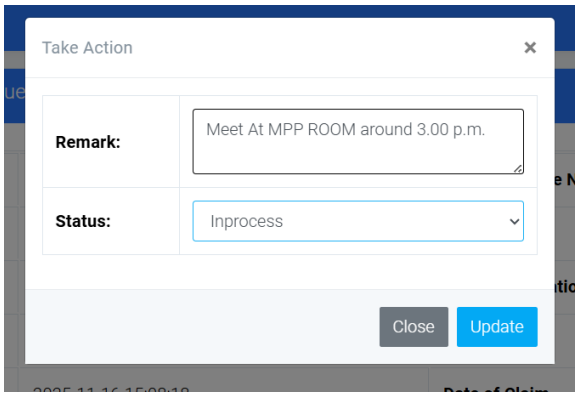

Take Action
Remark:
complete proof, the wallet does belong to Hafiz
Status:
Claimed
Close
Update
Inprocess

Claim Request Details

Claimed By	Hafiz Syazwan	**Claimer Mobile Number**	1987262882
Claimer Email	hafizsyazwan6@gmail.com	**Item Title**	Alain Delon Wallet View Details
Item Identification	My Alain Delon Wallet	**Item Description**	there a scratch in the wallet and there is my IC Card
Item Posting Date	2025-11-16 17:18:18	**Date of Claim**	2025-11-16 17:34:09
Status	Claimed		

Claim History

Remark	Status	Date
Meet at Mpp Room around 4.00 p.m.	Inprocess	2025-11-16 17:49:29
complete proof, the wallet does belong to Hafiz	Claimed	2025-11-16 18:02:03

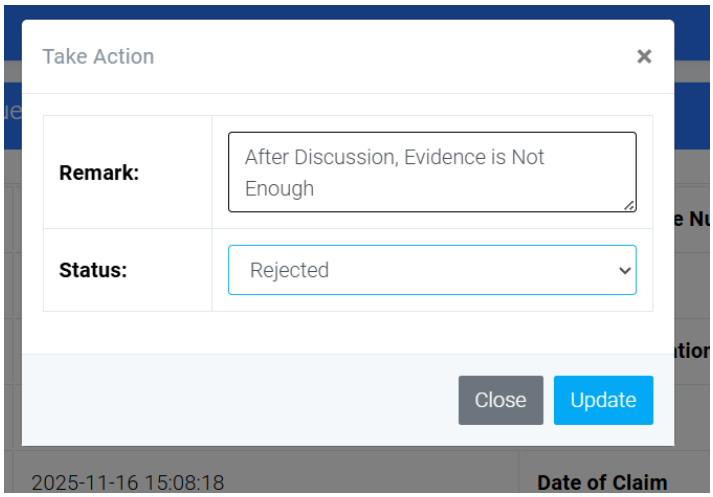


Lost Claim Request Details

Claimed By	Arif Zulhilmi	**Claimer Mobile Number**	1110439003
Claimer Email	kl2311015259@student.uptm.edu.my	**Item Title**	Alain Delon Wallet View Details
Item Identification	i found Your Alain Delon Wallet	**Item Description**	Alain Delon black colour and there is your IC card too
Item Posting Date	2025-11-16 15:08:18	**Date of Claim**	2025-11-16 22:15:09
Status	Inprocess		

Claim History

Remark	Status	Date
Meet At MPP ROOM around 3.00 p.m.	Inprocess	2025-11-16 22:27:40



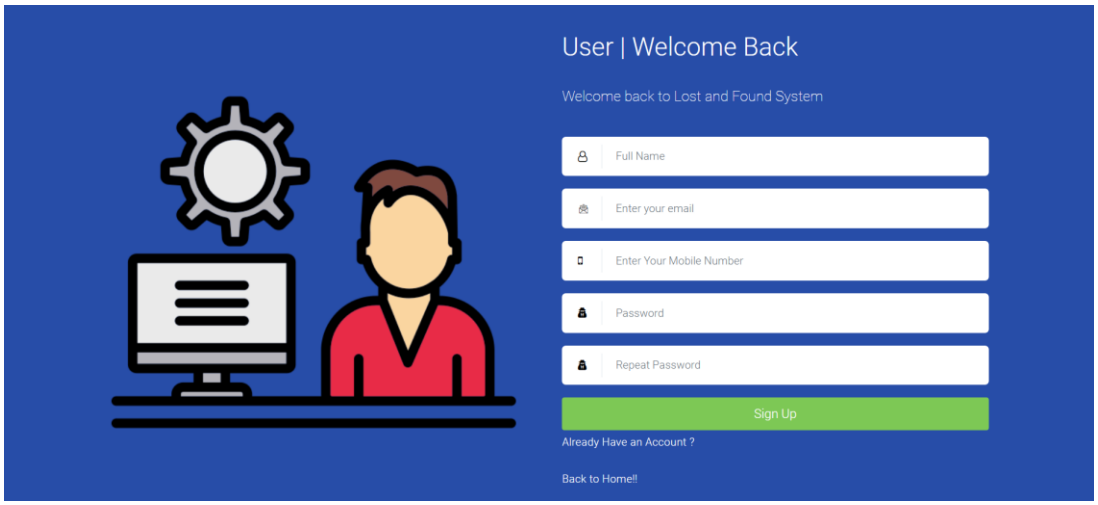
Lost Claim Request Details

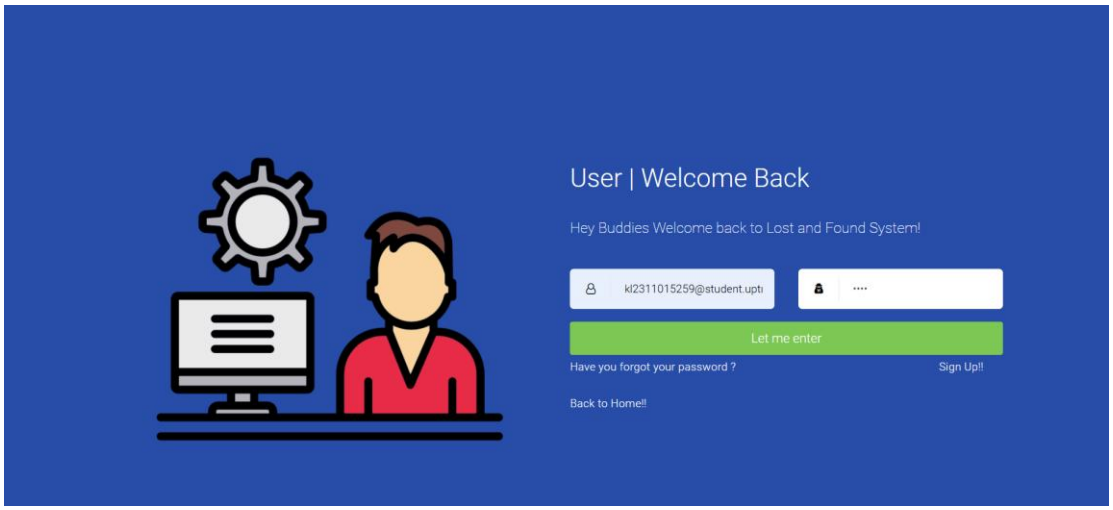
Claimed By	Arif Zulhilmi	**Claimer Mobile Number**	1110439003
Claimer Email	kl2311015259@student.uptm.edu.my	**Item Title**	Alain Delon Wallet View Details
Item Identification	i found Your Alain Delon Wallet	**Item Description**	Alain Delon black colour and there is your IC card too
Item Posting Date	2025-11-16 15:08:18	**Date of Claim**	2025-11-16 22:15:09
Status	Rejected		

