

# LOST AND FOUND SYSTEM FOR TUNIS-CARTHAGE AIRPORT

ENHANCING PASSENGER EXPERIENCE AND  
OPERATIONAL EFFICIENCY

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# Introduction

- Tunis-Carthage Airport faces inefficiencies in Lost and Found management.
- Current manual process is time-consuming and inconvenient.
- Need for a digital solution to improve service quality.



# Motivation

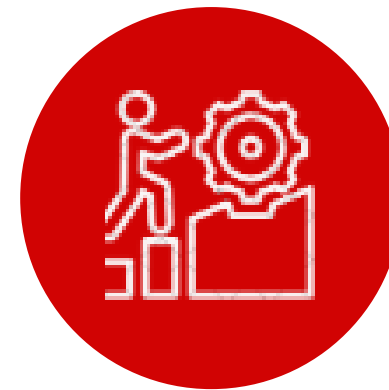
## Long Wait Times

- Long queues and multiple visits frustrate travelers.
- No transparency or real-time updates on lost items.



## Operational Challenges

- Inefficient system impacts airport operations.
- Manual processes lead to inefficiencies and errors.



## Goals

Improve passenger convenience and align services with international standards.



# Problem

## Challenges in the Current System

The existing manual Lost and Found process at Tunis-Carthage Airport is inconvenient, time-consuming, and lacks transparency, leading to passenger dissatisfaction and operational bottlenecks that hinder efficiency and customer service.

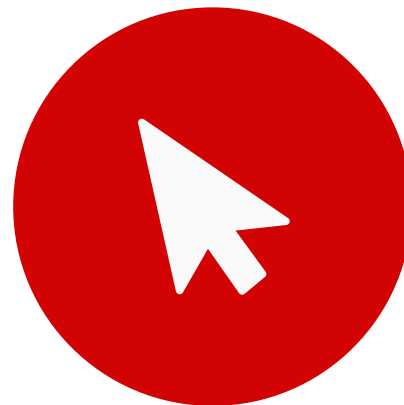
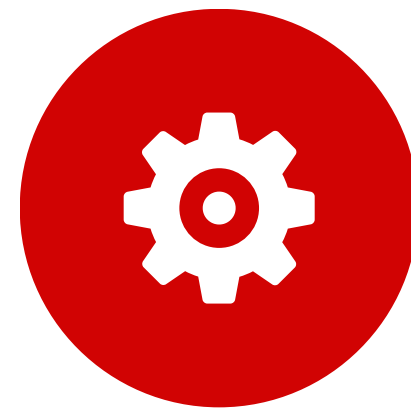
# Objectives

## Digitization

Transition the airport's outdated manual processes to a fully digital platform that simplifies reporting, tracking, and claiming lost items, ensuring seamless interactions for both passengers and staff.

## User Experience

Design a secure and intuitive interface—whether web or mobile—that prioritizes ease of use while maintaining robust data protection for passengers.



