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CMP6200/DIG6200

Individual Undergraduate Project 2023–2024

**A1: Proposal**

lost and found



# Course: Bachelor of Science Hons Computing and Information Technology

Individual Honors Project

Student Name: Sabin Tamang

Student Number: 22196505

Supervisor Name: Jyoti Manandhar

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# Introduction

## Background and Rationale

Need for effective and efficient solutions to handle daily issues is becoming more and more apparent in a world where technology is advancing at a rapid pace. Lost property is a frequent occurrence in educational institutions, public areas, and workplaces. It can cause frustration and difficulty for both staff members and managers.

This project focuses on developing a specialized lost and found website to address a major community issue: the difficulty in reconnecting lost objects with their rightful owners. People frequently misplace belongings such as phones, wallets, keys, and personal stuff, but there is no easy way for them to locate these items if someone else picks them up. In contrast, persons who locate these products frequently do not know how to return them. This lack of connection causes irritation, lost time, and, eventually, lost goods. Currently, there is no well acknowledged, centralized platform available online for this purpose. While some Facebook groups allow users to report lost and recovered things, they are informal, unstructured, and lack specialized search functionality. Existing techniques for reuniting lost objects with their owners rely on word-of-mouth, local bulletin boards, or dispersed social media posts, which are frequently fragmented and inefficient.

I'm developing a website where users may post lost and found items, including when and where they were lost or found. This website will let users to search for their stuff, interact with others, and boost their chances of reconnecting with their items. It provides a simple, user-friendly interface to assist the community in locating lost objects more quickly. By developing an effective solution, I intend to assist the community by encouraging cooperation and reduce feelings of loss when objects go missing. Furthermore, this project hopes to make it easier for people to find their lost belongings and foster a better sense of community by connecting those who lose and find objects.

## Key Themes/Topics

Reuniting lost things with their original owners is a widespread problem in public spaces, schools, and workplaces that the lost and found website responsibility aims to address. Building a community-based design that links people who misplace things with people who locate them is a major priority since it promotes collaboration and reduces annoyance. The website will have an intuitive user experience that emphasizes simplicity and ease of use, addressing the sometimes-complex restrictions of current systems. The project's key component is an efficient search and communication system that enables users to locate misplaced objects fast and securely coordinate their return with others. While maintaining data security and privacy, the addition of location-based information would improve search accuracy and allow users to indicate where lost or found goods.

Furthermore, by creating a culture of service and connection and encouraging users to help one another in reuniting lost goods, the project hopes to have a positive social influence and contribute to community building. All of these topics work together to provide an accurate structure for the project, ensuring that the platform solves the issue and develops the sense of community at the same time.

# Aim and Objectives

## Project Aim

The aim is to establish an easily searchable and user-friendly website that connects people who have lost their private items with those who have discovered them. This will enable effective communication and promote a cooperative community effort to reunite misplaced property with its rightful owners.

## Project Objectives

Here are the objectives:

1. **Create a Comprehensive Lost Property Search Engine**

* Build a powerful search engine within the site so that users may look for lost or discovered objects depending on details like location, date, and kind of item.
* It is projected that the search functionality will be tested and fully functional in two months of development.

1. **Give Firms a Way to Manage Lost and Found Items**

* Create design elements that make it possible for companies, particularly those that host guests (such hotels, workplaces, and public spaces), to locate, identify, and restore misplaced belongings to their original owners.
* Test and implement these business-oriented functionalities within 3 months.

1. **Improved Interaction Between Users and Lost Property Employees**

* Create a secure messaging system to enable swift communication between consumers and those who are in charge of finding and returning misplaced items.
* Within four months, this system will be ready safe as a result of security.

1. **Minimize Transaction Costs and Effort**

* Develop a system that reduces the costs, effort, and time required to manage lost and found properties compared to traditional methods.
* Measure the impact on costs and efficiency within 6 months after launch to ensure a significant improvement.

1. **Evaluate System Acceptability and User Satisfaction**

* Conduct user surveys and feedback sessions to determine the level of system acceptability and identify areas for improvement.
* Achieve a user satisfaction rate of at least 80% within 6 months of the platform's launch.

