CHITTAGONG UNIVERSITY OF ENGINEERING & TECHNOLOGY

Department of Computer Science & Engineering

Project Proposal

CUET Lost & Found Box

A Web-Based Smart Lost and Found Management System

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1. Introduction

University campuses are dynamic spaces where students carry multiple personal belongings throughout their daily academic activities. At Chittagong University of Engineering & Technology (CUET), items such as ID cards, wallets, books, chargers, and electronic devices are frequently misplaced due to continuous movement across classrooms, laboratories, libraries, and residential halls. Although many of these items are often found by fellow students or staff, the absence of a centralized digital platform makes it difficult to connect the finder with the rightful owner. The CUET Lost & Found Box is a web-based smart management system developed to address this issue by enabling users to report lost and found items, search for belongings, and track recovery status in an organized, secure, and efficient manner.

2. Motivation

The motivation behind developing the CUET Lost & Found Box arises from the frequent problem of misplaced personal belongings within the university campus. Students and staff often lose items such as ID cards, wallets, books, chargers, and electronic devices while moving between classrooms, laboratories, libraries, and dormitories. Traditional methods of reporting lost items, such as notice boards or verbal communication, are inefficient and often result in delays or unclaimed items. This leads to inconvenience, stress, and wasted time for both the owners and administrative staff. By implementing a centralized web-based system, the CUET Lost & Found Box aims to streamline the process of reporting, tracking, and recovering items. It ensures quick communication between finders and owners, enhances accountability, and reduces the chances of items being permanently lost. The system also provides an organized platform for administrators to manage reports efficiently, making the overall campus environment safer and more convenient.

3. Application

The CUET Lost & Found Box is designed for students, faculty, and staff within the CUET campus to efficiently manage lost and found items. The system provides a simple interface for reporting, searching, and tracking items, ensuring quick recovery while reducing manual effort. Users can access the platform from desktops, tablets, or smartphones, making it convenient and flexible for daily campus life.

1. Reporting Lost Items: Users can submit details of lost items, including description, category, location, and contact information. *Example: A student loses their library ID card in the main library; they can report it with a brief description, date, and location.*

2. Reporting Found Items: Any item found on campus can be reported with relevant details to notify potential owners. *Example: A faculty member finds a smartphone in the cafeteria and registers it in the system with its description and location.*

3. Search and Filter Items: Users can search for items using categories, keywords, or date ranges to locate belongings quickly. *Example: Searching for a "black wallet" lost in the CSE lab last week will show all matching reports.*

4. Notifications and Alerts: The system sends notifications to the rightful owner when a matching found item is registered, ensuring timely recovery. *Example: When a lost water bottle is found in the gym and reported, the owner receives an alert via email or system notification.*

4. Background Study

Managing lost and found items has traditionally been a challenging task in universities due to the high movement of students and staff across campus. Many institutions rely on physical notice boards, manual logs, or word-of-mouth announcements to track lost items. These methods are often inefficient, resulting in unclaimed belongings, delays in returning items, and increased administrative workload. In recent years, several universities and organizations have adopted digital lost-and-found systems to improve efficiency and accountability. Web-based platforms and mobile applications allow users to report lost or found items, search through categorized databases, and receive automated notifications when matches are found. Such systems enhance transparency, reduce human error, and facilitate faster recovery. In addition, the use of databases and notification systems ensures that items are tracked securely, and users can interact with the system from multiple devices. By analyzing existing implementations, it is clear that integrating real-time updates, search functionality, user authentication, and administrative oversight are essential components for an effective solution. The proposed CUET Lost & Found Box leverages these best practices, combining a user-friendly interface with a robust backend to create an organized, secure, and scalable platform for managing lost and found items within the CUET campus.

5. System Description

The CUET Lost & Found Box is a web-based platform that efficiently manages lost and found items within CUET, enabling reporting, searching, and recovery of belongings.

5.1. Core Structure

The system is designed with a three-tier architecture to ensure scalability, modularity, and efficient management of data:

1. **Presentation Layer (Frontend):** This layer provides a user-friendly interface for students, faculty, and staff.
   (a) Users can report lost/found items, search for items, and receive notifications.
   (b) Responsive design allows access from desktop, tablet, and mobile devices.
2. **Application Layer (Backend):** Handles all processing logic, ensuring smooth operations.
   (a) Matches lost and found items automatically.
   (b) Manages user sessions, authentication, and authorization.
   (c) Sends notifications to item owners when a match is found.
   (d) Implements rules for categorization and verification of items.
3. **Database Layer:** Securely stores all item records, user accounts, and transaction history.
   (a) Allows efficient queries for searching items based on keywords, category, or date.
   (b) Ensures data integrity and backup for recovery in case of system failure.

5.2. Features

The CUET Lost & Found Box provides comprehensive functionality to make item management smooth and reliable:

1. **Lost Item Reporting:** Users can submit lost items with details such as item name, category, description, date lost, and location.
   (a) Optional image upload enhances identification and increases recovery chances.
   (b) Immediate confirmation of report submission ensures transparency.
2. **Found Item Reporting:** Users who find items can register them with relevant details.
   (a) Admin verification ensures authenticity before notifying potential owners.
   (b) Facilitates organized tracking of found items for efficient return.
3. **Search and Filter Functionality:** Users can search lost or found items by category, keywords, or date.
   (a) Advanced filtering allows narrowing results based on location or item type.
   (b) Ensures quick retrieval of information without manual effort.
4. **Notifications and Alerts:** Automatic notifications are sent to item owners when a matching found item is reported.

(a) Email and in-system alerts increase the chance of quick recovery.

(b) Reduces the need for physical follow-ups or inquiry.

5. **Secure User Management:** Account registration with authentication prevents unauthorized access.

   (a) Users can manage their reports, track item status, and edit information.

   (b) Admin roles allow monitoring of the system, verifying reports, and managing users.

6. **Super Admin Controls:** Administrators can review lost/found reports, approve items, and resolve disputes.

   (a) Provides statistics on lost items, recovery times, and frequently misplaced objects.

   (b) Ensures smooth operation and fairness in item recovery.

7. **Additional Features:** Optional enhancements to improve efficiency.

   (a) QR code tagging for faster item identification.

   (b) Dashboard analytics for tracking item trends and peak loss periods.

   (c) Export functionality to generate reports for auditing or research purposes.

Summary: The CUET Lost & Found Box combines a simple user interface with robust backend processing and secure data storage, ensuring efficient management of lost and found items while reducing manual effort, increasing accountability, and improving item recovery rates campus-wide.

6. Technology Stack

The system is developed using a modern web technology stack to ensure efficiency, scalability, and maintainability. The frontend is built with HTML, CSS, JavaScript, and React JS to provide a dynamic and responsive user interface. The backend uses Django or FastAPI for secure application logic and authentication. MongoDB is used for flexible, scalable data storage, ensuring a robust and user-friendly system.

7. Conclusion

The CUET Lost & Found Box provides a comprehensive and efficient solution to the ongoing problem of misplaced items within the university campus. By integrating a user-friendly interface with a robust backend, the system allows students, faculty, and staff to report, search, and track lost and found items quickly and securely. Automated notifications, real-time search, and

organized data storage ensure timely recovery and reduce manual effort. With scalability, flexibility, and optional features like React JS integration and MongoDB storage, the system not only simplifies item management but also promotes accountability, enhances campus safety, and contributes to a more organized and convenient university environment.

8. Reference

1. University Lost and Found Systems: Best Practices and Implementation Guidelines, Journal of Campus Technology, 2022.

2. Web-Based Lost and Found Management Systems, International Journal of Computer Applications, 2021.