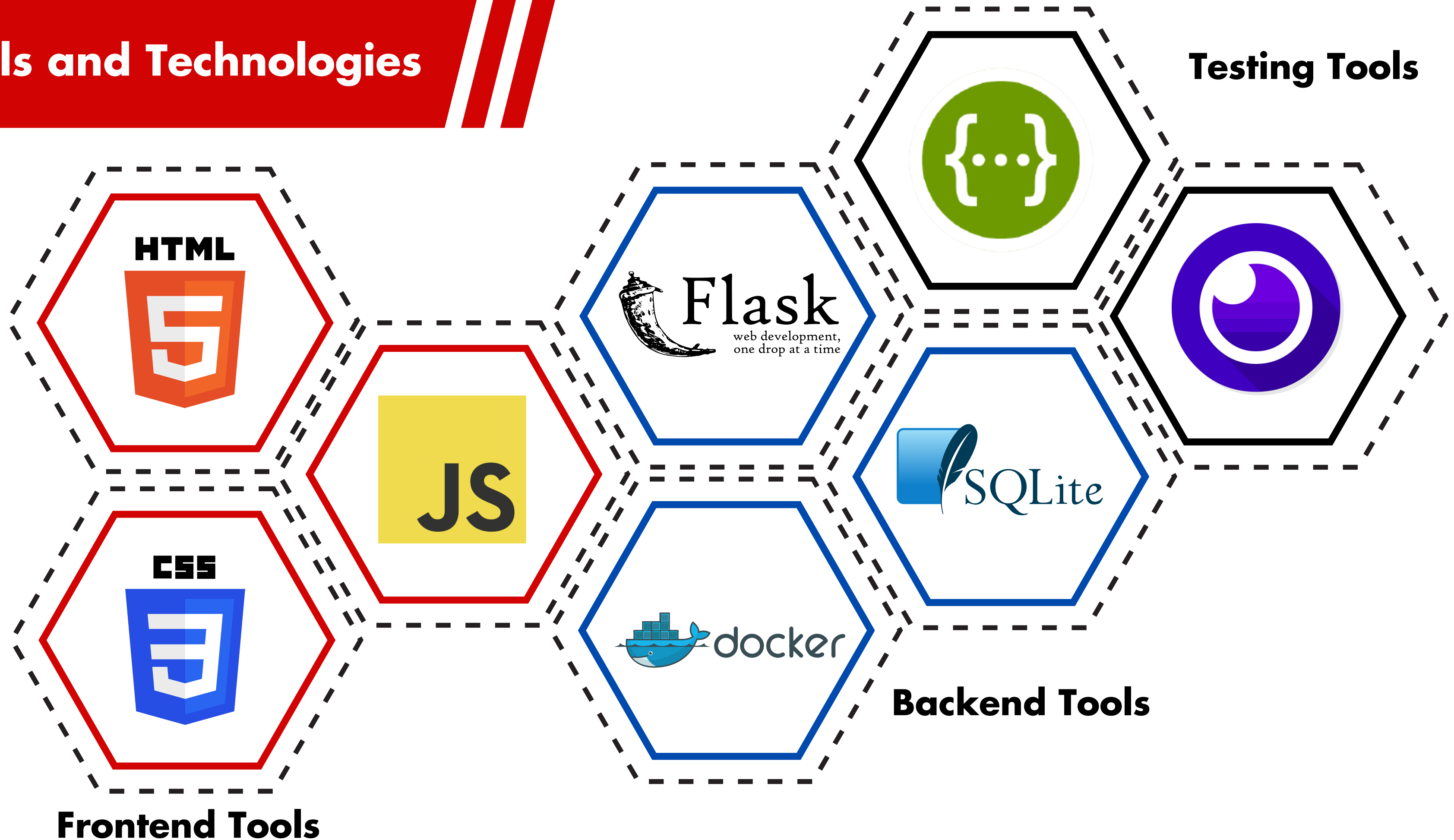
## Automation

Streamline operations by enabling passengers to self-report, search, and claim lost items online, reducing dependence on physical visits and manual paperwork.

## Transparency

Enhance service quality by providing real-time updates on the status of lost items, offering clear and accessible communication channels for passengers.

