# Software Requirements Specification

for

# **FindIIT**

Version 1.0

# **Prepared by Team WebVortex**

Group 2:	Group Name: WebVortex

Rudra Sinha	230880	rudrasinha23@iitk.ac.in
Siddharth Miglani	231006	siddharthm23@iitk.ac.in
Dharajiya Yug Harshadbhai	230362	dharajiya23@iitk.ac.in
Pratul Koolwal	230782	pratulk23@iitk.ac.in
Rohan Gauranga Potukuchi	230864	rohangp23@iitk.ac.in
Nischay Agarwal	230705	nischaya23@iitk.ac.in
Vihaan Sapra	231149	svihaan23@iitk.ac.in
Suyash Kapoor	231066	suyashk23@iitk.ac.in
Aarush Narendra Ghate	230017	aarushng23@iitk.ac.in
Shravan Agrawal	230984	ashravan23@iitk.ac.in

Course: CS253

Mentor TA: Hemang Mohanlal Khatri

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# Revisions

Version	Primary Author(s)	Description of Version	Date Completed
Initial Draft (v1.0)	Rudra Sinha Siddharth Miglani Dharajiya Yug Harshadbhai Pratul Koolwal Rohan Gauranga Potukuchi Nischay Agarwal Vihaan Sapra Suyash Kapoor Aarush Narendra Ghate Shravan Agarwal	Initiated the document. Added all the necessary details.	24/01/25

# 1 Introduction

## 1.1 Product Scope

FindIIT is a lost and found website tailored for the Indian Institute of Technology Kanpur (IITK) community. It is designed to be a centralized portal for reporting misplaced objects. Users can add category tags, photos, text description and location tags to ensure efficient matching of lost and found items. Email notifications are sent when a matching item is reported. Users can also communicate via website to share additional details. This application is focused on making the reporting process as seamless and hassle free as possible.

Major benefits include:-

- 1. Centralized platform for all lost and found queries connecting the entire campus community.
- 2. Organized platform and category tags to ensure products are correctly matched.
- 3. Location tags for users to get a better idea of possible matches.
- 4. Notifying concerned users to ensure quick resolution of queries.

#### 1.2 Intended Audience and Document Overview

#### 1.2.1 Intended Audience:

The Software Requirements Specification (SRS) document serves various people such as Developers, Project Managers, Documentation writers, Users, as well as Testers.

Developers and Project Managers can use this document to communicate systematically and gain a deeper understanding of the project's purpose, use cases, functional, and non-functional requirements, allowing them to proceed efficiently. Documentation writers can refer to this document to create clear and accurate documentations and user manuals. Users can utilize a subset of the SRS as a user manual for easy navigation of the website. Testers can refer to it during testing by using the requirements sections.

#### 1.2.2 Document organisation and overview:

#### Section 2: Overall Description:

This section gives a brief overview on the purpose, functionalities, design, implementation and constraints. This section is useful for Project managers and developers.

#### Section 3: Specific Requirements:

This section consists of detailed information about specifications such as user and software interfaces and functional requirements. This information is crucial for testers, developers, and documentation writers to understand testing requirements, system limitations, and development needs.

#### Section 4: Other Non-functional Requirements:

This section explores the Non-functional requirements like performance requirements, safety and security requirements and software quality attributes. It helps users and testers understand the expected behaviour of the system.

# 1.3 Definitions, Acronyms and Abbreviations

Acronyms/Abbreviations	Definition
CSS	Cascading Style Sheets
GUI	Graphical User Interface
HTML	HyperText Markup Language
НТТР	HyperText Transfer Protocol
IITK	Indian Institute of Technology, Kanpur
JS	JavaScript
mongoDB	Humongous DataBase
ОТР	One Time Password
SRS	Software Requirements Specification
UI	User Interface

#### 1.4 Document Conventions

#### **Formatting Conventions:**

- 1. The text in the SRS document is written in Arial font, size 11, with single spacing and 1-inch margins throughout.
- 2. Italics have been used for comments.
- 3. Underlines have been used for headings in subsections.
- 4. Important words are made bold.

