

**A
Project Report
On
"Healthy Food App"**
(CE447 - Software Project Major)



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Under the Supervision of
Prof. Ronak Patel

Submitted to
Charotar University of Science & Technology (CHARUSAT)
for the Partial Fulfillment of the Requirements for the
Degree of Bachelor of Technology (B.Tech.)
in U & P U. Patel Department of Computer Engineering (CE)
for B.Tech Semester 8



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ENGINEERING**
Chandubhai S. Patel Institute of Technology (CSPIT)
Faculty of Technology & Engineering (FTE), CHARUSAT
At: Changa, Dist: Anand, Pin: 388421.
April, 2023

DECLARATION BY THE CANDIDATES

We hereby declare that the project report entitled “**Healthy Food App**” submitted by us to Chandubhai S. Patel Institute of Technology, Changa in partial fulfilment of the requirements for the award of the degree of **B.Tech Computer Engineering**, from U & P U. Patel Department of Computer Engineering, CSPIT, FTE, is a record of bonafide CE447 Software Project Major (project work) carried out by us under the guidance of **Prof.Ronak Patel**. We further declare that the work carried out and documented in this project report has not been submitted anywhere else either in part or in full and it is the original work, for the award of any other degree or diploma in this institute or any other institute or university.

Signature of the candidate
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This is to certify that the above statement made by the candidate is correct to the best of my knowledge.

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TO WHOMSOEVER IT MAY CONCERN

With reference to the above and the internship completion certificate dated (April 17, 2023), issued to Mr. Dhruveshkumar Bharatbhai Patel, **Kintu Designs Pvt. Ltd.** Hereby issues this certificate to Mr. Dhruveshkumar Bharatbhai Patel and duly certifies that he has successfully completed his Internship programme of 5 months.

During this period (December 12, 2022 to May 12, 2023). He undertook a project titled "Healthy Food App Project" as partial fulfillment for the award of B.Tech(Computer Engineering) from **Charotar University of Science and Technology (CHARUSAT)**.

During his training period, we have found him to be dedicated and knowledgeable about the subject and her performance towards completion of the project has been satisfactory.

Yours Faithfully,

FOR KITNU DESIGNS PVT. LTD

For Kintu Designs Pvt. Ltd.

Director

**RUSHIKESH PATEL
CEO & FOUNDER**

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During his training period, we have found him to be dedicated and knowledgeable about the subject and her performance towards completion of the project has been satisfactory.

Yours Faithfully,

FOR KITNU DESIGNS PVT. LTD

For Kintu Designs Pvt. Ltd.

Director

**RUSHIKESH PATEL
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CHARUSAT

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

Accredited with Grade A+ by NAAC

CERTIFICATE

This is to certify that the report entitled “**Healthy Food App**” is a bonafied work carried out by **Dhruvesh Patel (19CE097)**, **Jeet Patel (19CE101)** under the guidance and supervision of **Prof. Ronak Patel & Mr. Rushikesh Patel** for the subject **Software Project Major (CE447)** of 8th Semester of Bachelor of Technology in **Computer Engineering** at Chandubhai S. Patel Institute of Technology (CSPIT), Faculty of Technology & Engineering (FTE) – CHARUSAT, Gujarat.

To the best of my knowledge and belief, this work embodies the work of candidate himself, has duly been completed, and fulfills the requirement of the ordinance relating to the B.Tech. Degree of the University and is up to the standard in respect of content, presentation and language for being referred by the examiner(s).

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Assistant Professor
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ABSTRACT

This abstract describes a new mobile application designed to help users maintain a healthy diet and track their daily calorie intake. The application is equipped with a calorie calculator that allows users to determine the number of calories required for their body type and lifestyle. Additionally, the application enables users to schedule their meals with detailed nutrition information and track their daily calorie intake. The application provides users with a vast array of features, including a database of foods that users can search to find specific nutritional information. The application's food tracking feature allows users to easily log their daily food intake and monitor their calorie consumption. In conclusion, this mobile application is an excellent tool for individuals who want to maintain a healthy lifestyle and track their daily calorie intake. The application is user-friendly, accessible, and offers comprehensive features that are tailored to the user's specific needs. By utilizing this mobile application, individuals can take control of their health and achieve their dietary goals.