# Tools and Technologies



# Database Integration

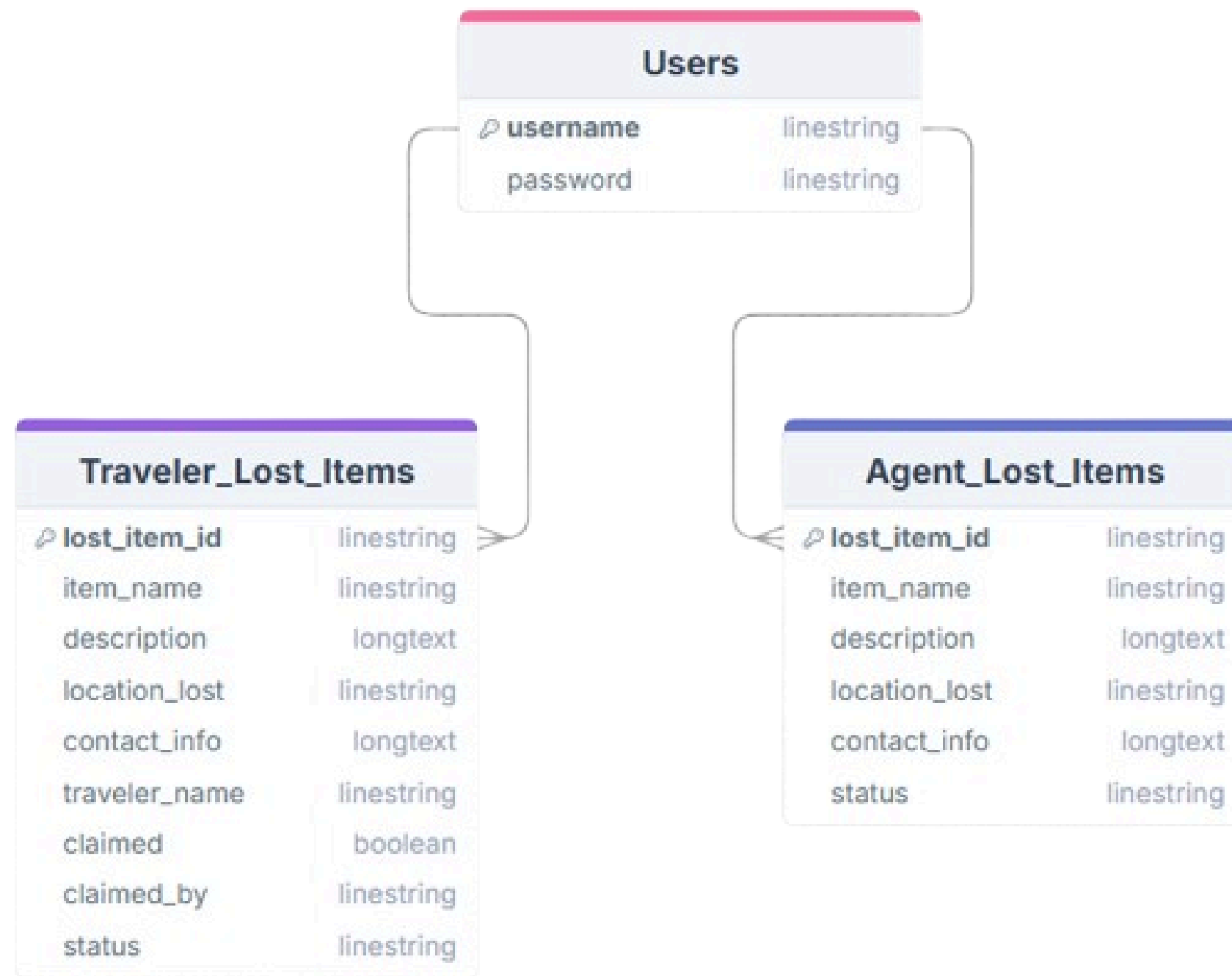


Figure 1: Database Schema of the Lost and Found Application

## Database Integration with SQLite

SQLite is a lightweight, file-based database, ideal for small-scale applications like Lost and Found management. It integrates easily with Flask and eliminates the need for a separate database server.

**SQLAlchemy** was used as an Object-Relational Mapping (ORM) for simpler database interactions.

### Key Tables:

- *traveler\_lost\_items*: Stores items reported by travelers.
- *agent\_lost\_items*: Stores items reported by agents.
- *users*: Stores user details for authentication and interaction.



# API Endpoints and Testing

## Agent Endpoints:

- Agent Register: **POST** /api/register
- Agent Login: **POST** /api/login
- Add Lost Item: **POST** /api/lost-items/report-by-agent
- Update Item Status: **PUT** /api/lost-items/{item\_id}
- Delete Lost Item: **DELETE** /api/lost-items/{item\_id}

## Traveler Endpoints:

- Traveler Register: **POST** /api/register
- Traveler Login: **POST** /api/login
- Add Lost Item: **POST** /api/lost-items/report-by-traveler
- Claim Lost Item: **POST** /api/lost-items/claim/{item\_id}

## Common Endpoints:

- Search Lost Items: **GET** /search?description={description}
- Get All Lost Items: **GET** /api/lost-items

## API Testing

Tested using Insomnia for:

- Endpoint functionality
- Data validation
- Response accuracy

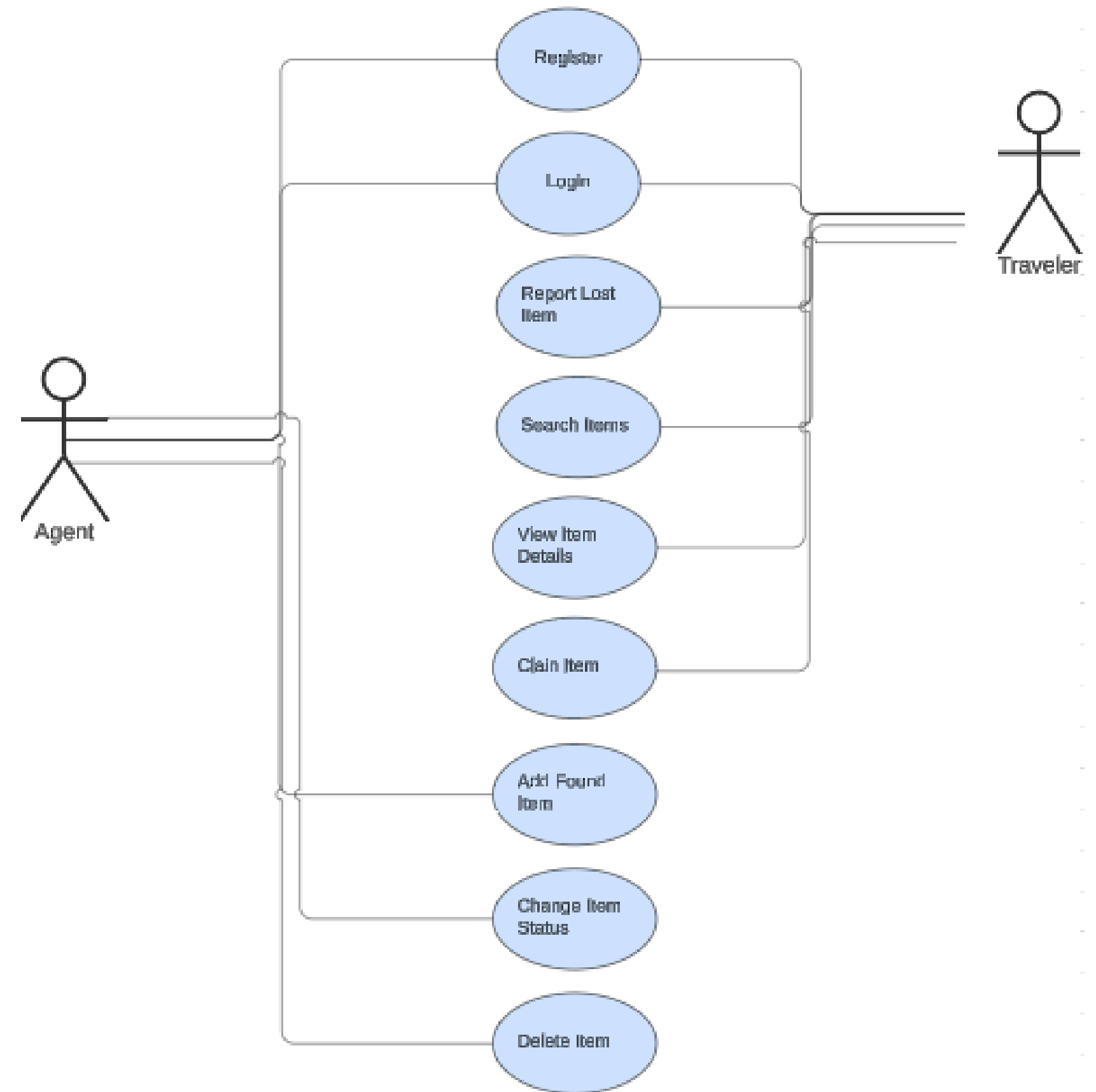
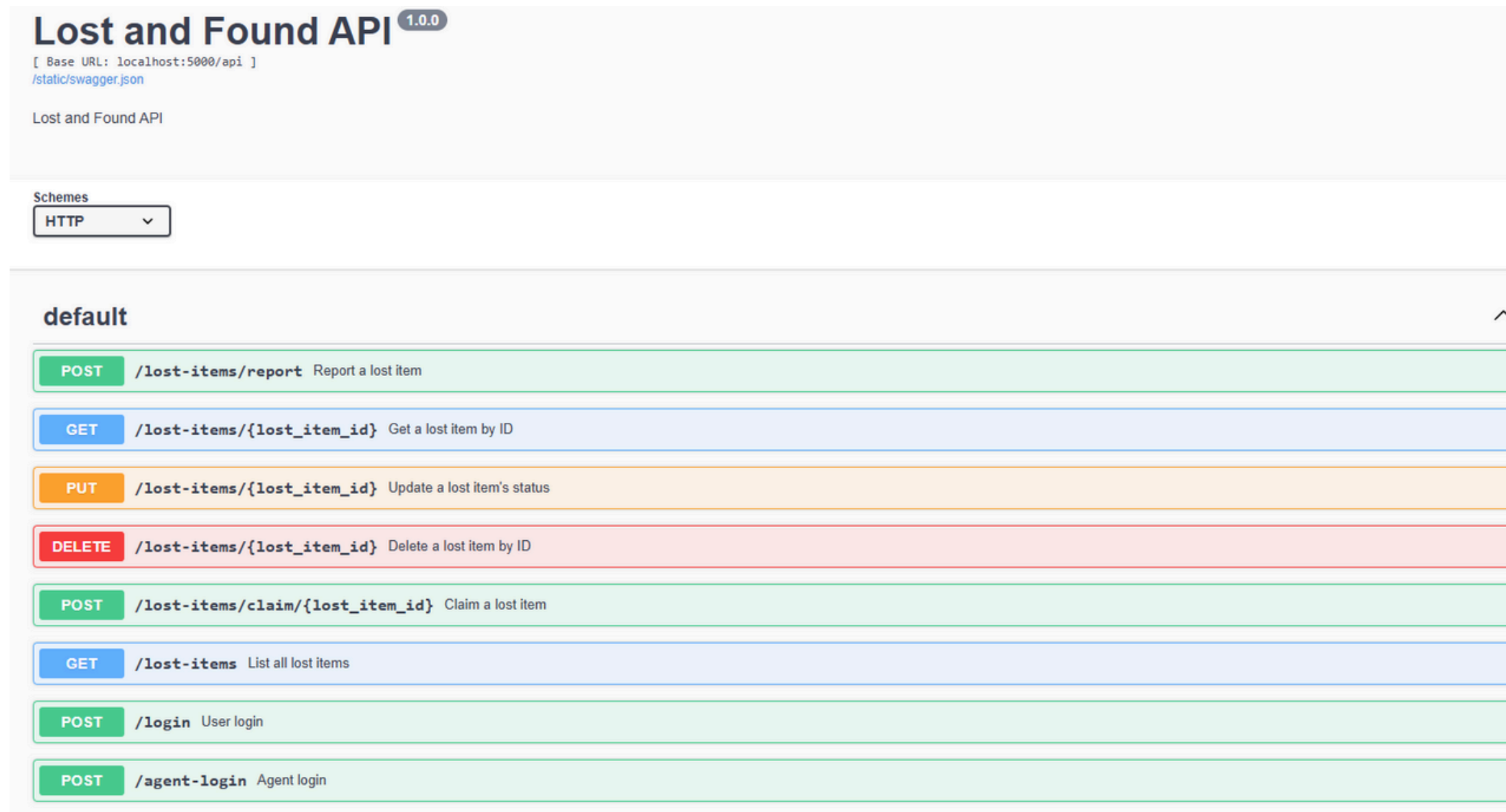


