Fitness App – A Personalised Health & Wellness Tracker

ON

Submitted in partial fulfilment of the requirements for
the degree of

Bachelor of Engineering

(Information Technology)

By

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Under the guidance of

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Institute of Technology
(Autonomous Institute Affiliated to University of Mumbai, Approved by AICTE & Recognised by Govt. of Maharashtra)
NAAC accredited with 'A' grade

April 2024

Certificate

This is to certify that project entitled

"FitTrack: Personalised Fitness Tracker"

Group Members Names

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In fulfillment of degree of BE. (Sem.VI) in Information Technology for Project is approved.

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Principal

Date:08 /04 /2025
Place: VESIT, Chembur

Declaration

I declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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(Signature)

Omkar Gholap- (17)

Abstract

Abstracts contain most of the following kinds of information in brief form. The body of your paper will, of course, develop and explain these ideas much more fully. As you will see in the samples below, the proportion of your abstract that you devote to each kind of information—and the sequence of that information—will vary, depending on the nature and genre of the paper that you are summarizing in your abstract. And in some cases, some of this information is implied, rather than stated explicitly. The Publication Manual of the American Psychological Association, which is widely used in the social sciences, gives specific guidelines for what to include in the abstract for different kinds of papers—for empirical studies, literature reviews or meta-analyses, theoretical papers, methodological papers, and case studies.

Keywords-*literature, theoretical, methodological, include, Publication*

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ACKNOWLEDGEMENT

The project report on *"Fitness App – A Personalized Health & Wellness Tracker"* is the result of consistent effort, dedicated research, and the unwavering support and guidance we received throughout the development process. We express our deepest gratitude to Dr. (Mrs.) Shalu Chopra (HOD), Dr. (Mr.) Manoj Sabnis (Deputy HOD), and Prof. Bharati Raut for their invaluable inputs, continuous encouragement, and expert mentorship which played a crucial role in shaping this project. We are also thankful to Vivekanand Education Society's Institute of Technology for providing a stimulating academic environment, access to essential resources, and a supportive platform for practical learning and innovation. This project stands as a reflection of the collective knowledge, collaboration, and inspiration provided by our esteemed faculty and institution.

CHAPTER: 1 INTRODUCTION

Chapter 1

Introduction

1.1. Introduction

The Fitness App is a web-based initiative designed to support individuals in achieving their health and wellness goals through personalized tracking. Users can monitor their calorie intake, exercise routines, and daily progress, while the system offers real-time feedback and goal management. This platform combines intuitive design with powerful functionality, promoting a healthier lifestyle through self-awareness and data-driven insights.

1.2. Objectives

- Provide a seamless user experience for calorie and fitness tracking.
- Enable secure user authentication and profile management.
- Support logging of daily food intake and exercises.
- Offer dynamic goal setting and progress monitoring features.
- Ensure data privacy and system security.

1.3. Motivation

The growing concern over lifestyle-related health issues has created a demand for accessible, digital tools that encourage healthy habits. This Fitness App was inspired by the desire to help individuals take control of their health through informed choices and consistent tracking, using modern web technologies to provide a reliable and user-friendly experience.

1.4. Scope of the Work

The platform includes:

- Role-based authentication and secure login system
- User dashboards with food and exercise logs
- Calorie goal setting and daily progress tracking
- Integration of health formulas for calorie estimation
- OTP-based verification for account security
- Responsive and interactive UI supporting mobile and desktop devices

1.5. Feasibility Study

1. Technical Feasibility:
   - Built using React (frontend), Flask (backend), and MongoDB (database), offering scalability and flexibility.
2. Economic Feasibility:
   - Developed using open-source technologies, significantly reducing cost and dependency on commercial tools.
3. Operational Feasibility:
   - Successfully implemented and tested within an academic environment with positive user interaction results.

1.6. Organization of the Report

• Chapter 1 introduces the project with motivation, objectives, scope, and feasibility.
• Chapter 2 provides a literature survey of related applications and background technologies.
• Chapter 3 outlines the design process, architecture, and implementation.
• Chapter 4 presents results, outputs, and interface screenshots.
• Chapter 5 concludes the work and discusses future improvements.