ACKNOWLEDGEMENT

We, the designer of a “Kintu Designs”, with immense pleasure and commitment would like to present the software project major. We are privileged to have this opportunity to express our gratitude and acknowledge everyone’s never ending support and valuable contributions for our project.

We would like to express our sincere gratitude to our advisor Prof. Ronak Patel and external guide Mr. Rushikesh Patel for the continuous support of our project study and related research, for their patience motivation, and immense knowledge.

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Last but not the least, we would like to thank our friends and family for supporting us spiritually throughout this project and for always being a constant source of inspiration.

Thanks

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CHAPTER 1 : INTRODUCTION

PROJECT SUMMARY :

Managing a balanced diet can be challenging for many people, as it requires careful consideration of the amount and balance of nutrients needed for the body. Factors such as Body Mass Index and daily calorie requirements based on age and activity level need to be taken into account when planning a balanced diet. Additionally, a person's diet should consist of a balanced calorie intake and the proper amount of protein, carbs, fiber, and fat. The ideal time span to rotate menus is 11 days.

To assist with this, a system has been developed that offers various features, such as a user personally calculate daily calorie requirements. The system also allows users to add their favorite dishes to the diet plan, create a food planner to track meals and scheduled your favorite meals. Additionally, users can track their daily calorie intake and progress towards their dietary goals.

PURPOSE :

The purpose of a healthy diet app is to assist users in tracking their nutritional intake, managing their diet, and promoting healthy eating habits. It is a tool that can be used for various health goals, such as weight loss, weight maintenance, weight gain, and fitness. Additionally, diet apps can be helpful for individuals with food sensitivities, allergies, and medical conditions, such as diabetes, high blood pressure, and heart disease, by allowing them to track and manage their food intake accordingly. By providing features such as meal planning, calorie tracking, and nutritional analysis, healthy diet apps can aid in making informed decisions about food choices and create a personalized diet plan tailored to each user's unique needs and goals. Ultimately, the purpose of a healthy diet app is to promote healthy lifestyle choices and empower individuals to take control of their health through proper nutrition.

OBJECTIVE :

The objective of a healthy food app is to promote good health by educating and reinforcing positive nutrition-related practices and behaviors among users. The app aims to motivate users to make healthier food choices and establish desirable food and nutrition behaviors that contribute to overall well-being. It seeks to provide users with accurate information on nutrition and help them understand how to balance their diet for optimal health.

SCOPE :

The scope of the healthy food app is to promote and encourage healthy eating habits by providing users with tools and resources to track and manage their nutritional intake. The app focuses on creating awareness and educating users about the benefits of a healthy diet and the risks associated with an unhealthy one. By doing so, the app aims to help users establish desirable food and nutrition behaviour for the promotion and protection of good health.

TECHNOLOGY & LITERATURE REVIEW :

The application that features the user can know the calories in his food, but the disadvantage that it is not dedicated to food. You have to select or choose your own food to based on their goal.



Fig 1.1 Calories App logo

CHAPTER 2 : PROJECT MANAGEMENT

PROJECT PLANNING :

Project Development Approach And Justification

We have been tasked with completing a project, and we are aware of all the requirements, including design, development, testing, deployment, and maintenance. Given the absence of a specific feedback system, we have concluded that the most suitable model for our project is the "Waterfall Model."

The Waterfall Model is a sequential approach to software development, in which each phase must be completed before moving on to the next. This model is highly structured and helps to ensure that all requirements are met before proceeding to the next phase. By using the Waterfall Model, we can carefully plan and execute each phase of the project, minimizing the risk of errors and ensuring that the final product meets all the necessary requirements.