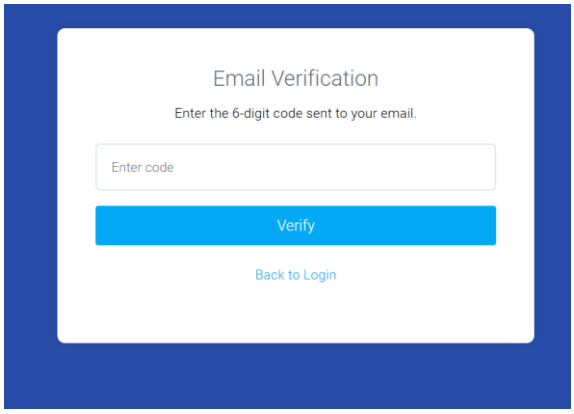
Claim History

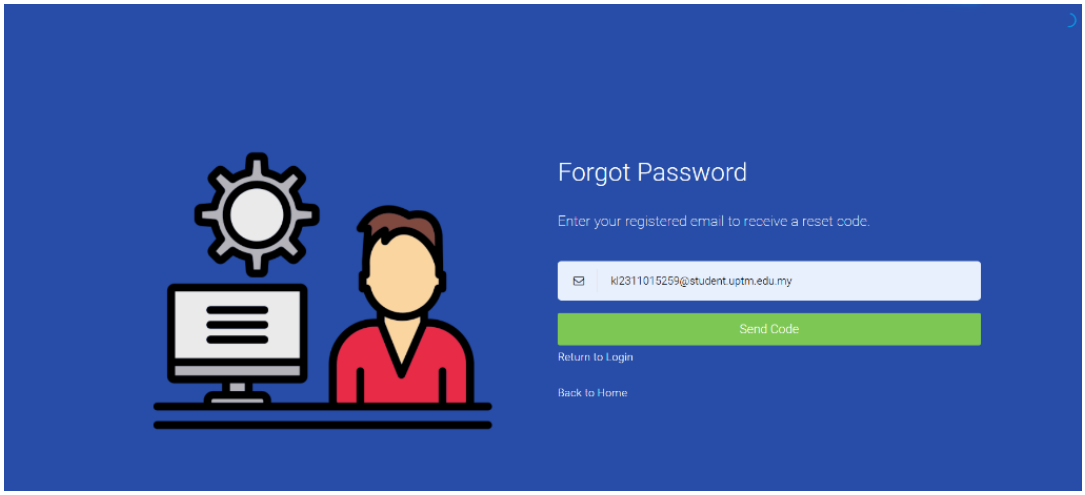
Remark	Status	Date
After Discussion, Evidence is Not Enough	Rejected	2025-11-16 22:34:35
Meet At MPP ROOM around 3.00 p.m.	Inprocess	2025-11-16 22:27:40