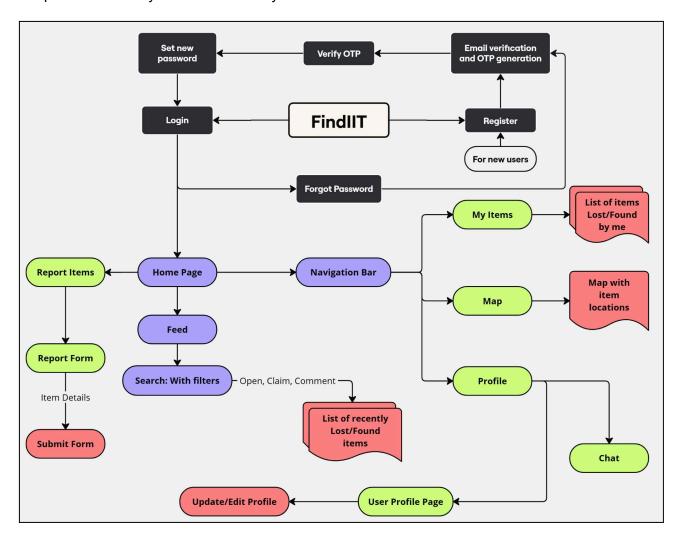
# 1.5 References and Acknowledgments

- 1. The following websites were referred to in the process of making this document:
  - Figma
  - Canva
  - Mogups
- 2. We would like to thank our instructor Prof. Indranil Saha for providing the SRS template and guiding us through the process of making this document.
- 3. We would also like to thank our TA Hemang Khatri for discussing with us and providing their valuable inputs in the creation of the SRS document.

# 2 Overall Description

#### 2.1 Product Overview

FindIIT is a web application that is designed to streamline the process of reporting and reclaiming lost and found items on the campus. It will be designed to serve as a central and self-contained platform that the campus community can use to deal with their misplaced items. This will tackle the problem of fragmented "Lost and Found" groups which only serve a small audience by opening up this platform to the wider campus audience. The key features of this app include a simple interface where details of lost and found items can be viewed. These details include time, location, description and contact information. We also propose to implement a commenting and chatting interface so users can easily contact others and a map feature which shows the various items that are lost at different locations. The figure below provides a high level overview of the main components of the system and how they are meant to interact with one another.



## 2.2 Product Functionality

- I. User Authentication:
  - A. Login
  - B. Register:
    - 1. OTP generation and verification
    - 2. Set password
    - 3. Login
  - C. Forgot password
- II. Profile:
  - A. View Profile:
    - 1. User information like Photo, Name, Roll number, Contact details, etc.
  - B. First-time user:
    - 1. Option to add Contact details, Photo, Room number, etc.
  - C. Update/Edit Profile:
    - 1. Modify fields like Photo, Room Number, Contact details
    - 2. Option to change password
  - D. Chat:
    - A chatting page where users can view their previous chats and also start new chats

#### III. <u>Homepage:</u>

- A. Navigation Bar:
  - 1. Report Items:
    - a) Prompt to create a report about a lost/found item
      - (1) Includes fields such as Item Description, Time, and Location
      - (2) Add tags to the report for easier searching
      - (3) Option to upload image
  - 2. My Items:
    - a) List of items reported as lost/found by the current user
    - b) Shows the status and similar matches to the listed items
  - 3. <u>Map:</u>
    - a) Opens a map of the campus where items lost in a particular location can be viewed by clicking on a location
  - 4. About
  - 5. View Profile
- B. Main Feed:
  - 1. Search bar:
    - a) Allows users to search with filters to look for items in the feed
  - 2. Item Feed:
    - a) Shows a list of lost and found items with their photo, tags and a short description
    - b) The feed is sorted by recency (i.e. recently lost/found items will appear near the top)
    - c) On clicking an entry, users can see a detailed description of the item along with a comments section where people can talk with each other
    - d) A list of tags will appear below the search bar for easier navigation of the page

## 2.3 Design and Implementation Constraints

While making this application, we have to be mindful of the following design constraints:

#### A. Memory Requirements:

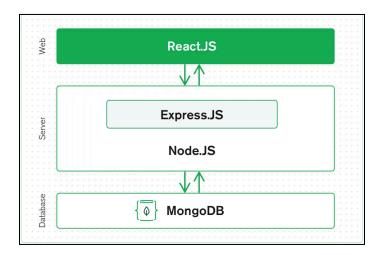
a. The application must have a dedicated database to store all the user information and item details

#### **B. Security Constraints:**

- a. IITK email based user authentication will be used to ensure only people in the campus community can access the application. This will ensure the legitimacy of the claims
- b. For enhanced security, passwords will be stored in hashes

#### C. Tools, Languages and Databases:

- a. MongoDB will be used as a database since it can handle the large amount of data required to store user and item information
- The frontend will be developed using React, HTML, CSS and JavaScript to ensure a user-friendly interface
- c. The backend will be built using Node.js with Express.js to streamline the development of APIs and handle server-side functionalities.