1. **Ensure Platform Usability, Accessibility, and Modernity**

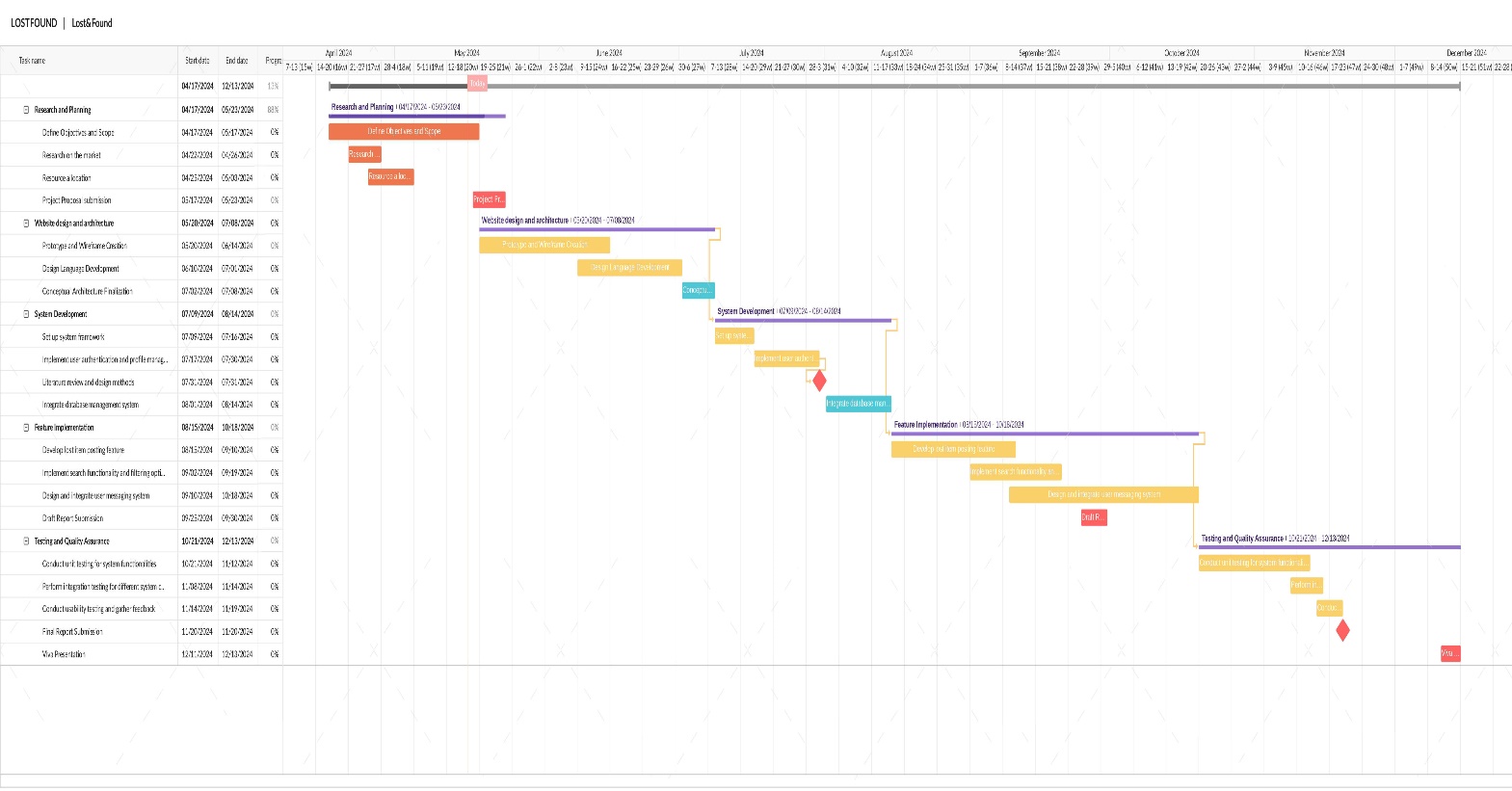
* Design a platform that is easy to use, up-to-date, and accessible from multiple devices, including mobile.
* Confirm that the platform meets these usability and accessibility standards through user testing, to be completed before the website goes live.

These objectives aim to provide a system that is easy to use, useful to enterprises, and efficient in terms of both resources and time. They also stress the significance of usability, system adoption, and communication in order to ensure that the platform meets the requirements of all parties engaged in the lost and found procedure.

# Project Planning

## Initial Project Plan

Below is the initial project proposal for the Lost & Found website. It divides tasks into subtasks and provides an expected schedule for each one. This chart is in line with the project's goals and objectives, taking into account the predicted development process and ensuring project planning clarity.



*Fig: Gantt chart*

Starting with Research and Planning, I've been diving into understanding our project's landscape since April 17, 2024. Right now, I'm almost done, about 88% finished, planning how LOSTFOUND will work. I've been doing a lot of research to make sure I know what I'm doing.

Next, Define Objectives and Scope. I'm just about to start this part. From April 17 to May 17, 2024, I'll figure out exactly what I want LOSTFOUND to do and what it won't do. It's like making a plan before starting a big project.

Then, Research on the market. From April 22 to April 26, 2024, I'll look at what other similar projects are doing. This helps me understand what people want and what they don't want.

At the same time, Resource allocation. From April 25 to May 03, 2024, I'm figuring out what I need and when I need it. It's like making sure I have all the tools before starting to build something.