CHAPTER: 2: LITERATURE

SURVEY

Chapter 2

Literature Survey

2.1. Introduction

The literature survey for the Fitness App explores research on health monitoring technologies, fitness tracking systems, and the adoption of scalable, secure web applications in personal health domains. By analyzing scholarly articles, case studies, and modern implementations, this section highlights the foundational concepts, gaps in current fitness solutions, and innovations that inform the development of a user-centric, real-time fitness tracking platform.

2.2. Problem Definition

With an increasing number of individuals seeking to improve or monitor their health independently, there is a need for digital tools that are intuitive, secure, and personalized. Existing fitness platforms often present challenges such as steep learning curves, limited customization, reliance on subscriptions, and lack of integration across devices. This Fitness App tackles these problems using a modular architecture powered by React (frontend), Flask (backend), and MongoDB (database) to deliver a responsive, reliable, and data-driven user experience.

2.3. Review of Literature Survey

- *"Gamification and Personalization in Fitness Applications", by L. Mehta and S. Krishnan, Journal of Digital Health Technologies, 2021, highlights how gamification elements and personalized goal setting enhance user engagement. This influenced the Fitness App's dynamic calorie goal system and progress feedback mechanisms. [1]*

- *"Nutrition and Fitness Tracking: A Data-Driven Approach", by R. Desai and M. Jain, 2022, International Journal of Health Informatics, evaluates existing tracking apps and emphasizes the importance of real-time logging and historical trend visualization—features incorporated into the Fitness App dashboard. [2]*

- *"Secure User Authentication in Health Portals", by A. Kulkarni and D. Shah, Cybersecurity & Ethics in Healthcare, 2023, promotes the use of OTP-based logins, token-based authentication, and secure storage for personal data. These principles guided the use of JWT and email OTP in the app. [3]*

- *"Comparative Study of MERN and Flask-based Architectures", by N. Sharma and T. Bhosale, Web Dev Journal, 2022, finds Flask suitable for API-centric fitness apps requiring modular development and clear REST endpoints. This supported the decision to use Flask alongside MongoDB. [4]*

- *"User Experience in Mobile Health Applications", by V. Thomas and P. Shinde, UX Design Review, 2021, stresses the role of responsive and accessible UIs in increasing adoption. The Fitness App reflects these learnings through its mobile-friendly interface and component-based React UI. [5]*

CHAPTER: 3 DESIGN AND

IMPLEMENTATION

Chapter 3

Design and Implementation

3.1. Introduction

The Fitness App project was developed using a modular, component-based architecture with a clear separation of frontend and backend concerns. Agile methodology was followed throughout the development cycle, incorporating frequent iterations, testing, and feedback to ensure feature completeness and usability.

3.2. Requirement Gathering

Key functional requirements included:

- Secure user authentication with OTP-based login
- Calorie goal setup and tracking
- Daily logging of food and exercise activities
- Dashboard view with visual progress indicators
- Real-time calorie calculation using standard health formulas

Tools and technologies used:

- Frontend: React, Tailwind CSS
- Backend: Flask (Python)
- Database: MongoDB Atlas
- Others: JWT, Nodemailer, Postman, Git, GitHub, VS Code

3.3. Proposed Design

The system is structured into the following pages/modules:

- Home Page – Entry point with application introduction and login navigation
- Login/Signup Page – Secure access through OTP-based authentication
- Dashboard – Displays total intake, calories burned, and balance calories
- Food Log Page – Allows users to log food and view caloric values

- Exercise Log Page – Enables users to record physical activities
- Goal Setting Page – Dynamic daily calorie goal configuration
- User Profile Page – Manages personal and health data for accurate tracking