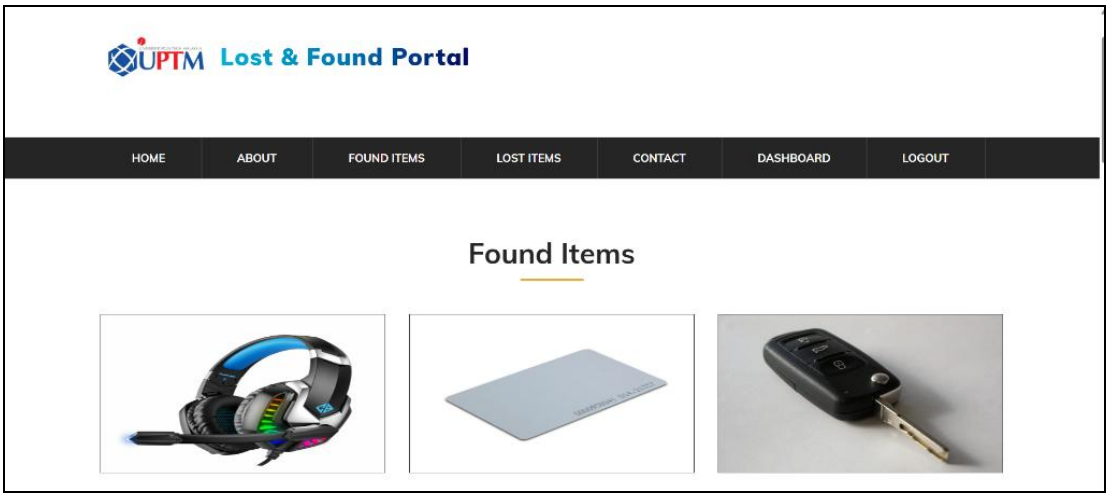
II- User Manual As User

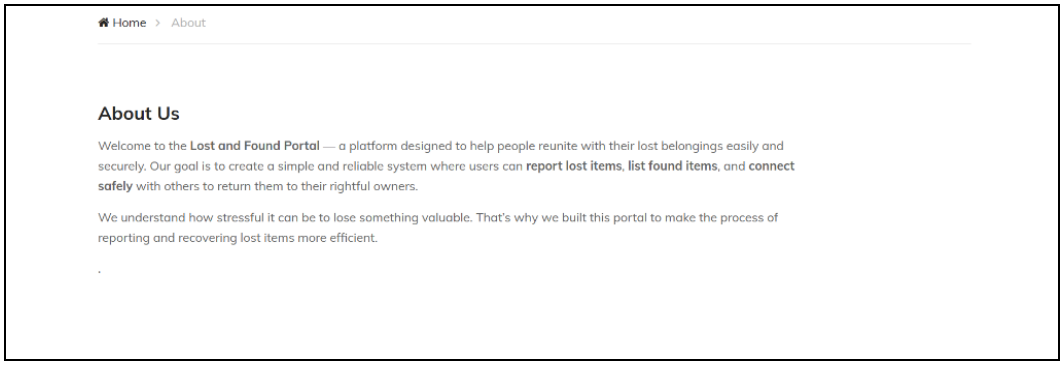


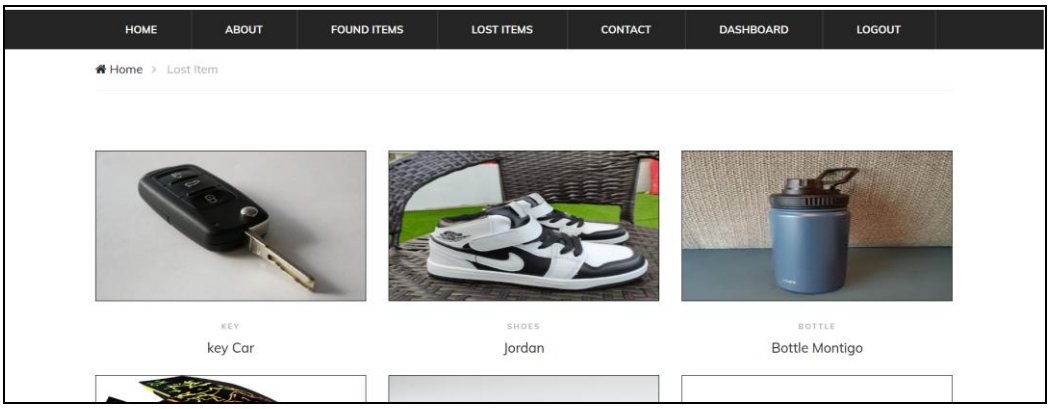


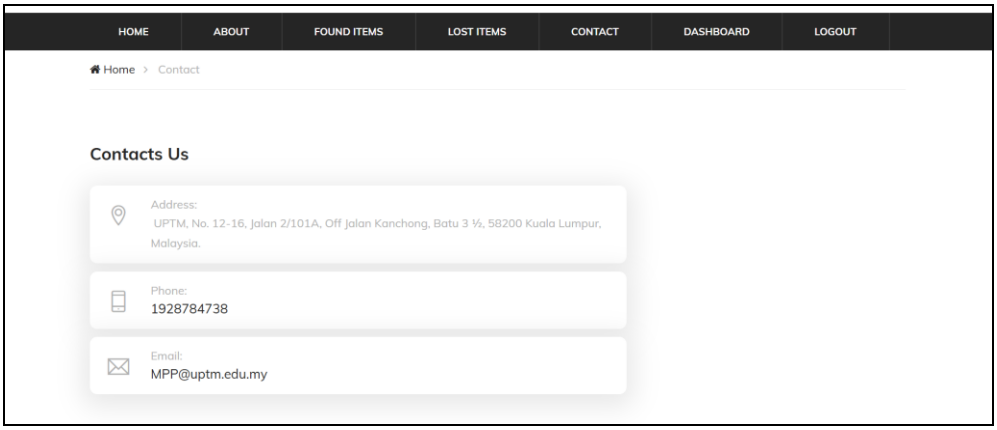


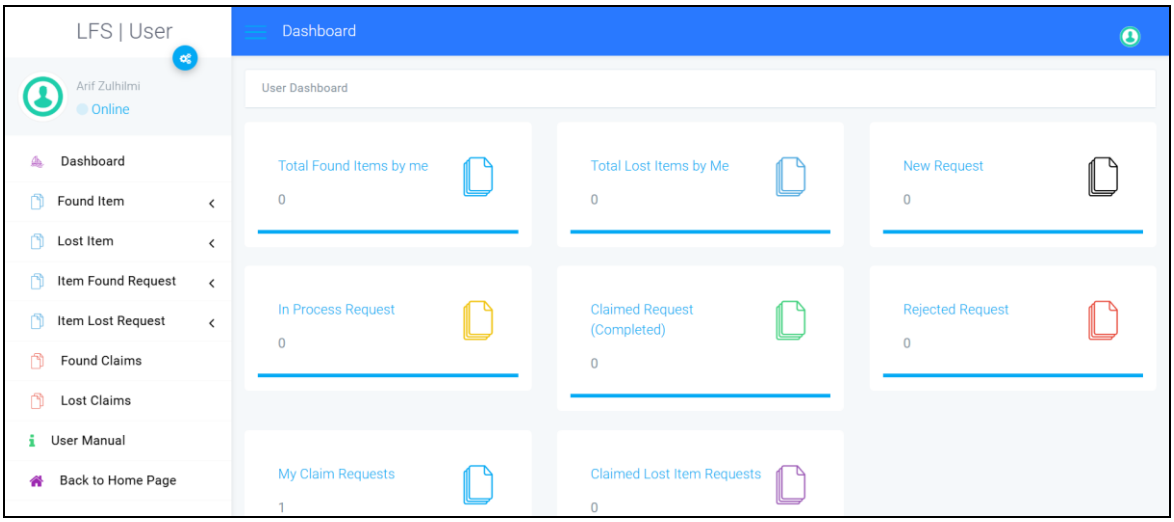

Forgot Password
Enter your registered email to receive a reset code.
kl2311015259@student.uptm.edu.my
Send Code
Return to Login
Back to Home

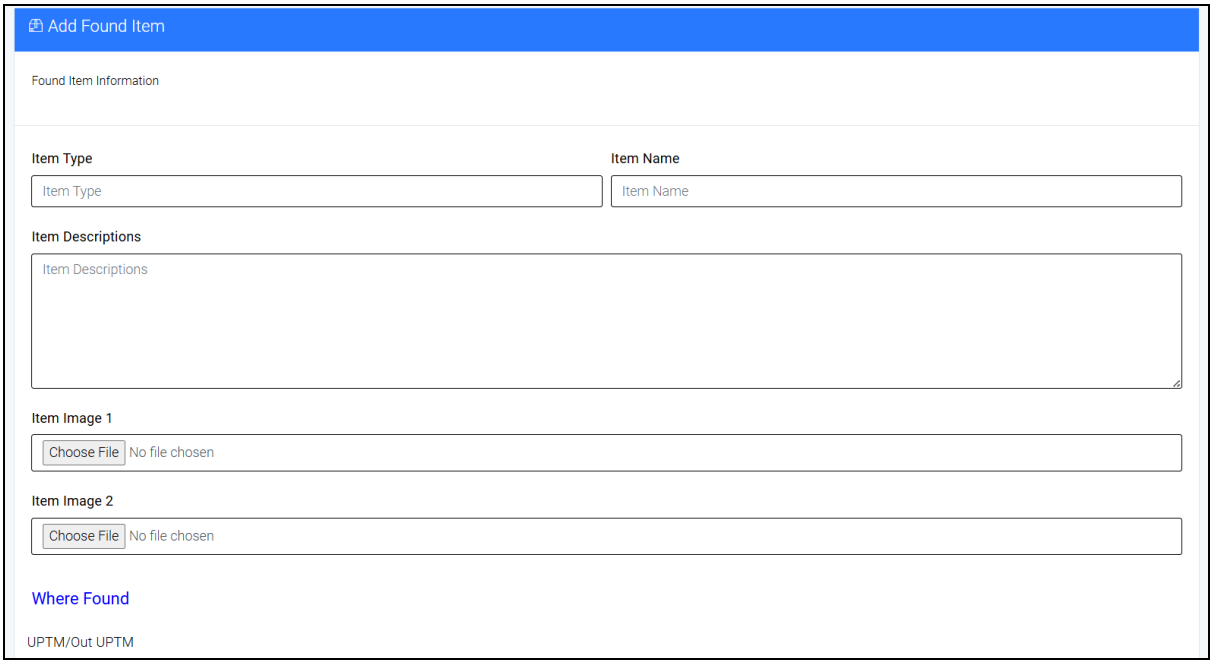

UPTM Lost & Found Portal
HOME
ABOUT
FOUND ITEMS
LOST ITEMS
CONTACT
DASHBOARD
LOGOUT
Found Items

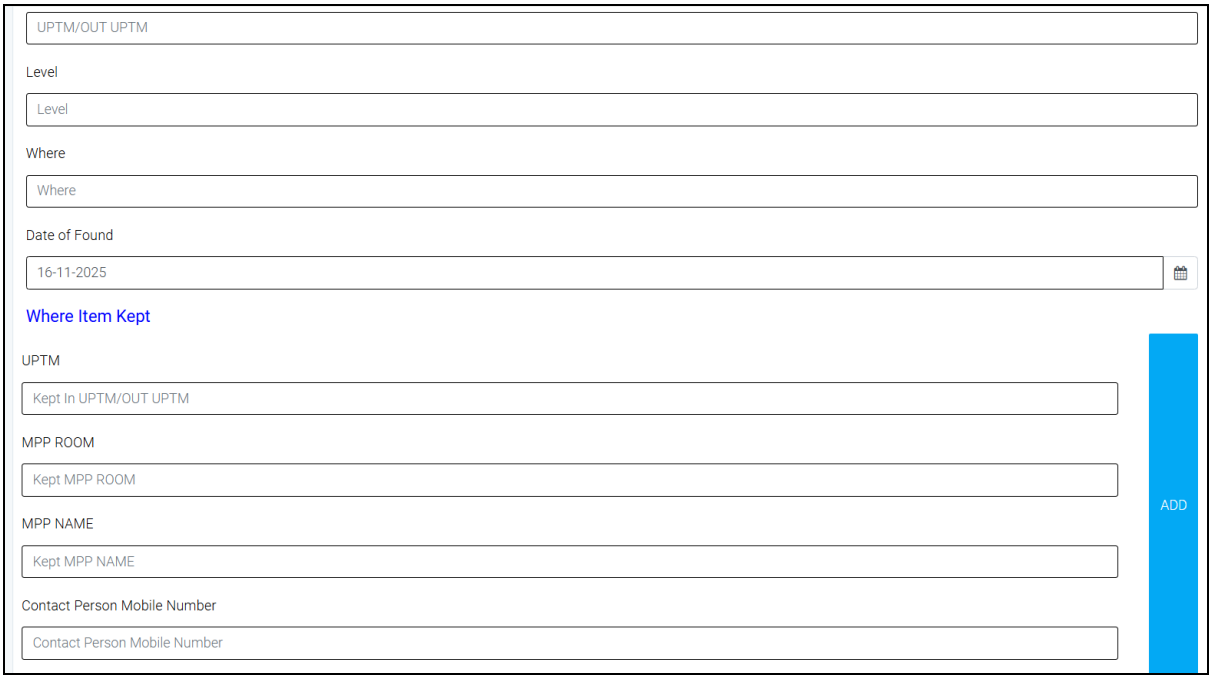

Home > About
About Us
Welcome to the Lost and Found Portal — a platform designed to help people reunite with their lost belongings easily and securely. Our goal is to create a simple and reliable system where users can report lost items, list found items, and connect safely with others to return them to their rightful owners.
We understand how stressful it can be to lose something valuable. That's why we built this portal to make the process of reporting and recovering lost items more efficient.

