Food Allergy Management System

A COURSE PROJECT REPORT

by

Meenakshi Gayathri.S (RA2111029010009)

Under the guidance of

Dr. M. Safa

In partial fulfilment for the course

18CSC303J – Database Management System

In

School of Computing

FACULTY OF ENGINEERING AND TECHNOLOGY

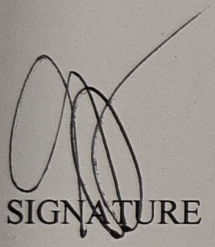
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

Kattankulathur, Chengalpattu District

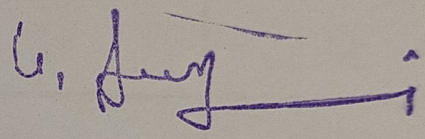
MAY 2024

BONAFIDE CERTIFICATE

Certified that course project report titled "FOOD ALLERGY DATABASE MANAGEMENT SYSTEM" is the bonafide work of **MEENAKSHI GAYATHRI.S (RA2111029010009)** who carried out the minor project under my supervision. Certified further, that to the best of my knowledge, the work reported herein does not form any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.



SIGNATURE
Dr. Safa M
Assistant Professor
Department of Networking and Communication



SIGNATURE
Dr. Annapurani K
Professor and Head
Department of Networking and Communication

ACKNOWLEDGEMENT

We extend our sincere gratitude to our esteemed mentor, **Dr. M. Safa**, for her invaluable guidance and unwavering support throughout the development of our project on the topic "**Food Allergy Database Management System**." Her profound expertise and insightful feedback have been instrumental in shaping our project and enhancing our understanding of the subject matter. We are deeply grateful for the opportunity she provided us to delve into this fascinating area of study.

We would also like to express our heartfelt appreciation to all the faculty members, both teaching and non-teaching, of our department for their constant encouragement and assistance.

Furthermore, we extend our thanks to our friends and peers whose collaboration and encouragement have been invaluable in completing this project within the stipulated timeframe. Their camaraderie and support have truly enriched our learning experience.

This project represents not only an academic endeavour but also a journey of personal growth and knowledge expansion, and we are grateful to everyone who has contributed to its realization.

-Meenakshi Gayathri.S

(RA2111029010009)

INDEX

CHAPTER – 1 INTRODUCTION

1.1 Overview

A software programme called the Food Allergy Management System makes it easier for people to track and manage their food allergies. Users may enter and retain information about their allergies, including the allergens they are sensitive to, on this platform. Users may effortlessly access and update their allergy profiles through the system, guaranteeing that current and correct information is always available for consultation. The system also has capabilities that let medical professionals access patient allergy data, which helps with emergency response and medical decision-making. The Food Allergy System strives to enhance the quality of life for people with food allergies by encouraging awareness, safety, and proactive treatment of allergic responses through its user-friendly interface and extensive capabilities.

1.2 Backend Development with MySQL

The backend of the Food Allergy Management System is primarily responsible for data storage, retrieval, and management. MySQL serves as the backend database management system, providing a robust and reliable platform for storing vast amounts of data related to flights, passengers, staff, and airport facilities. SQL queries are utilized to interact with the database, enabling efficient data manipulation and retrieval. MySQL's scalability, performance, and adherence to SQL standards make it an ideal choice for managing the backend of the FAMS.

1.3 Frontend Development with Tkinter

The frontend of the Food Allergy Management System is developed using the Tkinter library of Python. Tkinter is a powerful and user-friendly GUI toolkit that allows developers to create interactive and visually appealing interfaces for their applications. With Tkinter, various widgets and tools are available to design intuitive user interfaces, including buttons, labels, entry fields, and more. The use of Tkinter ensures that the AMS has a responsive and user-friendly interface that meets the needs of airport staff and administrators.

1.4 Advantages of Python Tkinter and MySQL

- Tkinter provides a simple and intuitive interface for building GUI applications, allowing developers to create visually appealing and interactive user interfaces with ease.
- Tkinter is platform-independent, meaning that the AMS can run on different operating systems without modification, enhancing its accessibility and usability.
- MySQL offers robust data management capabilities, including support for transactions, indexing, and data integrity constraints, ensuring the reliability and consistency of data stored in the backend.
- MySQL is highly scalable, allowing the AMS to handle large volumes of data efficiently as the airport grows and expands its operations.
- Python's integration with MySQL through libraries such as pymysql enables seamless interaction between the frontend and backend components of the AMS, facilitating data exchange and manipulation.