3.4. Proposed Algorithm

Step 1: Start

Step 2: User signs up or logs in with email OTP

Step 3: Dashboard renders with current date's tracking summary

Step 4: User sets or updates daily calorie goal

Step 5: User logs food items with corresponding calories

Step 6: User logs exercises with burned calories

Step 7: System calculates balance calories and displays feedback

Step 8: Data is stored and reflected in visual dashboard

Step 9: User logs out

Step 10: Exit

3.5. Architectural Diagrams

3.5.1. UML Diagram

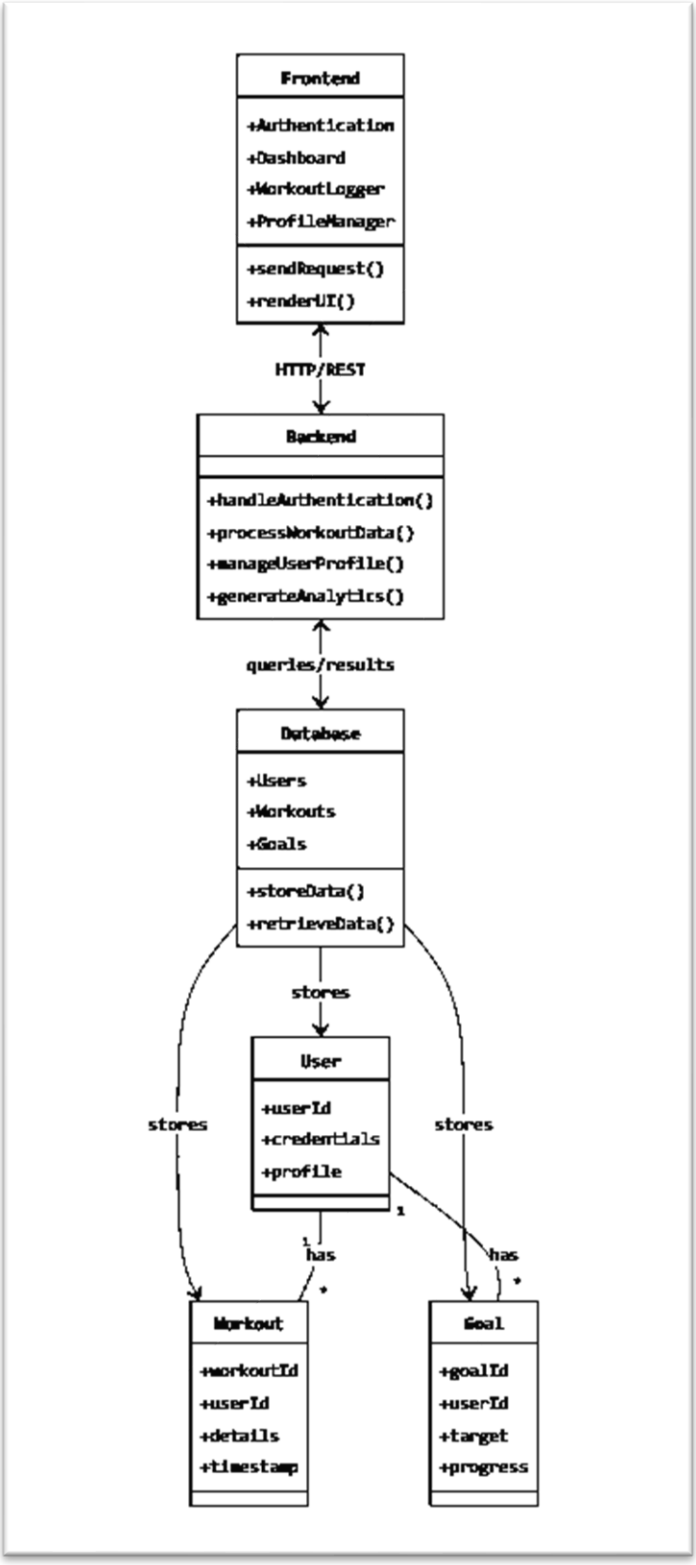


Figure 3.1: UML

3.5.2. Data Flow Diagram