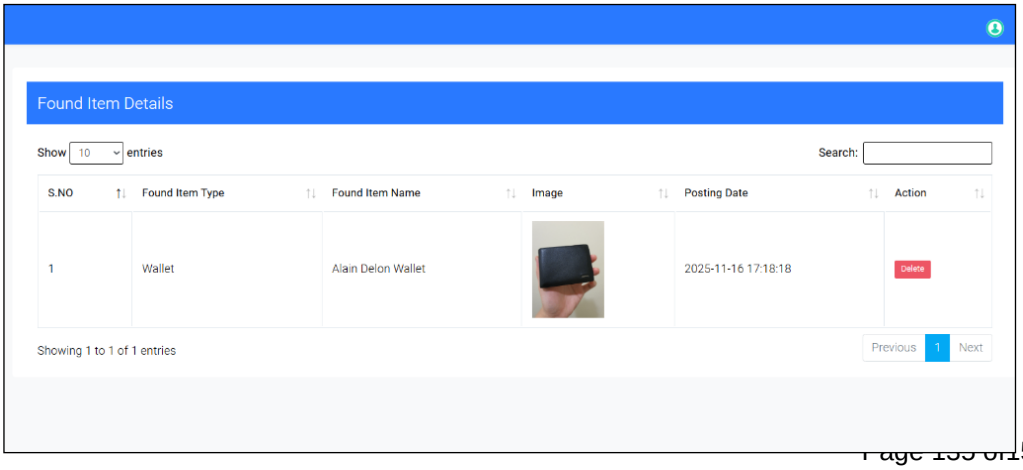

HOME
ABOUT
FOUND ITEMS
LOST ITEMS
CONTACT
DASHBOARD
LOGOUT
Home > Lost Item
KEY
key Car
SHOES
Jordan
BOTTLE
Bottle Montigo

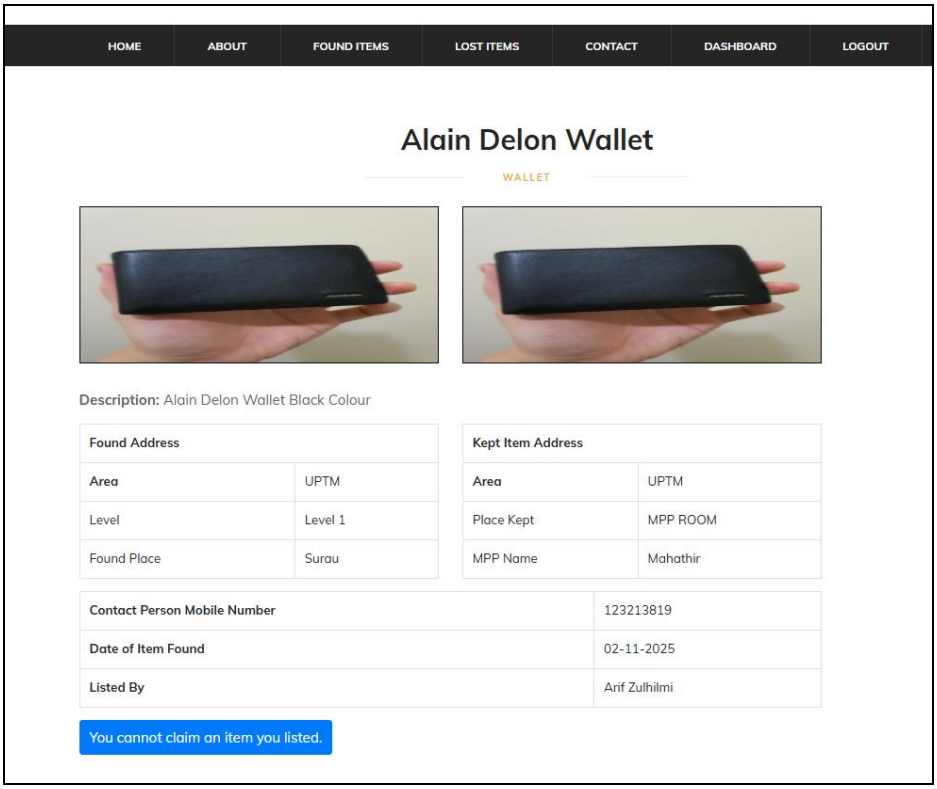

HOME
ABOUT
FOUND ITEMS
LOST ITEMS
CONTACT
DASHBOARD
LOGOUT
Home > Contact
Contacts Us
Address:
UPTM, No. 12-16, Jalan 2/101A, Off Jalan Kanchong, Batu 3 ½, 58200 Kuala Lumpur, Malaysia.
Phone:
1928784738
Email:
MPP@uptm.edu.my

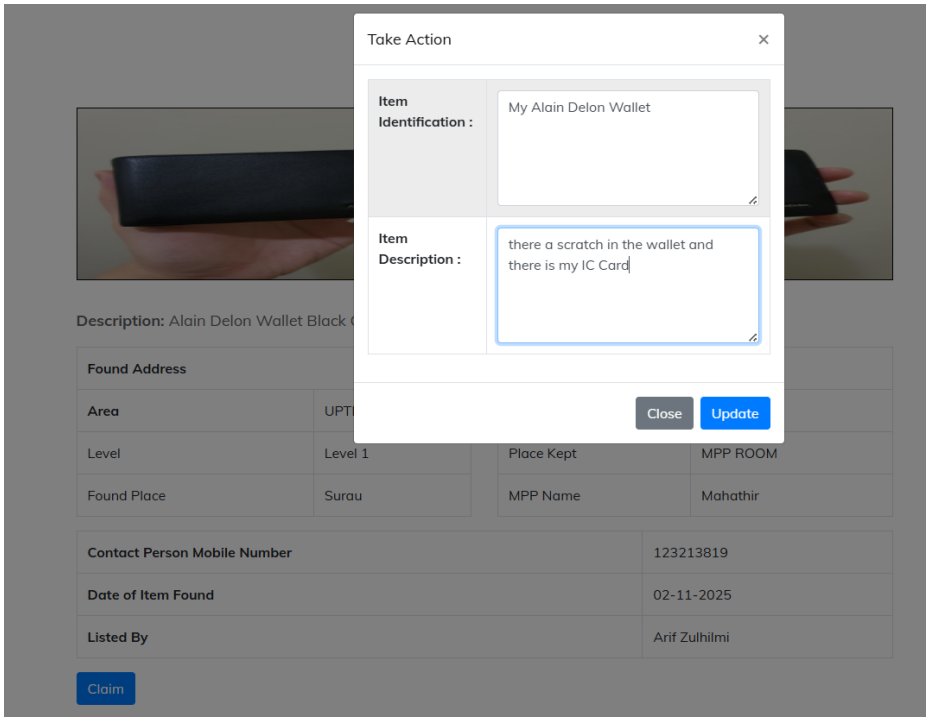

LFS | User
Arif Zulhilmi
Online
Dashboard
Found Item
Lost Item
Item Found Request
Item Lost Request
Found Claims
Lost Claims
User Manual
Back to Home Page
Dashboard
User Dashboard
Total Found Items by me
0
Total Lost Items by Me
0
New Request
0
In Process Request
0
Claimed Request (Completed)
0
Rejected Request
0
My Claim Requests
1
Claimed Lost Item Requests
0