Furthermore, the Waterfall Model is well-suited for projects with clearly defined requirements, as we have in this case. This model is also highly transparent, making it easy to track progress and ensure that the project stays on schedule. With its emphasis on careful planning and execution, the Waterfall Model is a reliable and effective approach to software development, and we are confident that it is the best choice for our project.



Fig 2.1 Waterfall model

Project Effort and Time, Cost Estimation

Project Effort	3 persons
Project Time	5 months
Cost Estimation	NA

Table 2.1 Effort, Time and Estimation

Roles and Responsibilities

Dhruvesh Patel & Jeet (UI / UX Developer)

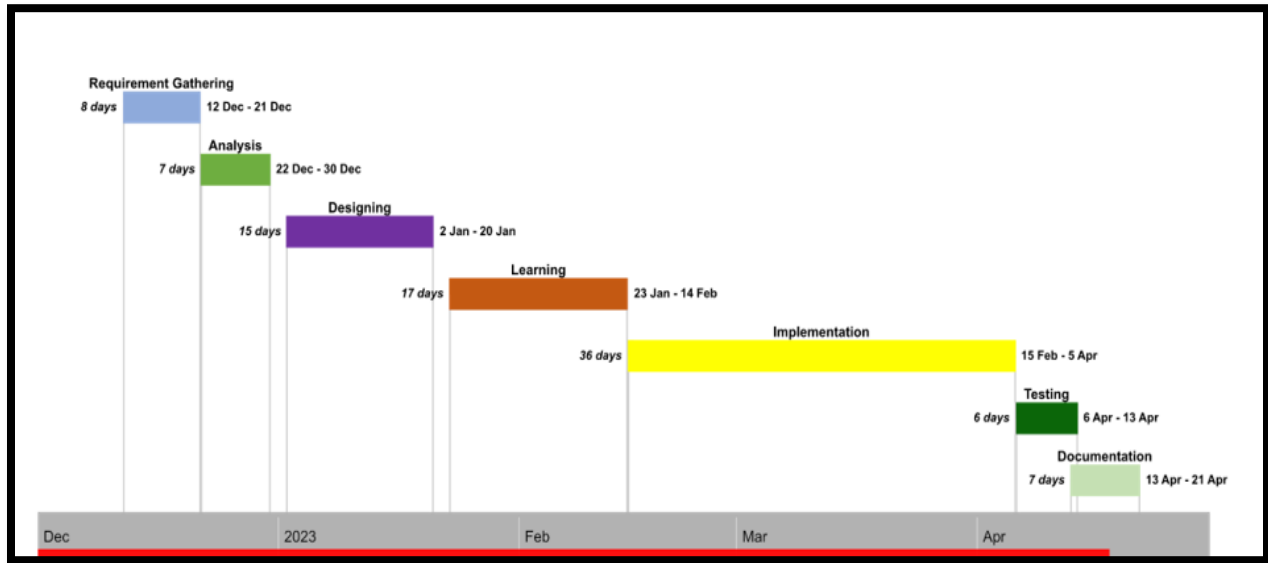
- Requirement gathering.
- Analysis
- UI Designing

Palak (App Developer)

- Database Designing
- App Development
- Testing

Group Dependencies

During the project, we divided ourselves into two teams - one for designing and the other for development. After finalizing all the requirements and completing the design phase, we started with the implementation of the project. We followed the waterfall model, which helped us in completing the project within the given time frame. As per the model, we completed each phase before moving on to the next phase, ensuring that everything was thoroughly tested and reviewed. This approach helped us to avoid any major issues or problems during the development phase, and we were able to deliver a high-quality product to our client.

PROJECT SCHEDULING*Fig 2.2 Gantt chart*

CHAPTER 3 : SYSTEM REQUIREMENTS STUDY

USER CHARACTERISTICS :

User:

- Calculate daily maintainable calorie.
- You can mark your preferred nutritious meals as favorites using the app's "Favorite" feature.
- Schedule your favourite meals.
- Progress your daily calorie intake.
- The app provides detailed information on the ingredients, preparation methods, and nutritional value of any selected meal.