#### **D. Communication Protocols:**

- a. HTTP protocol will be used to communicate between servers, thus ensuring smooth transfer of information within the system.
- b. IITK Webmail will be used to notify users if items related to their pending reports are posted using Nodemailer.js.

## 2.4 Assumptions and Dependencies

The design and implementation of our project are based on several assumptions and dependencies that may impact its development.

#### **Assumptions:**

- 1. All users of the software are assumed to possess a unique institute mail id and roll number.
- 2. The use of institute IDs for authenticating user profiles implies a commitment to maintaining the platform's standards by preventing the posting of inappropriate or unethical content.
- 3. It is assumed that the users have access to the internet.

#### **Software Dependencies:**

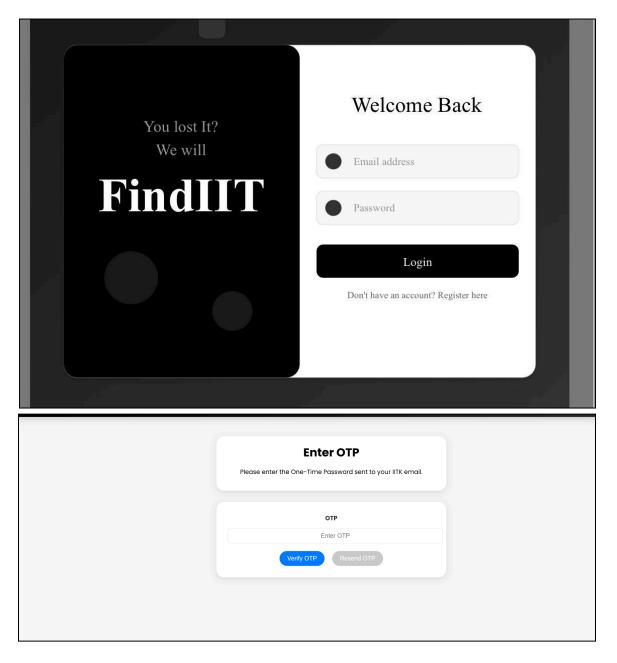
- 1. We rely on email services for user registration and verification, and will use NodeMailer to ensure seamless and reliable email communication throughout the process.
- 2. We are using Google Maps for location based searching. We assume that Google Maps API will provide reliable, accurate, and up-to-date location data and geocoding services.
- 3. The project relies on various JavaScript libraries to enhance functionality and streamline development.
- 4. ReactJS serves as a critical component for the front end, providing the necessary tools for creating an interactive and dynamic user interface.

# 3 Specific Requirements

# 3.1 External Interface Requirements

#### 3.1.1 User Interfaces

1. Login/ Sign Up Page



#### 1.1 Login:

- The login page will ask users to provide their registered Email and Password.
- Upon successful login, users will be directed to the Home Page.

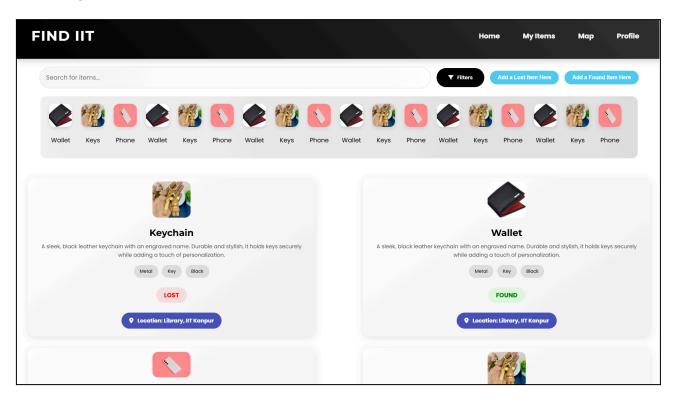
#### 1.2 Sign Up:

- A new user can sign up by providing their email address.
- After entering their email, the user will receive an OTP at the provided address and will be prompted to enter it to verify their email.
- After the verification, the user will be able to set up their Password.
- Upon successful account creation, the new user will be directed to the Login Page.