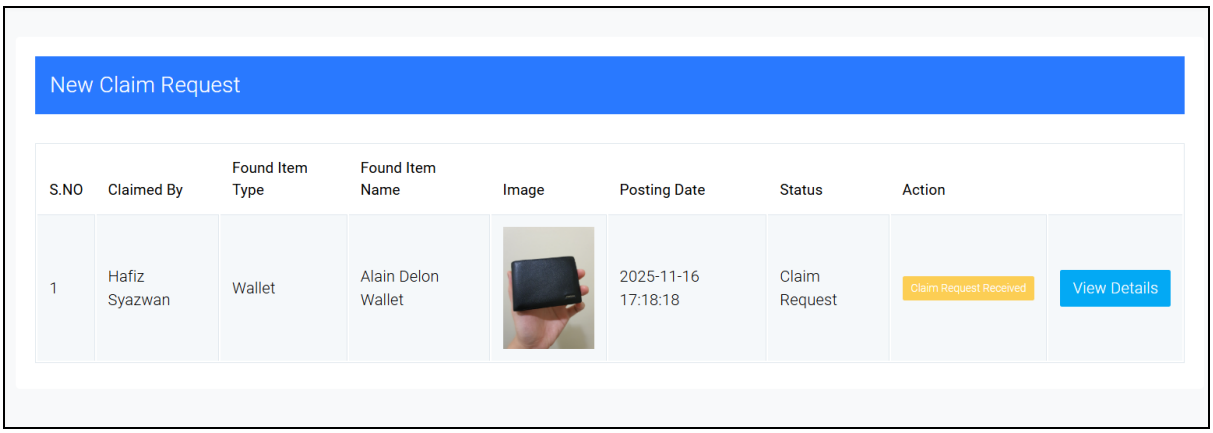

Add Found Item
Found Item Information
Item Type
Item Type
Item Name
Item Name
Item Descriptions
Item Descriptions
Item Image 1
Choose File No file chosen
Item Image 2
Choose File No file chosen
Where Found
UPTM/Out UPTM

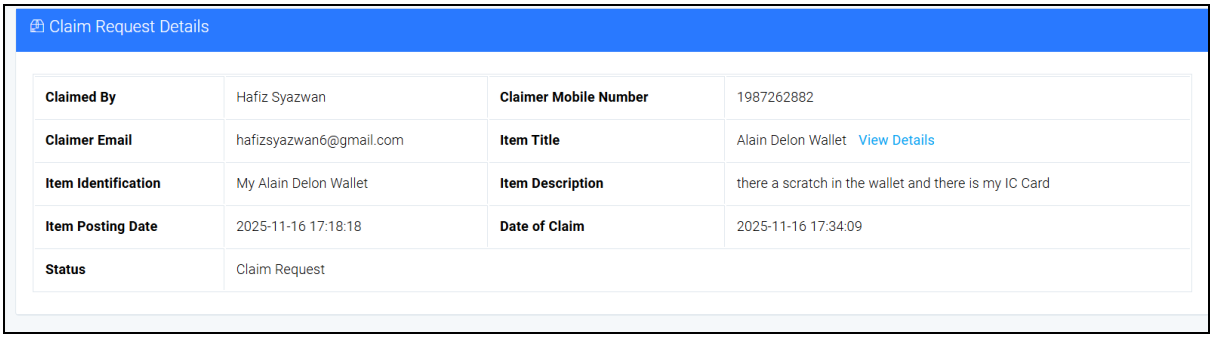

UPTM/OUT UPTM
Level
Level
Where
Where
Date of Found
16-11-2025
Where Item Kept
UPTM
Kept In UPTM/OUT UPTM
MPP ROOM
Kept MPP ROOM
MPP NAME
Kept MPP NAME
Contact Person Mobile Number
Contact Person Mobile Number
ADD

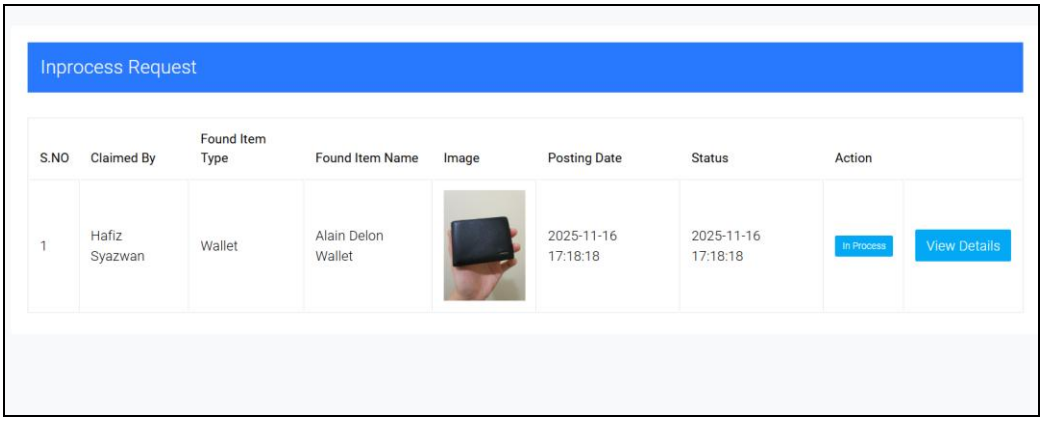

Found Item Details
Show 10 entries
Search:
S.NO
Found Item Type
Found Item Name
Image
Posting Date
Action
1
Wallet
Alain Delon Wallet
2025-11-16 17:18:18
Delete
Showing 1 to 1 of 1 entries
Previous
1
Next

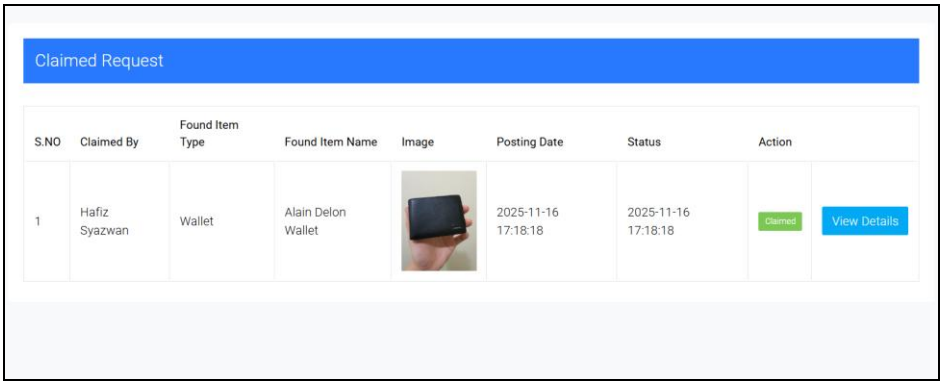

HOME
ABOUT
FOUND ITEMS
LOST ITEMS
CONTACT
DASHBOARD
LOGOUT
Alain Delon Wallet
WALLET
Description: Alain Delon Wallet Black Colour
Found Address
Area
UPTM
Level
Level 1
Found Place
Surau
Kept Item Address
Area
UPTM
Place Kept
MPP ROOM
MPP Name
Mahathir
Contact Person Mobile Number
123213819
Date of Item Found
02-11-2025
Listed By
Arif Zulhilmi
You cannot claim an item you listed.

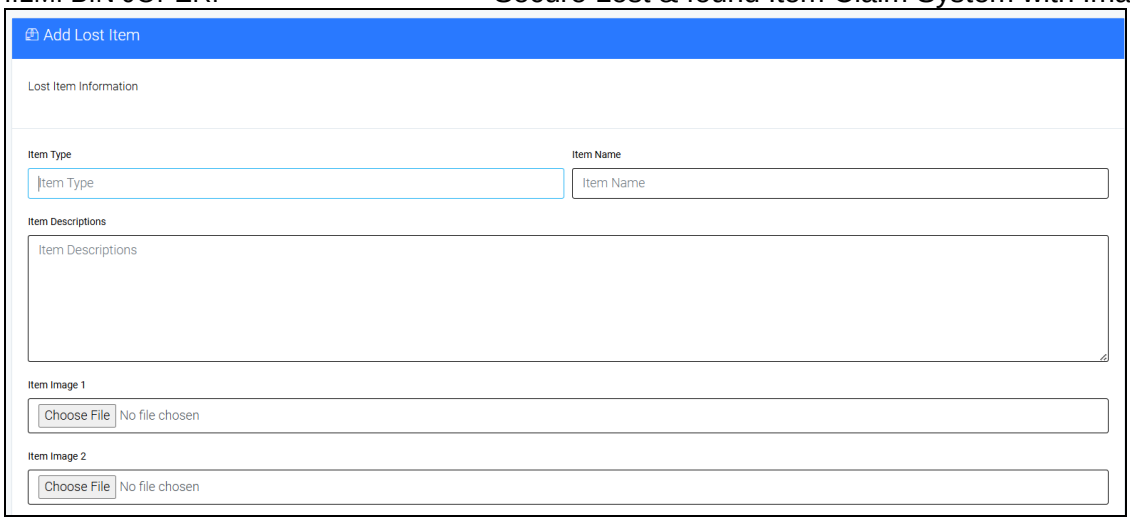

Take Action
Item Identification :
My Alain Delon Wallet
Item Description :
there a scratch in the wallet and there is my IC Card
Close
Update
Description: Alain Delon Wallet Black
Found Address
Area
Level
Level 1
Place Kept
MPP ROOM
Found Place
Surau
MPP Name
Mahathir
Contact Person Mobile Number
123213819
Date of Item Found
02-11-2025
Listed By
Arif Zulhilmi
Claim