HARDWARE AND SOFTWARE REQUIREMENTS :

Development Environment : VS Code (any version preferable)

Frontend : Flutter (v3.3.3) , Dart SDK (v2.18.2) , Kotlin (v1.7.0)

Backend : Firebase

ASSUMPTIONS AND DEPENDENCIES :

Dependencies are use in the projects are given below :

- awesome_notifications: ^0.7.4+1 (For Notification Purpose)
- cached_network_image: ^3.2.3 (To Display Network Image)
- circular_chart_flutter: ^0.0.2 (To Circular Chart)
- email_validator: ^2.1.17 (For email validation)
- firebase_auth: ^4.2.10 (For firebase authentication)
- firebase_storage: ^11.1.0 (For firebase storage)
- google_sign_in: null (For google sign in.)

- hexcolor: ^3.0.1 (For color pallate)
- image_picker: ^0.8.7+1 (For pick image from gallery)
- lottie: ^2.3.1 (For lottie animation)
- quickalert: ^1.0.1 (For Beautiful alert message)
- rflutter_alert: ^2.0.4 (For alert notifiactions)
- shimmer: ^2.0.0 (To give shimmer effect)

CHAPTER 4 : SYSTEM ANALYSIS

STUDY OF CURRENT SYSTEM :

Nowadays, there are numerous apps available in the market such as MyFitnessPal, Noom, Calorie Counter, Nutrition App, etc. Each of these tools serves a different purpose, mostly related to scheduling diets, making it difficult for the average person to use all of them. Additionally, these tools often lack customization options to cater to individual needs and preferences, and some of them can be quite expensive. Moreover, many of these apps only offer a basic user interface and provide limited details about food, making it challenging for users to choose healthy food based on their calorie count. A thorough study of the current system is needed to address these issues.

PROBLEM AND WEAKNESSES OF CURRENT SYSTEM

Here are some examples of healthy diet apps available in the market and their weaknesses and loopholes:

MyFitnessPal: This app allows users to track their daily food intake, set goals, and monitor progress but cannot schedule meals and get on time notifications.

My Diet Coach: This app offers a calorie counter, motivational tips, and progress tracking but cannot scheduled their meals and also can't give the wide variety of their nutritions info.

Healthifyme : While this app may offer a wide range of features, it may not be accessible to users for free.

REQUIREMENTS OF NEW SYSTEM

To overcome the all of the above problems and weakness in currently available systems in market we have to create a new system that can use by normal user. It should design in that way that any non-technical person should be use this application.

Functional Requirements

- User should have valid Email Address for registering procedure.

- User need to verify his email address after registering.
- User should be able to fill up application form with all needed details.
- User should have notifications as part of reminder to get which meals should be take.
- User can track their how much calorie they consume in a day.

Non Functional Requirements

- **Security:** The app must be designed with strong security measures to protect user data such as personal information.
- **Performance:** The app should be optimized for fast loading times and smooth navigation to provide a seamless user experience.
- **Compatibility:** The app should be compatible with various devices and operating systems to ensure accessibility for a wider audience.
- **Scalability:** The app should be designed to accommodate future updates and expansions to include new features and functionalities.
- **Accessibility:** The app should be designed with accessibility in mind, such as the ability to adjust font size and color contrast for users with visual impairments.
- **Reliability:** The app should be reliable and available for use at all times, without frequent crashes or downtime.
- **Usability:** The app should be user-friendly, intuitive, and easy to navigate to ensure a positive user experience for all users.
- **Compliance:** The app should comply with all relevant laws and regulations, such as data privacy laws and food safety regulations.

FEATURES OF NEW SYSTEM

- Tracking and calculating the user's daily maintainable calorie.