#### 1.3 Forgot Password:

- Users will be required to enter their registered email and verify it by entering the OTP sent to the email.
- Upon successful verification, the user can reset the password and confirm it.
- After resetting the password, the user will be redirected to the Login Page.

#### 2. Home Page



#### 2.1 Navigation Bar:

- It contains links to key sections such as My Items, Map and User profile.
- The user can easily navigate between these sections using the navigation bar.

#### 2.2 Search Bar:

- The user can search an item by entering relevant keywords such as item name, description or location.
- The user can apply various filters for personalized search.
- Offers suggestions, auto-correct and auto-complete options to optimise the search process.

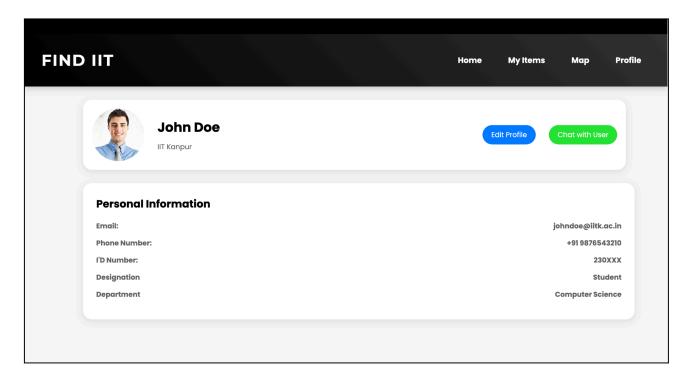
#### 2.3 Adding a Lost or Found Item:

- Users have the option to report either a lost or found item
- Upon selection, users will be redirected to a dedicated page where they can provide detailed information about the item

#### 2.4 Main Content area:

- Users can sort items based on general categories (like keys, electronics, etc) by selecting the respective icon.
- Displays a dynamic feed of the most recent items uploaded along with their description.

#### 3. User Profile

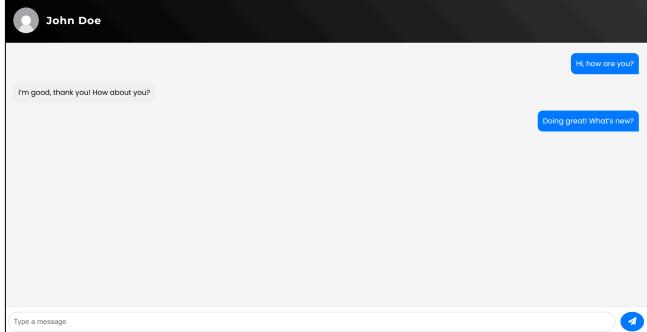


#### 3.1 Profile Information

- The user profile page will showcase essential details, including a User photo, Name, Designation, Email, Phone Number, ID number, etc.
- If a user is visiting another user's profile, a message button will appear by which the user can chat with another user.
- Users can edit and update their profile information as needed by a "Edit Profile" button. By clicking on the button, all details will become editable. This button will appear only on your own profile page
- Users can access the chat page directly from their profile, allowing them to view their entire chat history for quick and easy reference to previous conversations.

#### 4. Chat





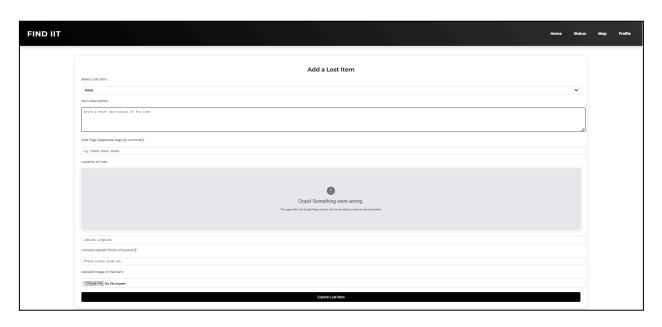
#### 4.1 The chat page:

- Systematic arrangement from newest to oldest for user convenience
- Efficient search bar for locating specific profiles.

#### 4.2 Inside a chat:

- Text input bar at the bottom for composing messages.
- Emoji and quick send icons for easy accessibility.
- History of the Chat is preserved.
- Profile picture and name at the top left.

#### 5. Add an Item



#### 5.1 Item Description:

- Users must provide a basic description of the lost or found item
- A detailed description helps us handle the query more swifty
- Description field supports special characters and multiple languages
- Users can create custom tags for the item, specifying its features such as color, brand, size, and other relevant attributes.