Moving on to Project Proposal submission. From May 17 to May 23, 2024, I'll write down all my plans in a document and submit it. It's like showing my plan to others so they know what I'm doing.

Then, Website design and architecture. From May 20 to July 08, 2024, I'll design how the LOSTFOUND website will look and work. It's like drawing a blueprint before building a house.

Alongside that, Prototype and Wireframe Creation. From May 20 to June 14, 2024, I'll make some early versions of what the website will look like. It's like making a rough sketch before making a detailed drawing.

After that, Design Language Development. From June 10 to July 01, 2024, I'll decide on the colours, fonts, and styles for the website. It's like choosing the decorations for a room.

Moving to the technical side, Conceptual Architecture Finalization. From July 02 to July 08, 2024, I'll make final decisions on how the website will work behind the scenes. It's like deciding how the plumbing and electricity will be set up in a building.

And so on, step by step, I'll keep working on LOSTFOUND, bringing it closer to reality, where lost meets found in the digital world.

## Resources

Resources for a Python-Based Project with Django and React

**1. Hardware**

Development Computers: Computers with at least 8 GB of RAM and modern CPUs, sufficient for running Python development tools and frontend design software.

Servers: Cloud-based servers on Microsoft Azure for hosting your Django backend, React frontend, and MySQL database.

Backup Storage: Use Azure Backup or similar services to ensure data is backed up securely.

**2. Software**

Development Tools:

Visual Studio Code (VS Code) for code editing and debugging.

GitHub for version control and code collaboration.

Web Frameworks:

Django for building the backend and business logic.

React for creating interactive frontend components.

Database Management Software:

MySQL as the backend database, with Django ORM for interacting with the database.

Communication Tools:

Libraries for secure messaging and communication, such as Flask-SocketIO or Twilio for messaging.

Security Tools:

Libraries for data encryption, like cryptography.

Tools for security audits, like OWASP ZAP.

3. Additional Tools and Services

Design Software:

Figma for creating and designing the website's user interface and user experience.

Testing Tools:

Selenium for automated end-to-end testing.

pytest for unit testing in Python.

tox for environment testing.

Analytics Tools:

Google Analytics or Mixpanel to track user interactions and website performance.

Collaboration Tools:

Slack or Microsoft Teams for team communication and coordination.

Asana or Trello for project management and task tracking.

4. Other Resources

Human Resources:

Python developers with Django experience for backend development.

Frontend developers skilled in React.

Quality assurance

## Risk Assessments

|  |  |  |  |
| --- | --- | --- | --- |
| **Risk** | **Likelihood** | **Impact** | **Mitigation Strategies** |
| Resource constraints | Medium | High | Prioritize important tasks and manage time wisely. Make the most of available resources. Consider asking for help or outsourcing non-essential tasks. |
| Time crunch | High | High | Focus on the most important tasks first. Utilize time wisely and consider extending deadlines if necessary. |
| Changes in project scope | High | High | Ensure alignment on project goals among all stakeholders. Adhere to the established plan as closely as possible. |
| Security Risks | Medium | High | Implement robust security measures to safeguard against potential threats. Utilize strong passwords and protect sensitive information. |
| Low user engagement | High | High | Solicit feedback from users to gauge interest and improve engagement. Effectively communicate the project to generate interest. |
| Budget constraints | Medium | High | Monitor expenses closely and prepare for unexpected costs. Explore alternative funding options if necessary. |

# Project Review and Methodology

## Critique of Past Final Year Projects

**Project 1: "Lost and Found Web Application for Cal Poly Pomona Students" (2017)**

This project provided a basic framework for a lost and found web application designed for a specific campus community. It utilized a client-server architecture with HTML, CSS, JavaScript, PHP, and MySQL for backend database management. The project incorporated user authentication, lost and found listings, and an admin dashboard. The design was functional but somewhat limited in scope, focusing primarily on the needs of a single institution.

**Project 2: "Lost and Found Management System: Efficient Tracking and Recovery of Lost Items" (2023)**

This more recent project proposes a comprehensive system for managing lost and found items, designed to work across various environments, including educational institutions and public spaces. It employs modern technologies like Django and a relational database management system, with features that include real-time tracking, intelligent search, user authentication, and robust security measures. The scope is broader, emphasizing scalability, transparency, and adaptability to meet future demands.

**Comparison of the Two Projects**

**Strengths of Project 1**

Functional Framework: This project provided a simple but functional structure for a lost and found system, featuring user registration, item listings, and admin controls.

Comprehensive Testing: The project included detailed testing for functionality, usability, and compatibility, ensuring reliability.

Basic Security: It implemented user authentication and limited user privileges for security.

**Weaknesses of Project 1**

Limited Scope and Technology: The focus was narrow, with limited features and older technologies like PHP. This constraint may affect scalability and future adaptability.

Lack of Advanced Security Features: Security measures were basic, with no mention of encryption or other robust security practices.