-
- Displaying various dishes with their calorie information and also nutrition info and preparation method.
- Scheduling meals and setting reminders for them.
- Calculating the total calorie intake from daily consumed foods.
- The user can add their favorite dish to the favorites section.

FEASIBILITY STUDY

Does the system contribute to the overall objectives of the organization?

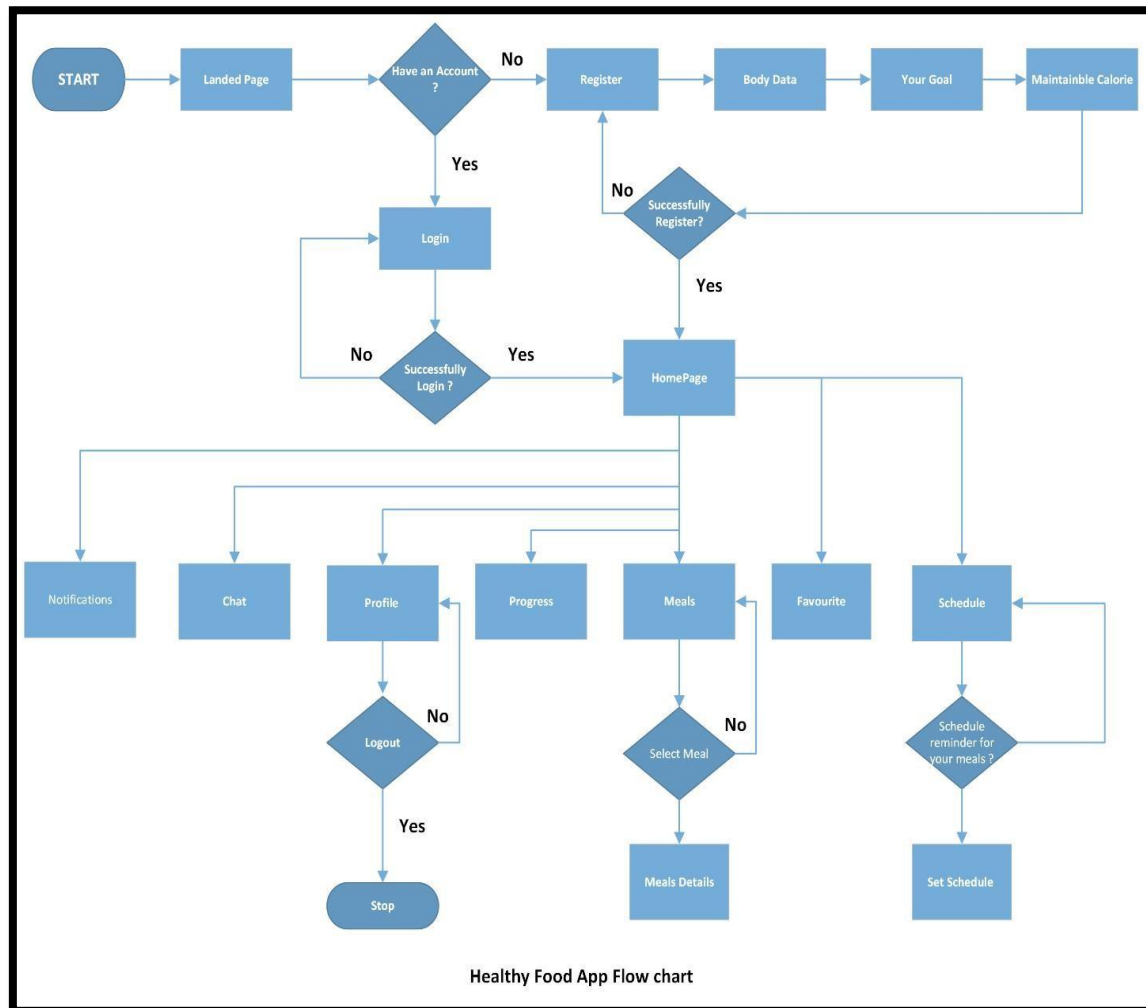
YES

Can the system be implemented using the current technology and within the given cost and schedule constraints?