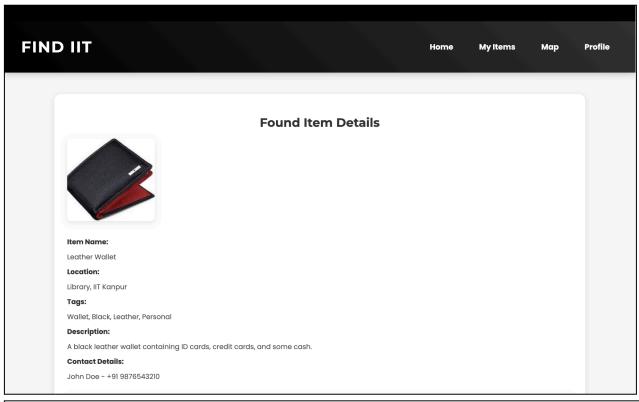
#### 5.2 Image Upload:

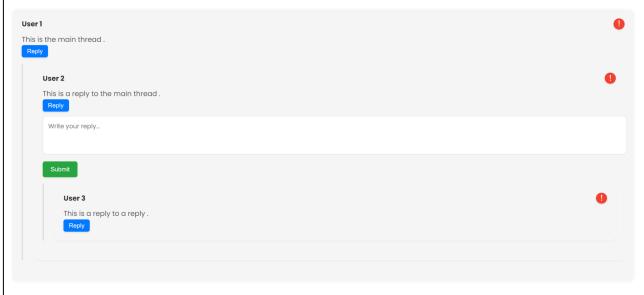
- Image is preferred while uploading an item
- Image uploaded under a maximum image size
- Supported formats: JPEG, PNG

## 5.3 Location reporting:

- Specify location of Lost/Found item
- Specify date and time for Lost/Found item

#### 6. Item Detail Page





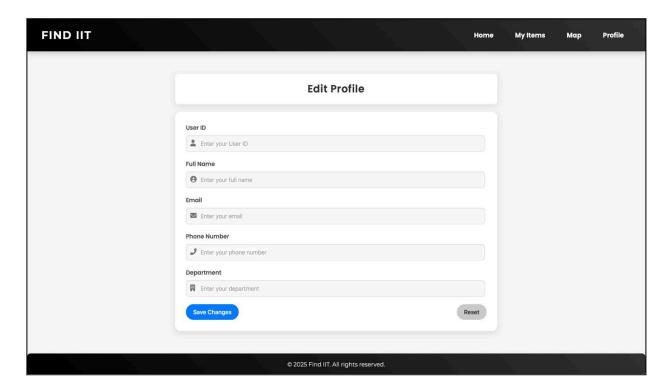
#### 6.1 View Detail:

- User can view the description of the lost item
- The location of the lost item will also be visible and clicking on icon will redirect to google maps

#### 6.2 Option to comment:

Any user can comment on the item and these will be visible for all users

#### 7. Create and Edit Profile



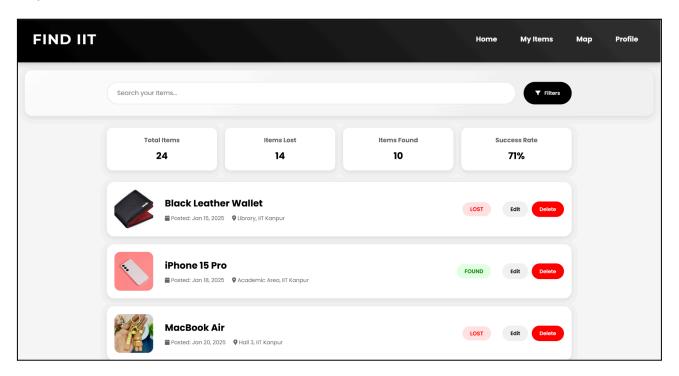
## 7.1 Create Profile:

- Users must provide complete personal information
- Mandatory fields include:
  - o Full Name
  - o Email
  - Contact Number
  - Department
- Optional profile picture upload

#### 7.2 Edit Profile:

- Users can modify personal information
- Editable fields include:
  - o Profile picture
  - Contact number
  - Department
  - Alternate email
- Email address and Contact number change requires OTP verification
- Password change requires current password confirmation