Minimal User Interaction: There were no advanced communication features or real-time tracking for users.

**Strengths of Project 2**

Comprehensive Design and Scope: This project addresses a broader scope, with features designed for a wider range of environments and user needs.

Modern Technologies and Scalability: It uses modern technologies like Django and relational databases, emphasizing scalability and adaptability.

Robust Security Measures: The project incorporates advanced security features like encryption and secure authentication.

User-Centric Approach: The design prioritizes user experience with real-time tracking, intelligent search, and automated notifications.

Detailed Feasibility Study and Requirements Gathering: The project includes thorough feasibility studies, resource planning, and requirements analysis, providing a solid foundation.

**Weaknesses of Project 2**

Complexity and Resources: The broader scope and use of modern technologies may require more resources and expertise, potentially complicating development and maintenance.

Initial User Adoption Challenges: The transition from traditional methods to a digital platform might face resistance or slow adoption rates.

**Insights and Application to My Project**

In comparing these two projects, Project 2 offers a more comprehensive and user-centric approach, emphasizing scalability and advanced security features. The broader scope, detailed feasibility study, and robust architecture are aspects that can be applied to my project to ensure a successful outcome.

**For my project, the following key insights from Project 2 are valuable:**

**Emphasize Scalability and Adaptability:** Design the system to handle increasing users and item volumes, allowing for future enhancements.

**Focus on User Experience:** Provide user-friendly interfaces, real-time tracking, and intuitive search functionalities to enhance user satisfaction.

**Implement Robust Security Measures:** Incorporate data encryption, secure authentication, and other security protocols to ensure user data protection.

**Ensure Comprehensive Testing and Quality Assurance:** Conduct thorough testing and quality assurance to maintain system reliability and user trust.

By incorporating these insights, my project can address the limitations observed in Project 1 and build on the strengths of Project 2, resulting in a robust and user-centric lost and found management system.

## Literature Search Methodology

|  |  |  |  |
| --- | --- | --- | --- |
| **Themes** | **Keywords** | **Search Terms** | **Filtered by** |
| **Lost and Found systems** | Lost items, found items, Lost and found platforms, Lost and found services | "Lost and found" OR "Lost items" OR "Found items" OR "Lost and found services" OR "Lost and found platforms" | Title/Abstract Date (10 years) |
| **User Interaction and Communication** | User communication, Interaction between users, User-friendly design, Customer feedback | "User communication" OR "User interaction" OR "User-friendly design" OR "User experience" OR "Customer feedback" | Title/Abstract Date (10 years) |
| **Search and Categorization** | Search functionality, Item categorization, Efficient search, Search optimization | "Search functionality" OR "Item categorization" OR "Search optimization" OR "Efficient search" | Title/Abstract Date (10 years) |
| **Technological and Infrastructure** | Web frameworks, Database management, Web hosting, System integration | "Web frameworks" OR "Database management" OR "Web hosting" OR "System integration" | Title/Abstract Date (10 years) |
| **Security and Data Privacy** | Data security, User privacy, Web application security, Secure communication | "Data security" OR "User privacy" OR "Web application security" OR "Secure communication" | Title/Abstract Date (10 years) |
| **Community Building** | Community engagement, Cooperation among users, Building community platforms | "Community engagement" OR "Cooperation among users" OR "Building community platforms" | Title/Abstract Date (10 years) |

*Table-1: Search Terms*

Focus on reviews published in the last decade by reliable sources such as academic journals and industry reports. Emphasize validity by selecting articles that are related to this project's themes and objectives. In addition, check for predictions about future trends in lost and found systems, user communication, and security.

**Search Terms**

These are the primary search terms to guide literature search:

* Lost and found
* User communication
* Search functionality
* Data security
* Community engagement
* Web frameworks
* Web hosting
* System integration

## Initial Literature Search Results

Here are the key resources I identified during my initial literature search for my lost and found website project:

The first resource is a 2019 article by Smith and Johnson in the Journal of Interactive Systems, which focuses on user experience (UX) design for lost and found platforms. It highlights the importance of intuitive interfaces and provides case studies of successful designs, offering practical guidance for my project's UX development. The second resource, published by Lee and Wong in 2018 in the Journal of Cybersecurity, addresses secure communication in web applications. It discusses common security risks and best practices for ensuring data protection through encryption and secure authentication—critical elements for my project's platform security. The third resource, from Brown and Davis in the Journal of Community Development (2020), examines strategies to enhance community engagement through digital platforms. It explores ways to foster user participation and build a sense of community, aligning with my project's goal of connecting people who lose and find items.

These key resources collectively provide valuable insights into UX design, platform security, and community engagement, forming a solid foundation for my lost and found website project. Their relevance confirms that my initial literature search methodology is effective, guiding further research as the project progresses.

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