CHAPTER – 2 FEATURES & OBJECTIVES

2.1 Introduction

The Food Allergy Management System is a comprehensive software solution designed to address the complex challenges associated with managing food allergies. With an intuitive user interface, this system allows individuals to input and maintain their allergy information with ease. Users can specify the allergens they are sensitive to and update their profiles as needed, ensuring that accurate information is readily available. Moreover, healthcare providers can access patient allergy profiles, enabling them to make informed decisions and provide timely medical interventions in case of emergencies. By promoting awareness, safety, and proactive management of allergic reactions, the Food Allergy Management System aims to enhance the quality of life for individuals with food allergies while improving overall healthcare outcomes.

2.1.2 Main Features

1. User Profiles
2. Allergen Tracking
3. Allergy Alerts
4. Healthcare Provider Access
5. Data visualisation

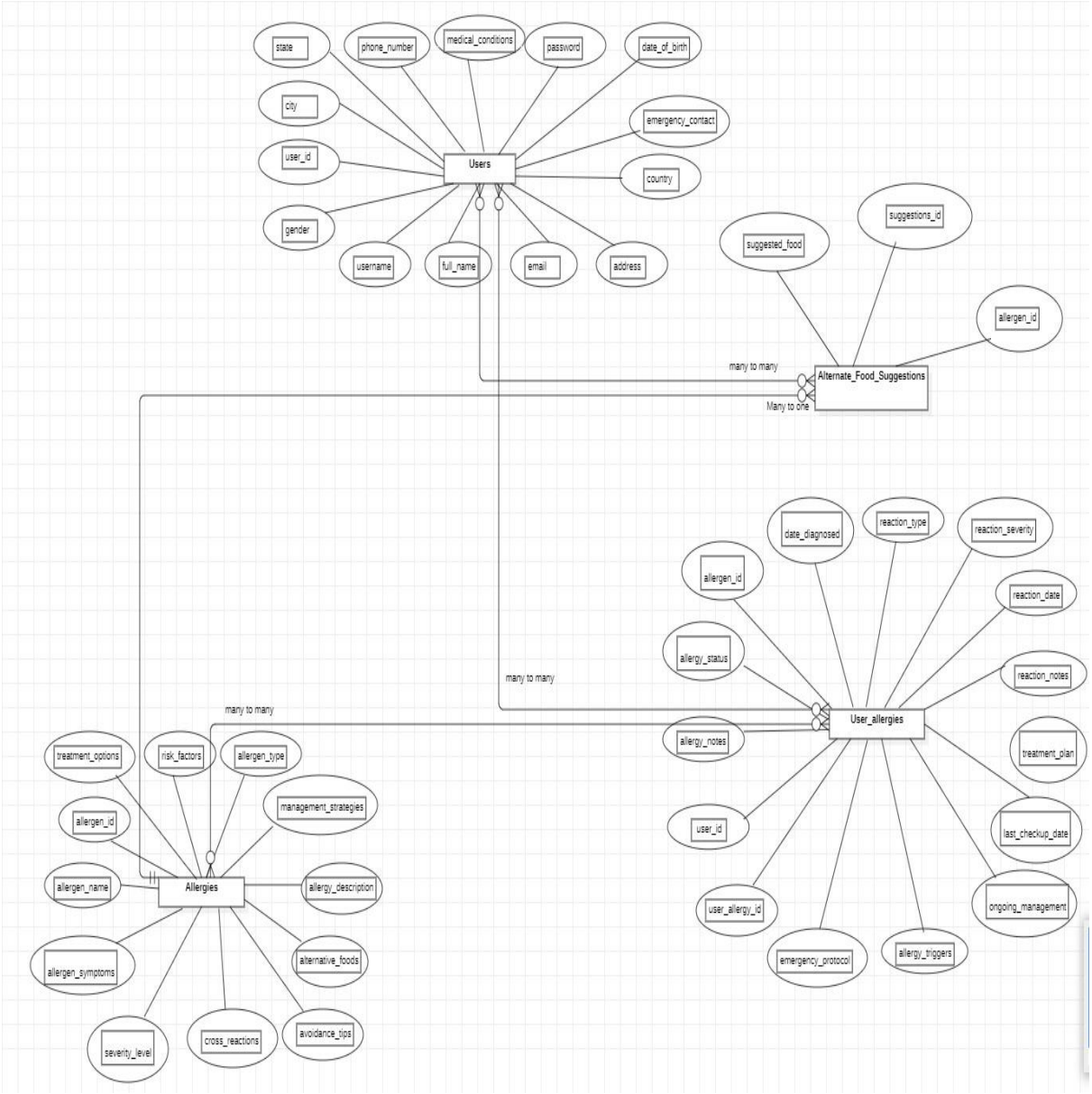
2.1.3 Objectives

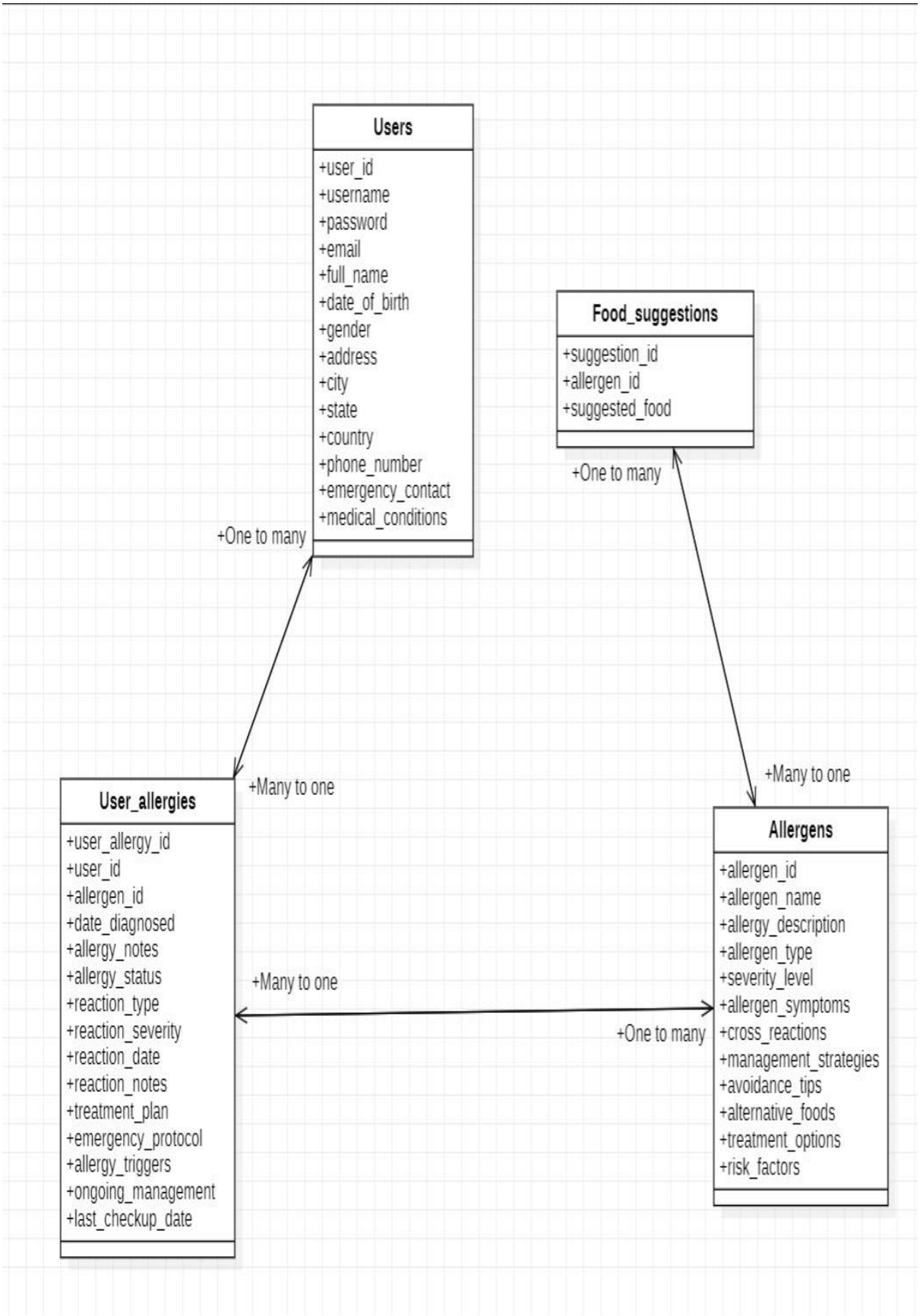
1. Allergen Identification.
2. Allergy Tracking
3. Alert System
4. Medical collaboration
5. Emergency preparedness

CHAPTER – 3

BACK-END DESIGN

3.1 Conceptual Database Design (ER Diagram and Relational database)




Users
+user_id
+username
+password
+email
+full_name
+date_of_birth
+gender
+address
+city
+state
+country
+phone_number
+emergency_contact
+medical_conditions
Food_suggestions
+suggestion_id
+allergen_id
+suggested_food
+One to many
+One to many
+Many to one
User_allergies
+user_allergy_id
+user_id
+allergen_id
+date_diagnosed
+allergy_notes
+allergy_status
+reaction_type
+reaction_severity
+reaction_date
+reaction_notes
+treatment_plan
+emergency_protocol
+allergy_triggers
+ongoing_management
+last_checkup_date
+Many to one
+Many to one
+One to many
Allergens
+allergen_id
+allergen_name
+allergy_description
+allergen_type
+severity_level
+allergen_symptoms
+cross_reactions
+management_strategies
+avoidance_tips
+alternative_foods
+treatment_options
+risk_factors

FRONT-END DESIGN

3.1 Introduction

The front-end design of the Food Allergy Management System (FAMS) serves as the user-facing interface through which users interact with the system. This chapter provides insights into the front-end web development technologies utilized in the FAMS, focusing on the integration of Tkinter Python for GUI development and MySQL for database connectivity.