#### 8. My Items



#### 8.1 Lost Items Management:

- Display list of reported lost items
- This list is sortable by:
  - o Date reported
  - Item category
  - Status
- Filter options for item status
- Detailed view for each lost item
- Option to edit or withdraw lost item report

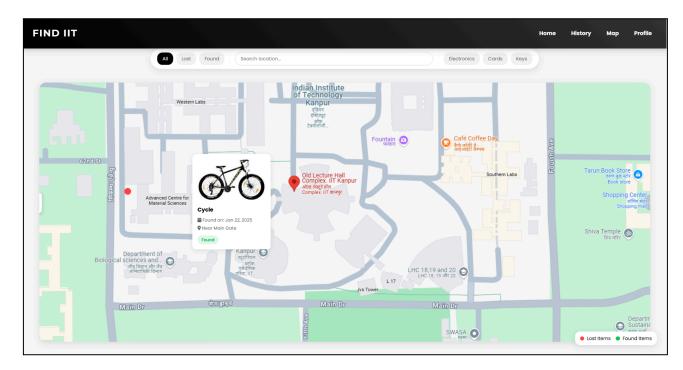
#### 8.2 Found Items Management:

- List of reported found items
- Categorization and filtering capabilities
- Track item status:
  - Claimed
  - Unclaimed
- Actions for each found item:
  - Update details
  - Mark as claimed
  - Delete report

## 8.3 Item Status Tracking:

- Notification system for item status changes
- History log of item interactions
- View communication history

#### 9. Map



#### 9.1 Geographical Search:

- Interactive campus map
- Pinpoint exact item locations
- Colour-coded markers for lost and found items
- On hovering over them, a basic description of item will be visible

#### 9.2 Search Functionality:

- Custom area selection
- Filter by:
  - o Item tag
  - Date range
  - Status

#### 9.3 Location Features:

- GPS coordinate tracking
- Detailed Identification of Campus Buildings and Zones
- Precise location marking

#### 3.1.2 Hardware Interfaces

There are no hardware interfaces involved in this project. No additional hardware is required.

#### 3.1.3 Software Interfaces

There are no software interfaces involved in this project. No additional software is required.

#### 3.2 Functional Requirements

#### 3.2.1 User Registration

All users must register on the system using their IITK mail ID, which is provided by the institute and an OTP sent to that ID. Users must create a password for future logins.

#### 3.2.2 Forgot Password

If a user forgets his/her password for logging in, the user will be able to reset the login password via OTP sent to the registered IITK mail ID.

#### 3.2.3 Edit Profile

All users will be able to edit their details like profile photo and Room Number etc. However, the Roll number and Name will be linked with their official ID and can't be changed.

#### 3.2.4 Chat with other users

Users will be able to chat with other users. If the user feels that the person initiating the chat messages him something unnecessary he can report him. Messages can contain images, emojis or text.

#### 3.2.5 Comment Section

The comment section features advanced conversation management by enabling topic-based discussions with hierarchical comment structures. Users can create nested replies with indentation and dynamically collapse or expand comment threads for improved readability and engagement.

#### 3.2.6 Manage User Permissions

Users will have options to report other users if they find them spamming chat or inappropriate messages. Admins will have the authority to block that user.

#### 3.2.7 Searching Items

All users will be able to search for an item using the search bar. This search interface shall include a text input field that supports partial and full-text search.

#### 3.2.8 Add New Found Items

Users can add a new found item.

#### 3.2.9 Add New Lost Items

Users can add a new lost item.

#### 3.2.10 Filter Items

Users will be able to Filter items based on specific tags associated with the item. Moreover users can select to be shown specifically either Lost Items or Found items. The system shall dynamically update the number of available results as filters are applied. A "Clear Filters" button shall be available to reset all applied filters.

#### 3.2.11 Map Based Search

The system shall integrate a geographical map interface for spatial searching of lost and found items with a custom search area on the map.

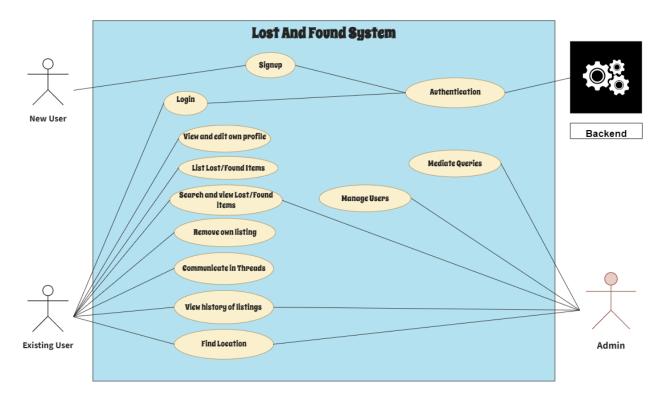
#### 3.2.12 Similar Items

The system shall implement an intelligent matching algorithm to suggest the most probable matches between lost and found items.