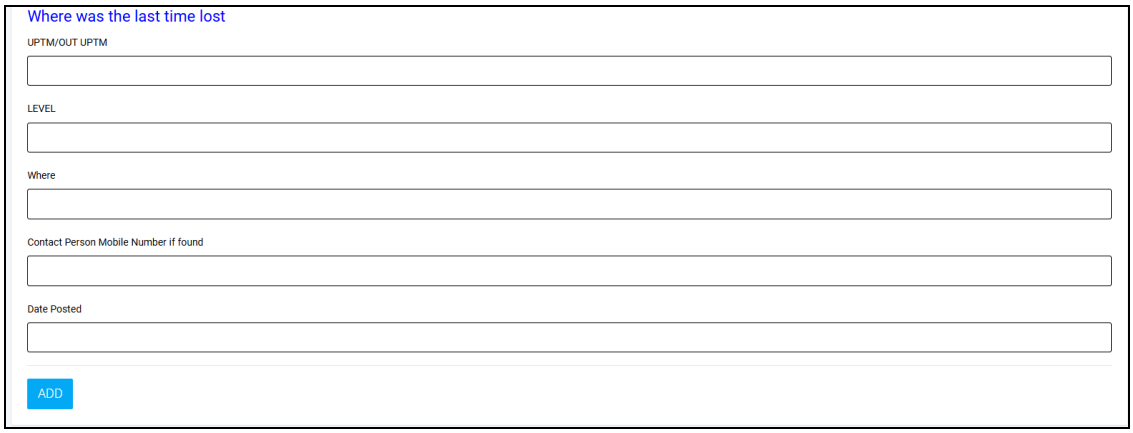

New Claim Request
S.NO
Claimed By
Found Item Type
Found Item Name
Image
Posting Date
Status
Action
1
Hafiz Syazwan
Wallet
Alain Delon Wallet
2025-11-16 17:18:18
Claim Request
Claim Request Received
View Details

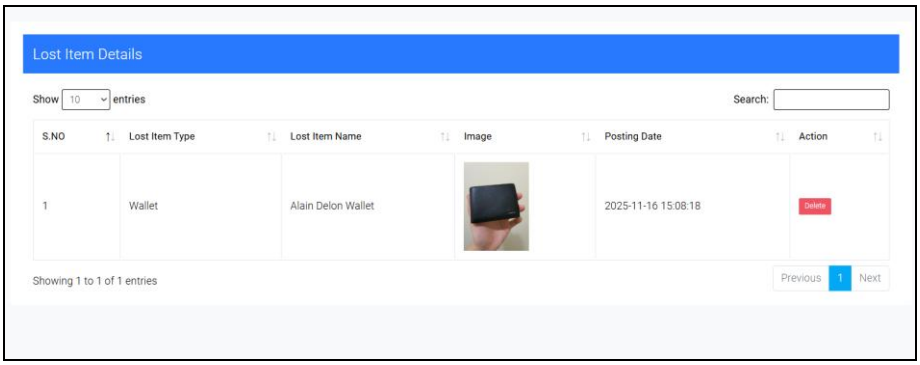

Claim Request Details
Claimed By
Hafiz Syazwan
Claimer Mobile Number
1987262882
Claimer Email
hafizsyazwan6@gmail.com
Item Title
Alain Delon Wallet
View Details
Item Identification
My Alain Delon Wallet
Item Description
there a scratch in the wallet and there is my IC Card
Item Posting Date
2025-11-16 17:18:18
Date of Claim
2025-11-16 17:34:09
Status
Claim Request

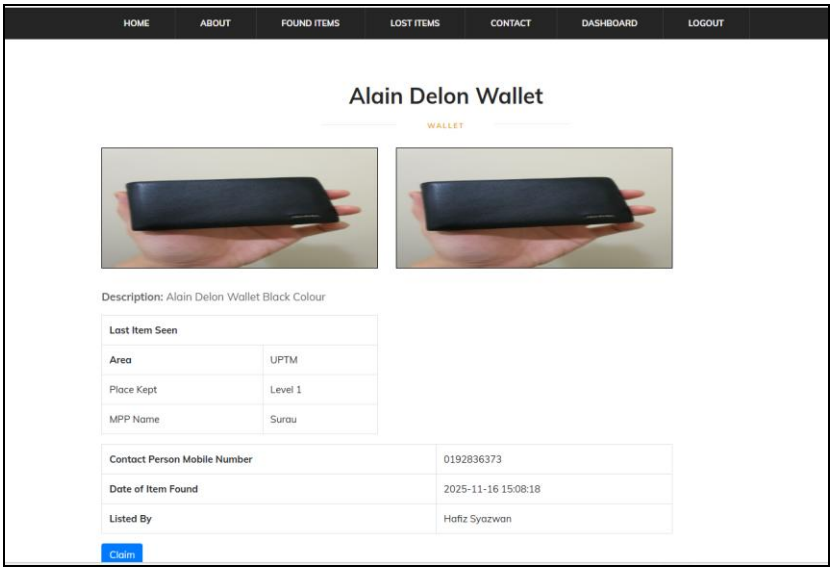

Inprocess Request
S.NO
Claimed By
Found Item Type
Found Item Name
Image
Posting Date
Status
Action
1
Hafiz Syazwan
Wallet
Alain Delon Wallet
2025-11-16 17:18:18
2025-11-16 17:18:18
In Process
View Details

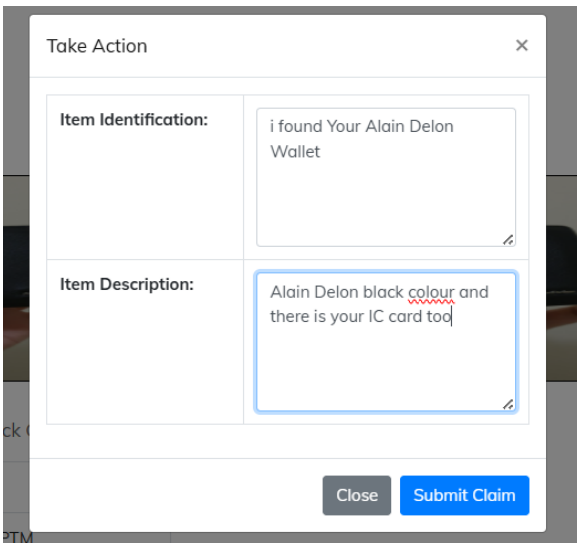

Claimed Request
S.NO
Claimed By
Found Item Type
Found Item Name
Image
Posting Date
Status
Action
1
Hafiz Syazwan
Wallet
Alain Delon Wallet
2025-11-16 17:18:18
2025-11-16 17:18:18
Claimed
View Details

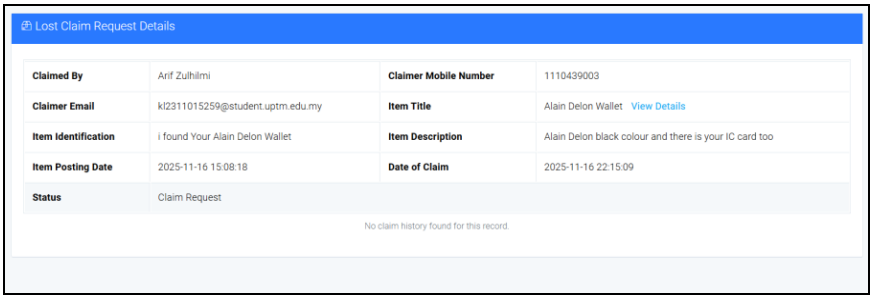

Add Lost Item
Lost Item Information
Item Type
Item Type
Item Name
Item Name
Item Descriptions
Item Descriptions
Item Image 1
Choose File No file chosen
Item Image 2
Choose File No file chosen