3.2 Front-End Web Development Details

Tkinter is a built-in Python library used for creating graphical user interfaces (GUIs). It provides a set of widgets and tools for designing interactive and visually appealing interfaces for desktop applications. In the AMS, Tkinter Python is leveraged to create windows, buttons, labels, entry fields, and other GUI components, allowing users to navigate the system seamlessly and perform various tasks with ease.

3.3 Connectivity (Front End and Back End)

3.3.1 MySQL Database Connectivity

MySQL serves as the backend database management system for the Food Allergy Management System, storing and managing data related to users, allergies and food suggestions. Through the integration of MySQL with Tkinter Python, the AMS facilitates seamless data retrieval, storage, and manipulation, ensuring accurate and efficient management of airport operations.

3.3.2 Python Integration

Python serves as the bridge between the front-end Tkinter GUI and the backend MySQL database, orchestrating the flow of data between the two components. Python scripts interact with the MySQL database to fetch and update information based on user input from the Tkinter interface, enabling real-time data synchronization and manipulation.

CHAPTER – 4 OUTPUT

4.1 Login Page

4.2 Registration Page

4.3 Allergy Details Page

4.4 Food Suggestion table display

CHAPTER – 5

MODULES

1. **Login** – Responsible for logging into the FAMS

2. **Registration** – Responsible for Registering the User Credentials into the database

3. **Allergy details** – Users enter their respective allergies and the symptoms

4. **Food Suggestion Table** – Based on the keywords in the allergy details the alternate food suggestion for an allergen is displayed

APPLICATIONS

Healthcare Facilities:

Hospitals, clinics, and medical centres can use a food allergy database to keep track of patients' allergies. This helps medical professionals make informed decisions when prescribing medication, planning diets, or providing treatment.

Schools and Daycares:

Educational institutions can utilize a food allergy database to ensure the safety of students with allergies. By maintaining a centralized record of students' allergies, school staff can prevent accidental exposure to allergens in meals and snacks provided on campus.

Restaurants and Food Service:

Restaurants and food service establishments can benefit from a food allergy database to accommodate customers with allergies. By storing information about common allergens in menu items and ingredient lists, restaurants can provide accurate allergen information to patrons and offer alternative options when necessary.

Food Manufacturers:

Food manufacturers can employ a food allergy database to comply with labeling regulations and ensure product safety. By maintaining detailed records of allergenic ingredients and potential cross-contamination risks, manufacturers can accurately label their products and minimize the risk of allergic reactions among consumers.

Research and Public Health:

Researchers and public health agencies can use a food allergy database to study allergy trends, identify risk factors, and develop strategies for allergy prevention and management. By analyzing data on allergen prevalence, demographic factors, and clinical outcomes, researchers can improve understanding of food allergies and inform public health policies and interventions.

CONCLUSION

Healthcare Sector:

Patient Management: Healthcare providers can use the system to maintain records of patients with food allergies, including their allergens, symptoms, medical history, and treatment plans. This enables personalized care and efficient management of allergic reactions.

Allergen Identification: Healthcare professionals can access the database to identify common allergens and cross-reactivity patterns, facilitating accurate diagnosis and treatment.

Research and Analysis: Researchers can analyze data from the database to identify trends, risk factors, and emerging allergens, leading to advancements in allergy management and prevention.

Food Industry:

Product Development: Food manufacturers can utilize the database to develop allergy-friendly products by identifying allergens and potential substitutes. This promotes inclusivity and expands market reach.

Labelling Compliance: Food companies can ensure compliance with labeling regulations by referencing the database to accurately label allergens and provide clear information to consumers.

Supply Chain Management: The system aids in managing the supply chain by tracking allergen-containing ingredients, ensuring proper handling, and preventing cross-contamination during production.

Hospitality and Food Service:

Menu Planning: Restaurants and catering services can use the database to plan menus that cater to customers with food allergies, offering safe and enjoyable dining experiences.

Staff Training: Training programs can be developed based on the information in the database to educate staff members about food allergies, cross-contact prevention, and emergency response protocols.

BIBLIOGRAPHY

It has been a matter of immense pleasure, honour and challenge to have this opportunity to take up this project and complete it successfully.

I have obtained the required information from various sources to design and implement the project. I have acquired most of the knowledge from the Internet.

The following are the resources –

1. Python Software Foundation. "Tkinter - Python Interface to Tcl/Tk." Python Software Foundation, https://docs.python.org/3/library/tkinter.html.

2. MySQL. "MySQL :: MySQL Community Downloads." MySQL, https://dev.mysql.com/downloads/

3. Oracle. "MySQL :: MySQL Documentation." MySQL, https://dev.mysql.com/doc/