#### 3.2.13 Automatic Notification Generation

Whenever a new possible match is found within a given threshold a new mail will be generated and sent to the user.

# 3.3 Use Case Model



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## 3.3.1 User Registration #1

Purpose	New User Registration for students
Requirements Traceability	Name, IITK Email id of the new user, a password setup
Priority	High
Preconditions	None
Post conditions	The user will be registered on FindIIT
Actors	New User
Exceptions	<ol> <li>If the email ID is not found in the IITK domain, throw an error: "Invalid Email ID. Please use your IITK Email ID for registration."</li> <li>If the email ID is already registered, throw an error: "Email ID already registered. Please log in or reset your password."</li> </ol>
Includes	None

Notes/Issues	<ol> <li>OTP for new registration will be sent to the IITK email ID provided during registration.</li> <li>Ensure that the OTP expires after a defined time</li> </ol>
	period (e.g., 10 minutes) to enhance security.

# 3.3.2 User Login #2

Purpose	Registered User Login
Requirements Traceability	Registered email id , password
Priority	High
Preconditions	User account should be pre-registered
Post conditions	The user profile will be available to pre-registered users. They can view the profile or search/list any lost/found items.
Actors	User, Admin
Exceptions	<ol> <li>If a user account is deleted, or if a student graduates and his account is discontinued, then the system should generate an error message.</li> <li>If a new user tries to login directly before registering, the system shows an error message "User Not Found".</li> </ol>
Includes	Use Case #1
Notes/Issues	If the user forgets the password, OTP verification will be done by sending an OTP to the registered IITK email ID and the user will set a new password and log in again

# 3.3.3 Viewing Lost and Found items #3

Purpose	Searching through items to find a lost item or match with other found item
Requirements Traceability	Registered User
Priority	High
Preconditions	User must be logged in
Post conditions	The user can see all the lost and found items uploaded on webpage
Actors	User
Exceptions	None
Includes	Use Case # 2
Notes/Issues	The queries that were previously resolved can be shown on specific user prompts, and won't be displayed by default.

# 3.3.4 Communicate in the Comment Section #4

Purpose	To Chat and Confirm the Lost/Found Item
Requirements Traceability	None
Priority	Medium
Preconditions	User must be logged in and an item must be selected
Post conditions	A comment thread is generated on the topic of that item
Actors	Users
Exceptions	None
Includes	None
Notes/Issues	None
	I .

# 3.3.5 Listing Lost /Found items #5

Purpose	Listing a lost/found item on the site
Requirements Traceability	Information about the object, place where it was found/lost
Priority	High
Preconditions	User must be logged in
Post conditions	The item is listed in the site database and others can see. You can also remove a listing
Actors	User
Exceptions	None
Includes	Use Case #2
Notes/Issues	None

## 3.3.6 Find Location #6

Purpose	To check location of lost/found items
Requirements Traceability	Google Maps API
Priority	Medium
Preconditions	User must be logged in and item/items must be selected
Post conditions	User can view the items in on a map giving graphical visualisation to users about the item
Actors	Users
Exceptions	None
Includes	None
Notes/Issues	None

# 3.3.7 View History #7

Purpose	View history of listings
Requirements Traceability	None
Priority	Medium
Preconditions	Registered User must be logged in
Post conditions	Users can view all the lost/found items they listed
Actors	User
Exceptions	None
Includes	None
Notes/Issues	None

# 4 Other Non-Functional Requirements

# 4.1 Performance Requirements

#### 4.1.1 Robustness:

The system should be capable of handling a simultaneous connection of a large number of users (at least 5,000 users) even at peak times without significant degradation in performance. The server should be robust to the very high number of API Calls in peak hours and must not go down. This affects the reliability and user experience of the application.

#### **4.1.2 Latency:**

The system is required to exhibit a response within a second for any user action under standard operational conditions at least on the client side. The application must provide a clean, seamless and efficient user experience, especially during searches and message exchanges.