Figure 2: Use Case Diagram

## Swagger Documentation

- **Purpose:** API endpoints documented for clarity and testing.
- **Features:** Interactive testing, detailed endpoint info, and simplified backend integration.

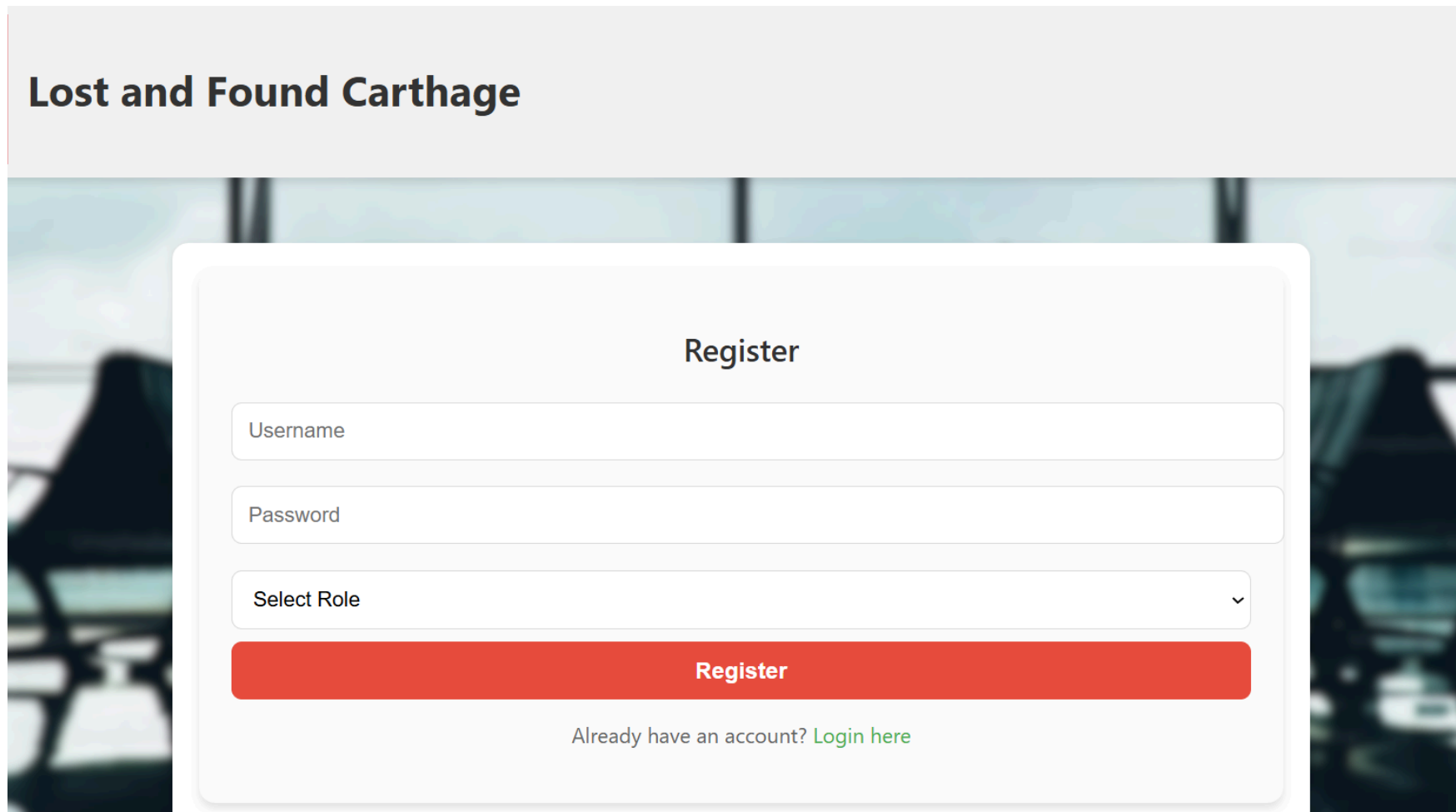


## JWT Authentication

- **Purpose:** Secure user authentication with JSON Web Tokens.
- **Features:** Access tokens for session management, refresh tokens for seamless login, and tamper-proof security.