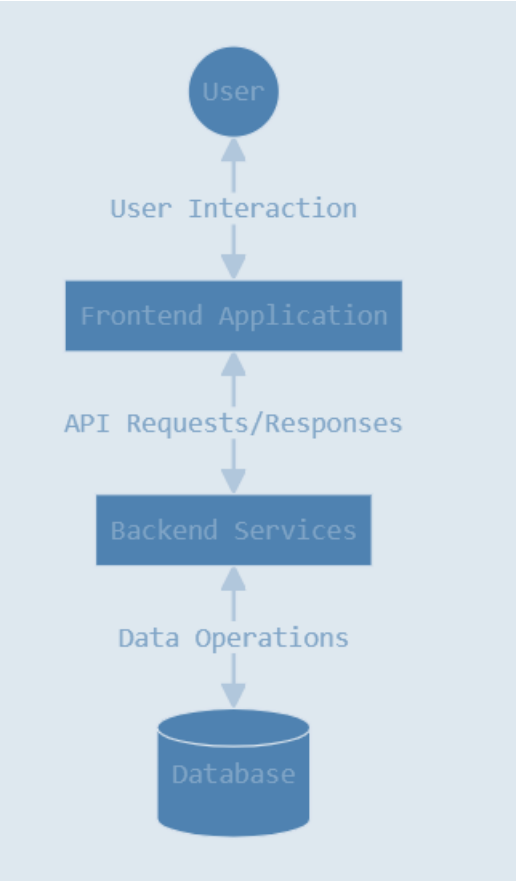


Figure 3.2: Data Flow Diagram

3.6. Hardware Requirements

- **Device Used:** Laptop
- **Processor:** Intel Core i5 (Quad-Core)
- **RAM:** 8 GB
- **Usage:** Suitable for initial development and testing

3.7. Software Requirements

- **Operating System:** Windows 11 64-bit
- **Frontend:** Angular
- **Backend:** Python 3.11+ with Flask
- **Package Manager:** Node.js v18.16.1 (with npm)
- **Database:** MongoDB Atlas (Cloud-based NoSQL)
- **Code Editor:** Visual Studio Code (VS Code)
- **Version Control:** Git & GitHub for collaboration and code management