#### 4.1.3 Initial Loading Time:

Feed, user profiles and content should be provided by the server within 2 seconds of initiation in the events of a new session. The user must not be left staring at the loading screen for long, or else the user retention rate will dip.

#### 4.1.4 Scalability:

The software must be adaptive to the increasing user base and be ready to handle sudden large volume increases in API Queries. The software must be open to horizontal and vertical scaling - adaptive as well as manual.

# 4.2 Safety and Security Requirements

#### 4.2.1 User Data Protection:

The user data and personal records must be shielded from any kind of vulnerabilities in the software which might have accidentally crept in. The entire session the user spends on the application must not be able to be traced to the user's real identity except public activities. Their private chats must not be accessible to third parties under any circumstances.

#### 4.2.2 User Authentication:

The user account on this application must be authenticated from IITK CC ID for students, professors and other campus workers so as to restrict the user base to the IITK setting which was the founding principle for this software. This not only solves the problem of impersonation but also restricts the content on the app to be relevant to the user.

#### 4.2.3 Accountability and user experience:

The site must ensure reliable tracking and retrieval of lost items by maintaining accurate records of user interactions. Clear policies should be in place to verify ownership, prevent fraudulent claims, and hold users accountable for false reports. Admin moderation, secure authentication, and user ratings can enhance trust and responsibility in the platform. Any public activity that happens in the application like chats etc must be accountable to the user. The user experience should be shielded from spam, toxicity, negativity etc. These actions must be reportable and there must be a manual (moderators) as well as an automated method to curb them

#### 4.3 Software Quality Attributes

#### 4.3.1 Usability:

The application's interface is designed to be user-friendly, ensuring an intuitive experience for first-time users. It has an intuitive interface with easy navigation, allowing users to quickly report and search for items. Efficient search filters, smart matching algorithms, and location-based tagging will enhance effectiveness

#### 4.3.2 Portability:

The application should be portable across different devices with consistent functionality and user experience. The software must be built on cross-platform frameworks and the GUI must be responsive to the port width.

#### 4.3.3 Interoperability:

This application is designed to function smoothly alongside other applications on the device, avoiding any interruptions. When users are in the midst of uploading or searching an item they can use other applications concurrently, and return to site from the Recent screen or browser tabs seamlessly. This design guarantees the application's seamless interoperability with different device functions.

# 5 Other Requirements

#### Legal data requirements:

User data collected via the website should be stored in the country's regional data center. This is to comply with data protection and privacy rules that may be enforced by the Government of the nation.

#### Internationalization requirements:

All strings and locale-specific references from the code should be maintained in a resources file which creates the possibility of using other languages in the future.

# Appendix A – Data Dictionary

# **User Class:**

Element Name	Description	Attributes	Operations	Relationships
User	User will use the website to add lost and found queries	MailID RollNo Name Password RoomNo	post_Item remove_Post view_Profile edit_Profile chat comment view_Posts search_Posts report_Users view_Map filter_Item	The User class has many to one relationship with the admin class and one to many relationship with the Query class.

# **Admin Class:**

Element Name	Description	Attributes	Operations	Relationships
Admin	Admin will access listings and edit all and ban users as well	MailID RollNo Name Password	remove_Post view_Profile remove_Comme nts ban_Users view_Posts	The Admin class has a one to many relationship with the user class.

# **Query Class:**

Element Name	Description	Attributes	Operations	Relationships
Query	Lost or Found queries uploaded by the User. Each query has an image of the item, description, tags and Location.	ItemName Description Tags Location Time	upload_query delete_query claim	The Query class has many to one relationship with the user class.

# Appendix B - Group Log

Date	Summary of the meeting
05 January 2025	Discussion on newly proposed ideas from different domains.
07 January 2025	Expanding into deeper details of the ideas.
09 January 2025	Discussion on feasibility of ideas and shortlisting of the best.
10 January 2025	List of shortlisted ideas presented to and discussed with the Professor. Confirmed "FindIIT" as the project.
15 January 2025	More detailed discussion regarding the user requirements and system requirements.
18 January 2025	Met with our project mentor TA Hemang Mohanlal Khatri to discuss and share our ideas.
20 January 2025	Finalising on the timeline of the SRS. Division of tasks finalised.
21 January 2025 - 24 January 2025	Working on Requirement Documentation.
24 January 2025	Met with TA and finalised SRS document after some inputs and modifications given by the TA