Yes, it can be implemented using the current technology and within the given cost and schedule constraints.

Can the system be integrated with other systems which are already in place?

Yes, it can be easily integrated with other system as all the coding standards were followed during implementation.

FLOW CHART*Fig 4.1 Flow Chart*

ACTIVITY DIAGRAM

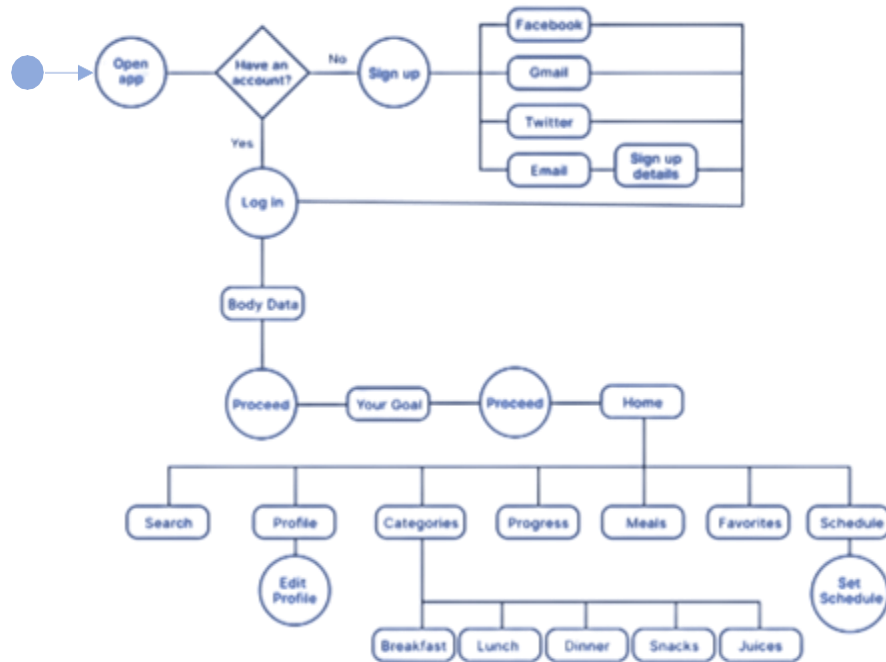


Fig 4.2 Activity Diagram

USE CASE DIAGRAM

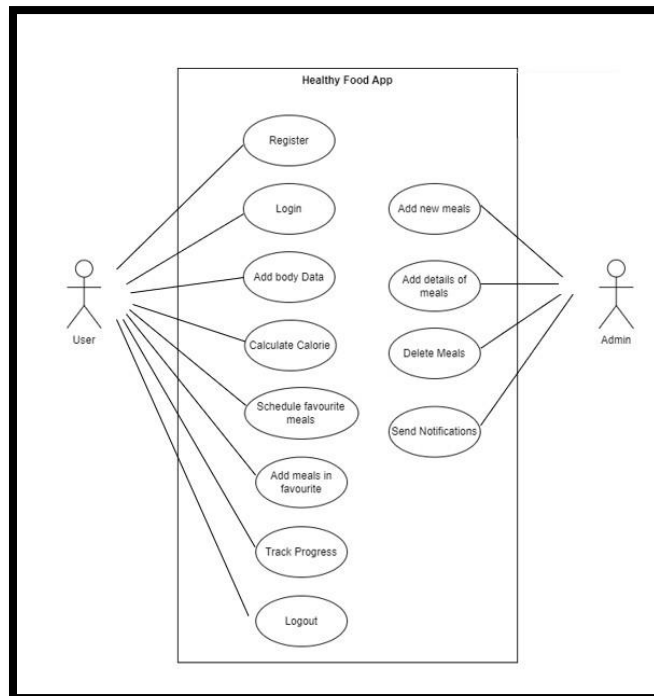


Fig 4.3 Use case Diagram

CLASS DIAGRAM

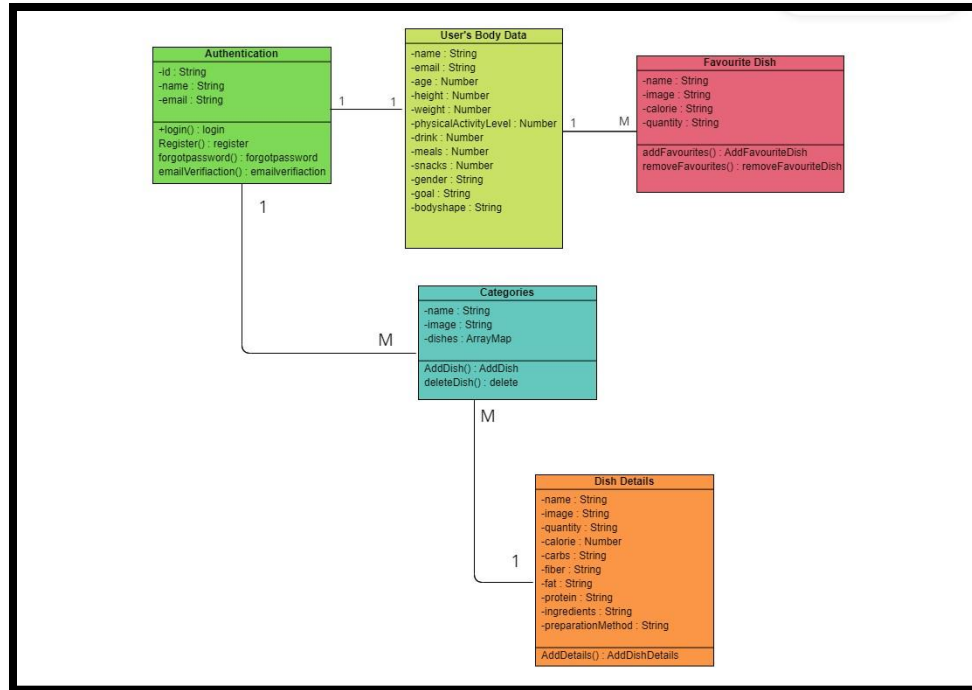


Fig 4.4 Class Diagram

SEQUENCE DIAGRAM

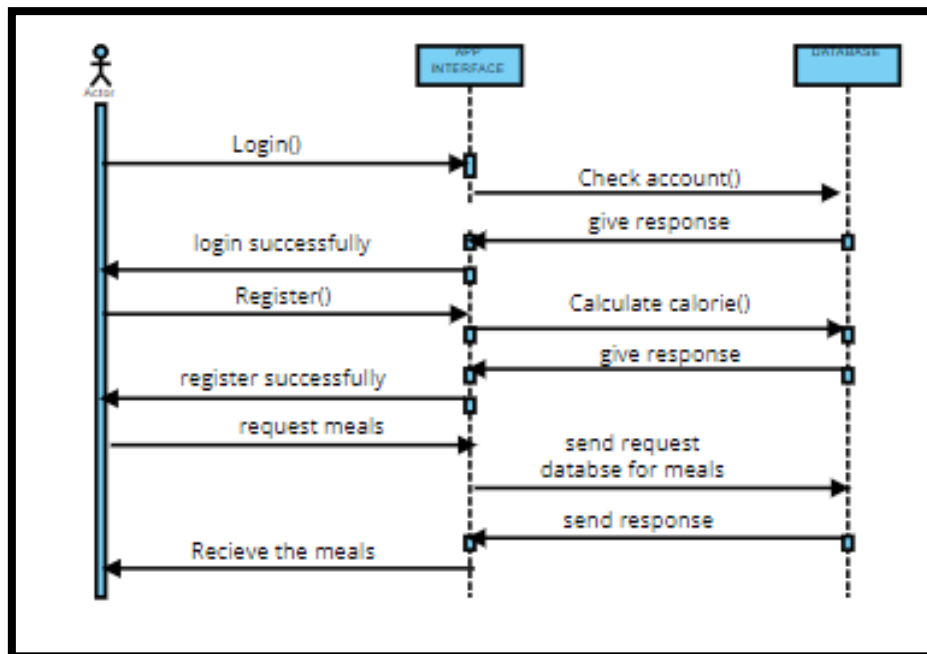


Fig 4.5 Sequence diagram

SELECTION OF HARDWARE AND SOFTWARE JUSTIFICATION

FLUTTER

We have selected Flutter for this project because Flutter is a popular choice for app development because it offers a number of advantages over other frameworks. Here are some justifications:

- **Cross-platform development:** Flutter allows developers to build apps for both Android and iOS platforms using a single codebase, which saves time and money on development efforts.