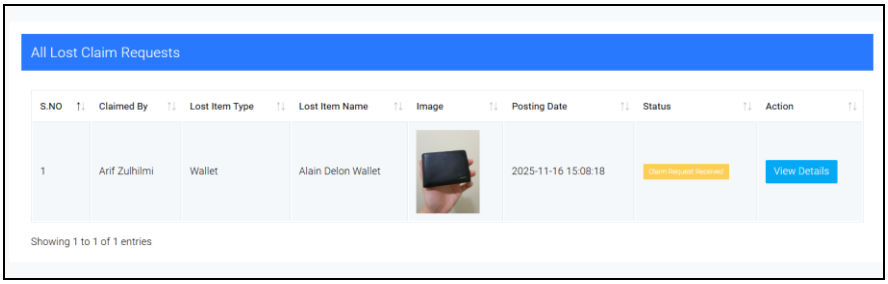

Where was the last time lost
UPTM/OUT UPTM
LEVEL
Where
Contact Person Mobile Number if found
Date Posted
ADD

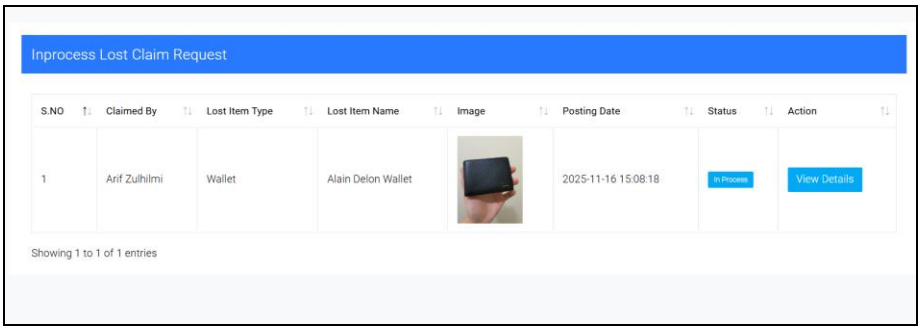

Lost Item Details
Show 10 entries
Search:
S.NO
Lost Item Type
Lost Item Name
Image
Posting Date
Action
1
Wallet
Alain Delon Wallet
2025-11-16 15:08:18
Delete
Showing 1 to 1 of 1 entries
Previous
1
Next

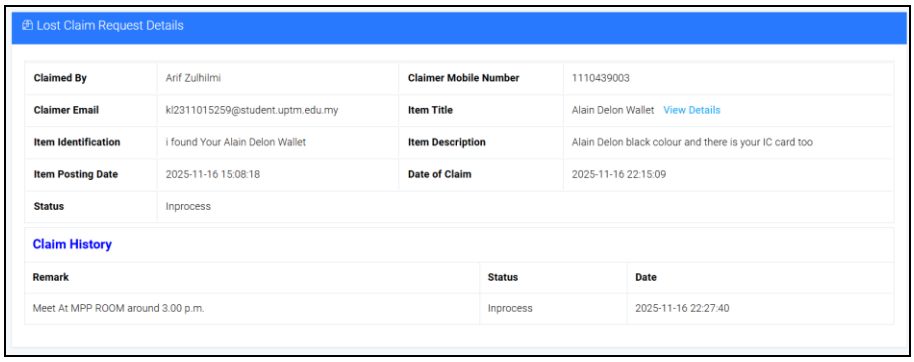

HOME
ABOUT
FOUND ITEMS
LOST ITEMS
CONTACT
DASHBOARD
LOGOUT
Alain Delon Wallet
WALLET
Description: Alain Delon Wallet Black Colour
Last Item Seen
Area
UPTM
Place Kept
Level 1
MPP Name
Surau
Contact Person Mobile Number
0192836373
Date of Item Found
2025-11-16 15:08:18
Listed By
Hafiz Syazwan
Claim

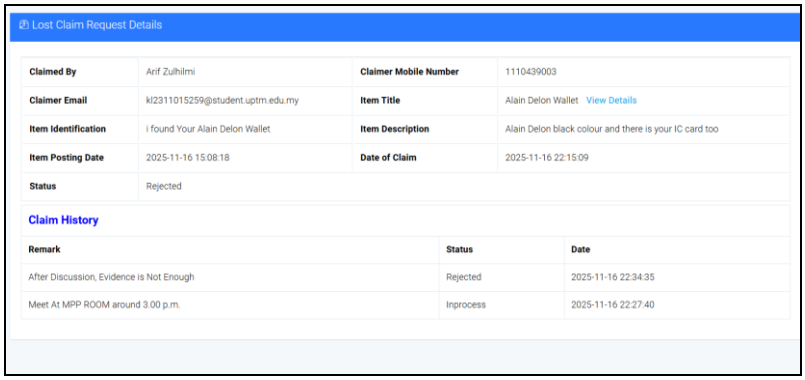

Take Action
Item Identification:
i found Your Alain Delon Wallet
Item Description:
Alain Delon black colour and there is your IC card too
Close
Submit Claim

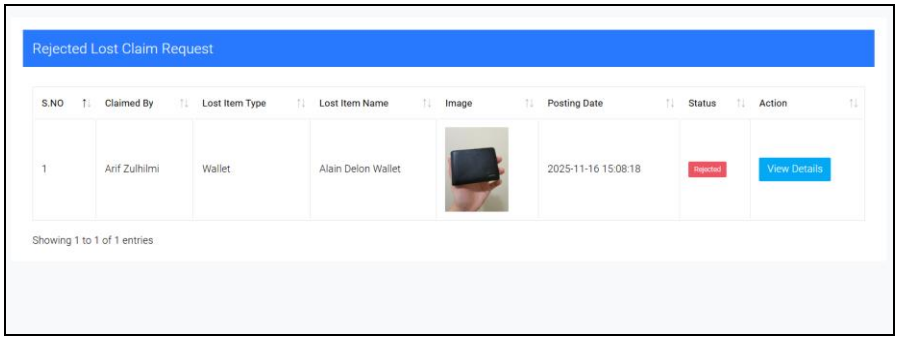

Lost Claim Request Details
Claimed By
Arif Zulhilmi
Claimer Mobile Number
1110439003
Claimer Email
kl2311015259@student.uptm.edu.my
Item Title
Alain Delon Wallet
View Details
Item Identification
i found Your Alain Delon Wallet
Item Description
Alain Delon black colour and there is your IC card too
Item Posting Date
2025-11-16 15:08:18
Date of Claim
2025-11-16 22:15:09
Status
Claim Request
No claim history found for this record.


All Lost Claim Requests
S.NO
Claimed By
Lost Item Type
Lost Item Name
Image
Posting Date
Status
Action
1
Arif Zulhilmi
Wallet
Alain Delon Wallet
2025-11-16 15:08:18
Claim Request Received
View Details
Showing 1 to 1 of 1 entries


Inprocess Lost Claim Request
S.NO
Claimed By
Lost Item Type
Lost Item Name
Image
Posting Date
Status
Action
1
Arif Zulhilmi
Wallet
Alain Delon Wallet
2025-11-16 15:08:18
In Process
View Details
Showing 1 to 1 of 1 entries


Lost Claim Request Details
Claimed By
Arif Zulhilmi
Claimer Mobile Number
1110439003
Claimer Email
kl2311015259@student.uptm.edu.my
Item Title
Alain Delon Wallet View Details
Item Identification
i found Your Alain Delon Wallet
Item Description
Alain Delon black colour and there is your IC card too
Item Posting Date
2025-11-16 15:08:18
Date of Claim
2025-11-16 22:15:09
Status
Inprocess
Claim History
Remark
Status
Date
Meet At MPP ROOM around 3.00 p.m.
Inprocess
2025-11-16 22:27:40