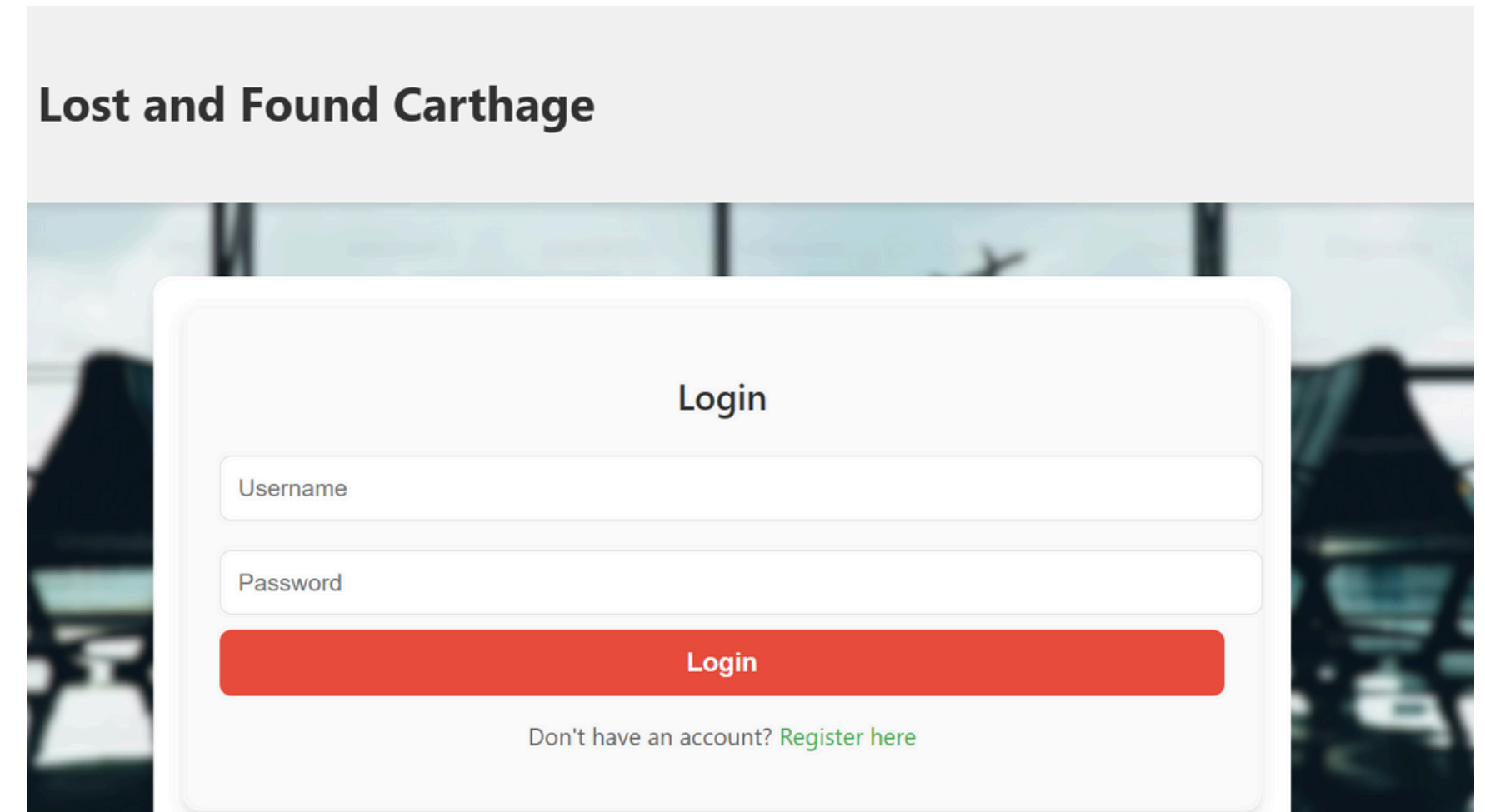
# Frontend Integration

**Technology:** Built with **HTML, CSS, and JavaScript** for a responsive, user-friendly interface.  
**Features:**



The image shows a web application titled "Lost and Found Carthage" with a background image of a car. A white "Register" form is centered on the page. The form contains three input fields: "Username", "Password", and "Select Role" (a dropdown menu). Below these fields is a red "Register" button. At the bottom of the form, there is a link that says "Already have an account? [Login here](#)".

**Register:** Users can create an account to manage their lost items.



The image shows the same web application titled "Lost and Found Carthage". A white "Login" form is centered on the page. The form contains two input fields: "Username" and "Password". Below these fields is a red "Login" button. At the bottom of the form, there is a link that says "Don't have an account? [Register here](#)".

**Login:** Secure login for users to access their website.

## Report Lost Item

Select Reporter Type

▼

Item Name

Description

Location Lost

Contact Info

Lost

▼

Submit

**Report Lost Items:** Forms for both agents and travelers to submit lost items.

## Search Lost and Found

Enter description

Search

**Search Items:** Search bar for querying lost items by description.

## Lost Items

Item Name	Description	Location Lost	Contact Info	Reporter Type	Status
Laptop	A silver MacBook Pro with a black case	Carthage Airport, Terminal 2	undefined	Traveler	Lost
PC	A silver MacBook Pro with a black case	Carthage Airport, Terminal 2	undefined	Traveler	Lost
PC	A silver MacBook Pro with a black case	Carthage Airport, Terminal 2	undefined	Traveler	Lost
Pink Purse	*	Carthage Airport, Terminal 2	undefined	Traveler	Lost
Pink Purse	*	Carthage Airport, Terminal 2	undefined	Traveler	Lost
Watch	Cartier Watch	Carthage Airport, Terminal 2	undefined	Traveler	Lost
Watch	Cartier Watch	Carthage Airport, Terminal 2	undefined	Traveler	Lost
carrier	black carrier	Carthage Airport, Terminal 2	undefined	Traveler	Lost
carrier	black carrier	Carthage Airport, Terminal 2	undefined	Traveler	Lost

**List of All Lost Items:** A comprehensive list of all reported lost items, displayed with key details like item name, description, and status.