3.8. Code

GITHUB LINK - https://github.com/omkarlovesdebugging/Fitness-Tracker/tree/main

CHAPTER: 4 RESULTS AND

DISCUSSION

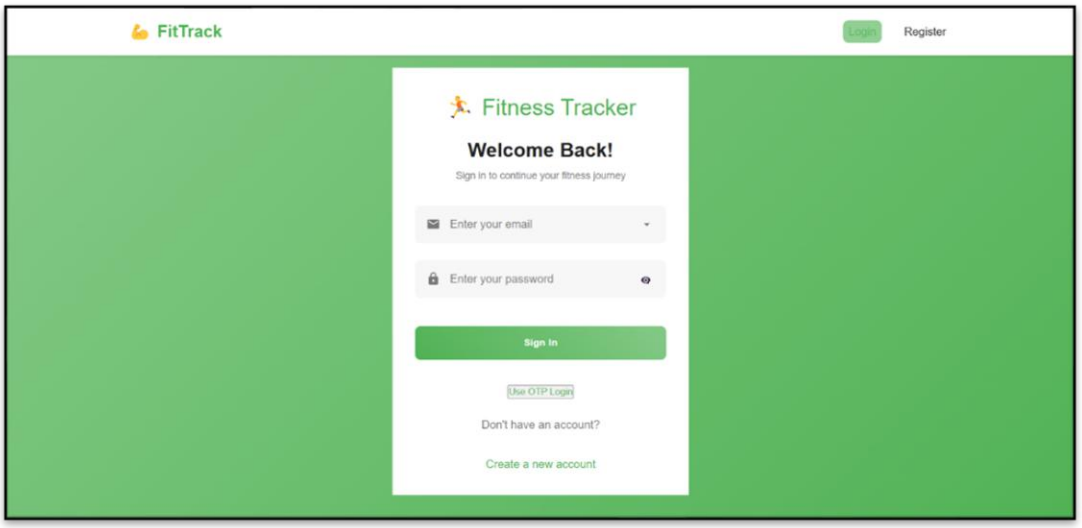
Chapter 4

Results and Discussion

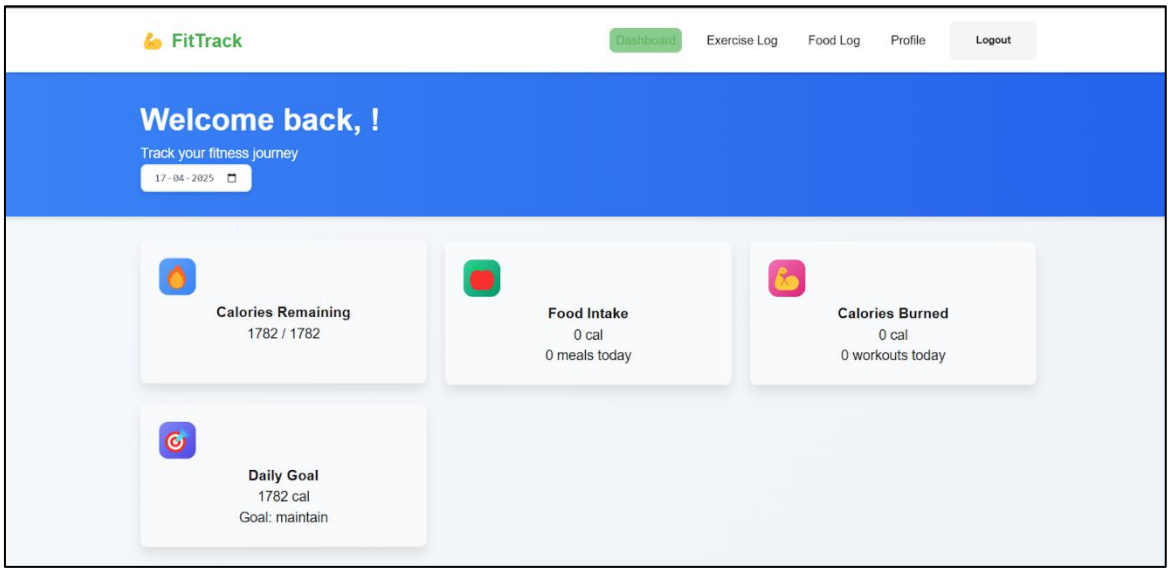
4.1. Introduction

This chapter documents the major outputs and screens of the FitTrack project.