Lost Claim Request Details
Claimed By
Arif Zulhilmi
Claimer Mobile Number
1110439003
Claimer Email
kl2311015259@student.uptm.edu.my
Item Title
Alain Delon Wallet View Details
Item Identification
i found Your Alain Delon Wallet
Item Description
Alain Delon black colour and there is your IC card too
Item Posting Date
2025-11-16 15:08:18
Date of Claim
2025-11-16 22:15:09
Status
Rejected
Claim History
Remark
Status
Date
After Discussion, Evidence is Not Enough
Rejected
2025-11-16 22:34:35
Meet At MPP ROOM around 3.00 p.m.
Inprocess
2025-11-16 22:27:40


Rejected Lost Claim Request
S.NO
Claimed By
Lost Item Type
Lost Item Name
Image
Posting Date
Status
Action
1
Arif Zulhilmi
Wallet
Alain Delon Wallet
2025-11-16 15:08:18
Rejected
View Details
Showing 1 to 1 of 1 entries

User Manual
Introduction
Welcome to the Secure Lost Item Claim System! This platform allows UPTM students and staff to report and claim lost or found items easily. It ensures security, transparency, and convenience through verified reporting and image proof.
1. Creating an Account
Click Register on the homepage.
Fill in your personal details.
Click Sign Up to complete your registration.
2. Logging In
Enter your registered email and password.
Check your email for a verification code.
Enter the code to log in securely.
3. Reporting a Lost Item
Go to Lost Item > Add from the sidebar.
Fill in item details such as name, description, and location.
Upload an image for proof (recommended).
Click Submit

Appendix C – Turnitin Result

Appendix D – Log Book (FYP 1 + FYP 2)

CM206 / BACHELOR OF INFORMATION TECHNOLOGY (HONS) IN CYBERSECURITY

FACULTY OF COMPUTING & MULTIMEDIA (FCOM)

FINAL YEAR PROJECT O1

FYP4074

LOG BOOK

STUDENT'S NAME : ARIF ZULHILMI BIN JOPERI
ID NO. : AM2311015259
SUPERVISOR : NORFAZLINA BINTI JOHAR
PROJECT TITLE : Secure Lost Item Claim System with Image Proof

CM206 / BACHELOR OF INFORMATION TECHNOLOGY (HONS) IN CYBERSECURITY

Week		Agenda	Next Agenda	Signature (Supervisor / Coordinator)
19/5/2025	1	Brainstorming, Introduction to the course and Title selection	Start drafting project proposal and objectives.	
21/5/2025	1	Attended FYP briefing. Selected project title and registered it. Discussed project idea with supervisor.	Research on existing systems for comparison .	
26/5/2025	2	Started drafting project proposal and objectives. Researched UPTM lost & found issues.	Start writing literature review	
28/6/2025	2	Completed related systems analysis. Created comparison table.	Design and distribute user questionnaire.	
2/6/2025	3	Prepared Google Form questionnaire. Shared with UPTM community.	Monitor responses and prepare for analysis.	
4/6/2025	3	Collected and organized over 50 responses.	Analyze responses and identify system features.	
9/6/2025	4	Analyzed survey results. Highlighted key user requirements.	Convert results into functional requirements.	
11/6/2025	4	Drafted functional/non-functional requirements. Started use case model.	Complete diagrams and begin Chapter 5.	
16/6/2025	5	Finished diagrams	Start documenting Agile methodology	
18/6/2025	5	Outlined 6 Agile phases. Drafted methodology chapter.	Finalize Chapters 4 & 5 and complete Gantt chart.	
23/6/2025	6	Compiled final draft for Chapters 1–6. Proofread and formatted report	Create slide presentation for final presentation.	
25/6/2025	6	Prepared and rehearsed final presentation slides.	Get ready for presentation session.	
30/6/2025	7	Presented to supervisor and examiner. Explained full FYP1 progress	Collect feedback and note improvements.	

CM206 / BACHELOR OF INFORMATION TECHNOLOGY (HONS) IN CYBERSECURITY

2/7/2025	7	Updated documentation based on feedback. Finalized FYP1 phase.	Submit report to supervisor amd examiner	

FACULTY OF COMPUTING & MULTIMEDIA (FCOM)

FINAL YEAR PROJECT O2

FYP4074

LOG BOOK

STUDENT'S NAME	: ARIF ZULHILMI BIN JOPEI
ID NO.	: AM2311015259
SUPERVISOR	: NORFAZLINA BINTI JOHAR
PROJECT TITLE	: SECURE LOST & FOUND CLAIM SYSTEM WITH IMAGE PROOF

Week		Agenda	Next Agenda	Signature (Supervisor / Coordinator)
5 Aug 2025	1	Brainstorming, introduction to the course, and project title selection.	Begin requirement gathering and problem analysis.	NORFAZLINA BINTI ICHSAR Lecturer Faculty of Computing & Multimedia Universiti Poly-Tech Malaysia
12 Aug 2025	2	Requirement gathering, identifying system needs, and defining project scope.	Draft initial system requirements and begin system planning.	NORFAZLINA BINTI ICHSAR Lecturer Faculty of Computing & Multimedia Universiti Poly-Tech Malaysia
19 Aug 2025	3	System planning, workflow mapping, and feature outlining.	Start system design (UI sketches, database planning).	NORFAZLINA BINTI ICHSAR Lecturer Faculty of Computing & Multimedia Universiti Poly-Tech Malaysia
26 Aug 2025	4	System design: UI sketching, database structure design, and data flow planning.	Begin development of core modules (user login, claim submission).	NORFAZLINA BINTI ICHSAR Lecturer Faculty of Computing & Multimedia Universiti Poly-Tech Malaysia
2 Sept 2025	5	Start system development: implementing login module, user registration, and basic navigation	Continue backend development and connect to database	NORFAZLINA BINTI ICHSAR Lecturer Faculty of Computing & Multimedia Universiti Poly-Tech Malaysia
MID-TERM BREAK				
16 Sept 2025	6	Development continues: Image upload module and lost-item reporting module created.	Integrate modules and begin refining UI.	NORFAZLINA BINTI ICHSAR Lecturer Faculty of Computing & Multimedia Universiti Poly-Tech Malaysia

23 Sept 2025	7	Development of claim verification and admin checking features.	Continue integration and prepare for testing phase.	NORFAZLINA BINTI JOHAR Lecturer Faculty of Computing & Multimedia Universiti Poly-Tech Malaysia
30 Sept 2025	8	System integration: connecting all modules (login, image upload, claim checking).	Begin internal testing and debugging.	NORFAZLINA BINTI JOHAR Lecturer Faculty of Computing & Multimedia Universiti Poly-Tech Malaysia
7 Oct 2025	9	Functional testing on all modules, fixing bugs, improving responsiveness.	Begin system testing and improve security features.	NORFAZLINA BINTI JOHAR Lecturer Faculty of Computing & Multimedia Universiti Poly-Tech Malaysia
14 Oct 2025	10	System testing: validating security (password hashing, input validation).	Begin UAT preparation and optimize UI.	NORFAZLINA BINTI JOHAR Lecturer Faculty of Computing & Multimedia Universiti Poly-Tech Malaysia
21 Oct 2025	11	User Acceptance Testing (UAT) with sample users and feedback collection.	Apply improvements and finalize system features.	NORFAZLINA BINTI JOHAR Lecturer Faculty of Computing & Multimedia Universiti Poly-Tech Malaysia
28 Oct 2025	12	System refinement: apply UAT feedback, improve stability, final debugging.	Begin documentation writing and report refinement.	NORFAZLINA BINTI JOHAR Lecturer Faculty of Computing & Multimedia Universiti Poly-Tech Malaysia
4 Nov 2025	13	Documentation writing: project report, system documentation, testing documentation.	Finalize report.	NORFAZLINA BINTI JOHAR Lecturer Faculty of Computing & Multimedia Universiti Poly-Tech Malaysia
11 Nov 2025	14	Final touch-up on the system, compilation of all documents, submission preparation.	Prepare for presentation and Submit Report.	NORFAZLINA BINTI JOHAR Lecturer Faculty of Computing & Multimedia Universiti Poly-Tech Malaysia

Appendix E – Link To GitHub