# Future Enhancement

## Enhanced Frontend

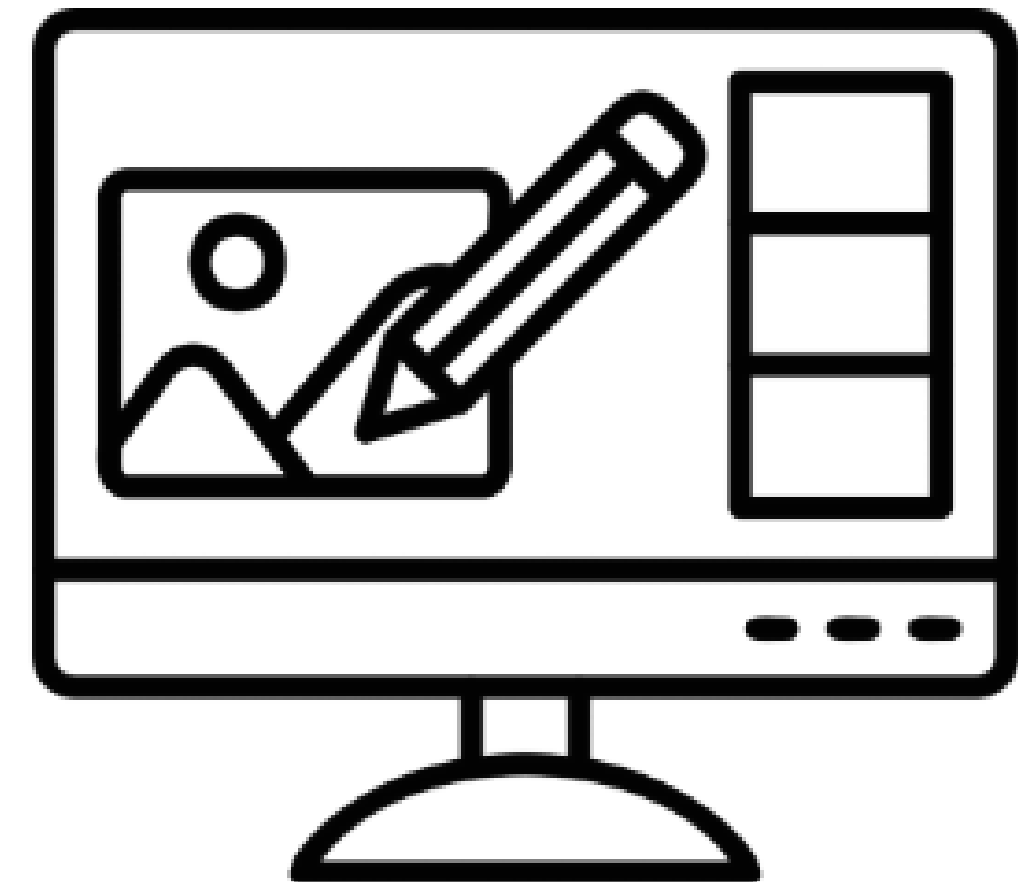
- Improve visual design and user experience.
- Add advanced filtering options for easier searches.

## Image Uploads

- Allow users to attach images of lost items.
- Enhance item identification and tracking.

## Integration with External API

- Link lost item reports to specific flights.
- Use a flight arrivals API to streamline the reporting process.
- Simplify tracking for travelers and agents.



# Conclusion

The Lost and Found API digitizes Tunis-Carthage Airport's manual lost item process, improving efficiency and passenger satisfaction. Built with Flask, SQLite, and SQLAlchemy, the system offers a user-friendly interface and secure data management. Its scalable design holds the potential to modernize lost and found operations at the Tunis airport.

THANK  
YOU

Any Questions?