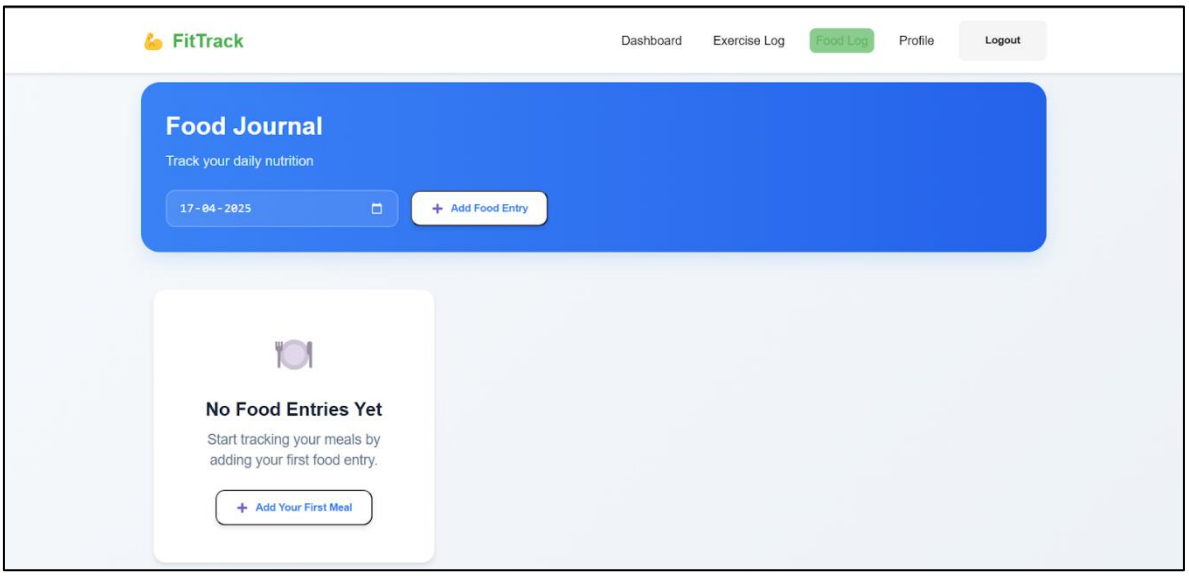
4.2. Results of Implementation



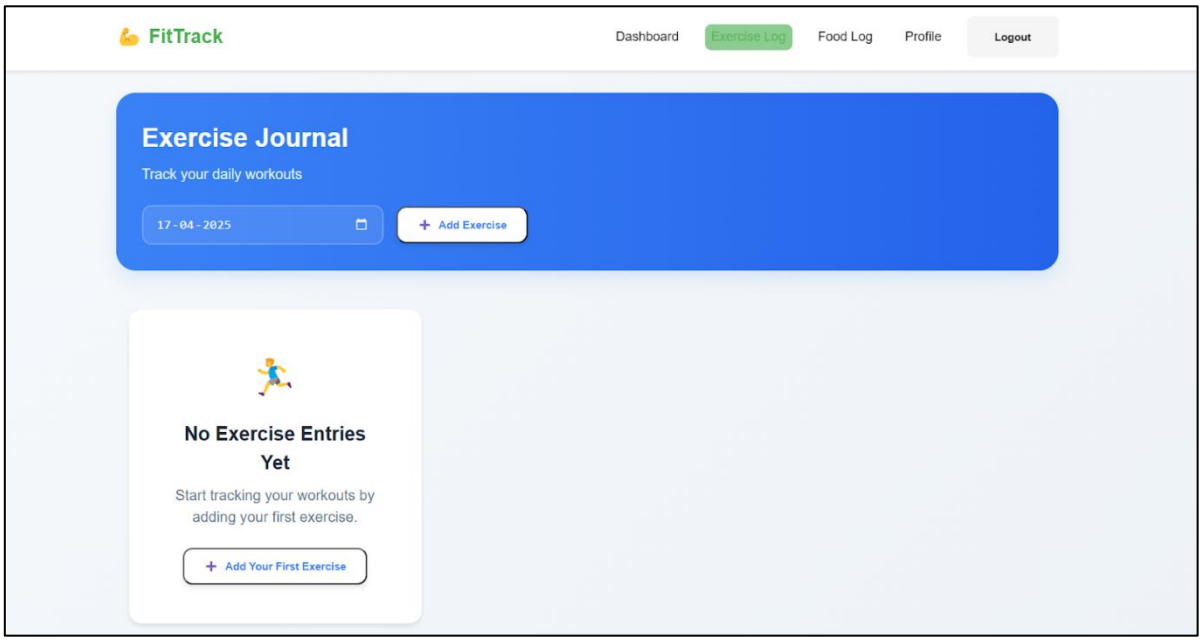
4.1 Login Page (OTP feature included)



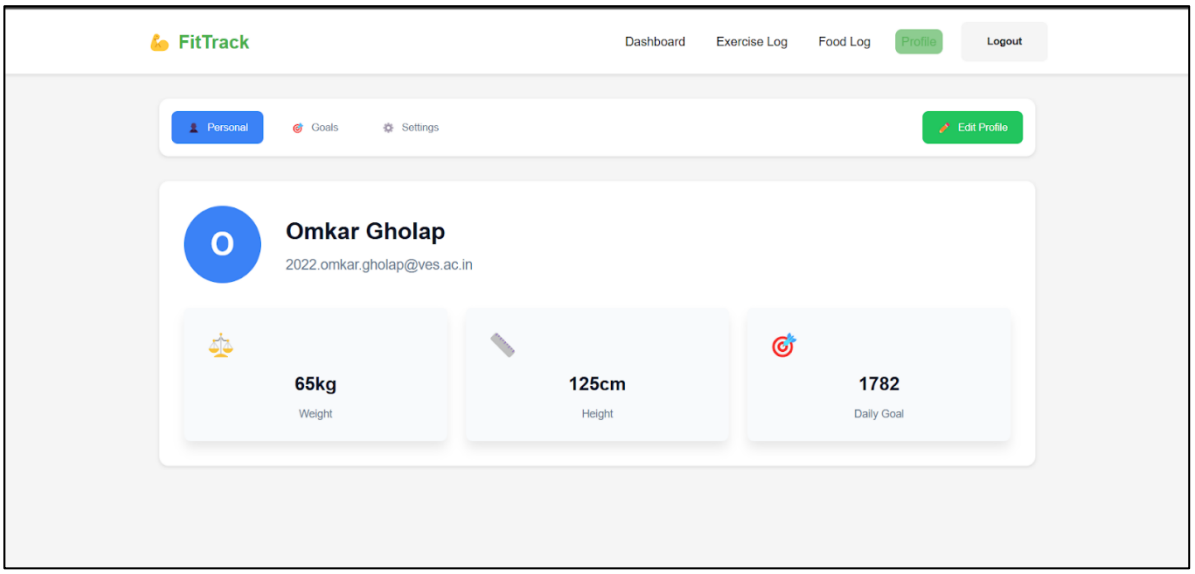
4.2 Dashboard



4.3. Food log (Can add the daily food consumption)



4.4. Exercise log



4.5. Profile Page

4.3. Observation/Remarks

The Fitness App has demonstrated itself as a practical and user-centric full-stack web application aimed at promoting healthier lifestyle choices. Its strengths lie in a modular design, responsive interface, and the seamless integration of modern technologies such as Flask for backend APIs, React for dynamic frontend rendering, and MongoDB Atlas for secure, scalable data management.

With its intuitive UI and robust feature set, the system effectively simulates a real-time health monitoring tool. It enables users to set goals, track calorie intake and exercise, and receive immediate feedback based on logged data. The application reflects best practices in RESTful API development, secure OTP-based authentication, and real-time data updates.

The use of personalized calorie goals, JWT-based sessions, and responsive dashboard elements reflects a strong understanding of user needs and modern web development practices—ensuring that the application is not only functional but also engaging and accessible for a broad user base.

CHAPTER: 5 CONCLUSION

Chapter 5

Conclusion

5.1. Conclusion

The Fitness App project demonstrates the effective application of modern web technologies to build a responsive, real-time health and wellness tracking platform. Its strengths lie in a modular architecture, intuitive user interface, and strong integration between React, Flask, and MongoDB Atlas. By allowing users to set fitness goals, track calorie intake and burned calories, and monitor daily progress, the project successfully promotes self-awareness and healthier lifestyle habits.

Throughout its development, the project applied key software engineering principles such as secure user authentication, RESTful API design, responsive layout, and real-time data interaction. Features like dynamic goal tracking, OTP-based login, and visual dashboard feedback reflect a user-focused design approach tailored for accessibility and engagement.

Overall, the Fitness App serves as a practical demonstration of full-stack development skills, contributing meaningfully to the domain of digital health and personal fitness management.

5.2. Future Scope

The future scope of the **Fitness App** is extensive and promising, with several potential upgrades that can enhance user experience, accuracy, and the app's long-term impact on personal health management:

- **Integration of wearable device support** (e.g., smartwatches, fitness bands) for automatic tracking of steps, heart rate, and calories burned.
- **AI-based goal adjustment algorithms** that adapt daily calorie goals based on user progress, weight trends, and activity patterns.
- **Secure biometric authentication** (such as fingerprint or facial recognition) to simplify login and enhance data security.
- **Gamification elements**, including achievement badges, streak tracking, and fitness challenges to increase user motivation and retention.
- **Real-time chat with nutritionists or trainers** for personalized advice and guidance.
- **Recipe suggestions and meal planner** based on daily calorie goals and dietary preferences.
- **Integration with Google Fit or Apple Health** for holistic fitness and health data synchronization.
- **Social sharing features** to allow users to share milestones, meal logs, or workouts with friends or fitness communities.
- **Voice-command logging and screen-reader support** to improve accessibility for users with disabilities.
- **Push notifications and SMS reminders** to help users stay on track with meals, exercise, and hydration goals.

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