- **Fast development:** Flutter offers a hot reload feature, which allows developers to see the changes they make to the code in real-time, making the development process faster and more efficient.
- **Rich UI:** Flutter offers a wide range of customizable widgets that can be used to build beautiful and responsive user interfaces, making it easier to create visually appealing and engaging apps.
- **Performance:** Flutter uses Dart, which is a compiled language, resulting in faster app performance compared to other frameworks that use interpreted languages.
- **Community support:** Flutter has a large and growing community of developers who contribute to its open-source ecosystem, providing support, resources, and plugins for app development.
- **Compatibility with other technologies:** Flutter can be easily integrated with other technologies and frameworks, such as Firebase, which makes it easier to build full-stack apps.

FIREBASE

We have selected Firebase because Firebase is a popular choice for Flutter app developers because it offers a variety of features and services that can help simplify and accelerate the development process. Here are some reasons why people choose Firebase for their Flutter app:

1. **Real-time database:** Firebase offers a real-time database that can be easily integrated into a Flutter app, allowing users to access and update data in real-time.
2. **Authentication:** Firebase provides built-in authentication services that make it easy to authenticate users and secure your app's data.

3. **Cloud functions:** Firebase provides cloud functions that can be used to perform server-side logic, such as sending notifications, processing payments, or running background tasks.
4. **Cloud storage:** Firebase provides cloud storage that can be used to store and serve files, such as images, videos, and audio files, directly from Firebase's servers.

CHAPTER 5 : SYSTEM DESIGN

5.1 SYSTEM APPLICATION DESIGN

WIRE FRAMES:

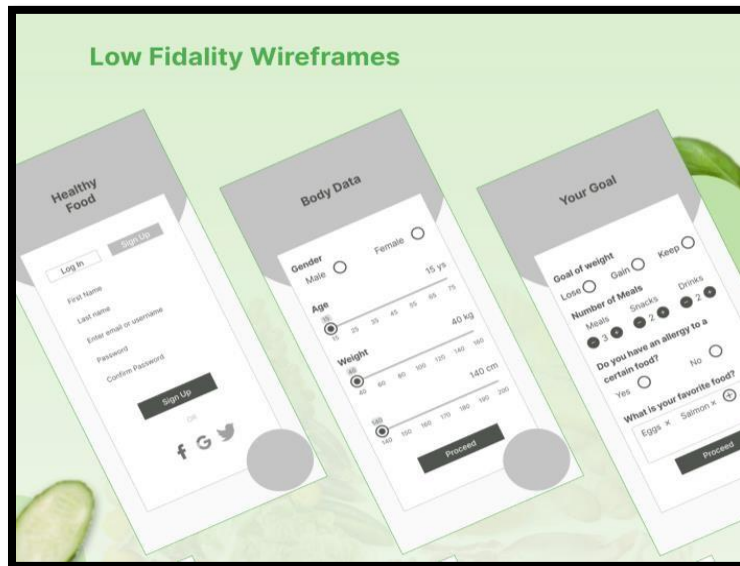


Fig 5.1 Wireframes

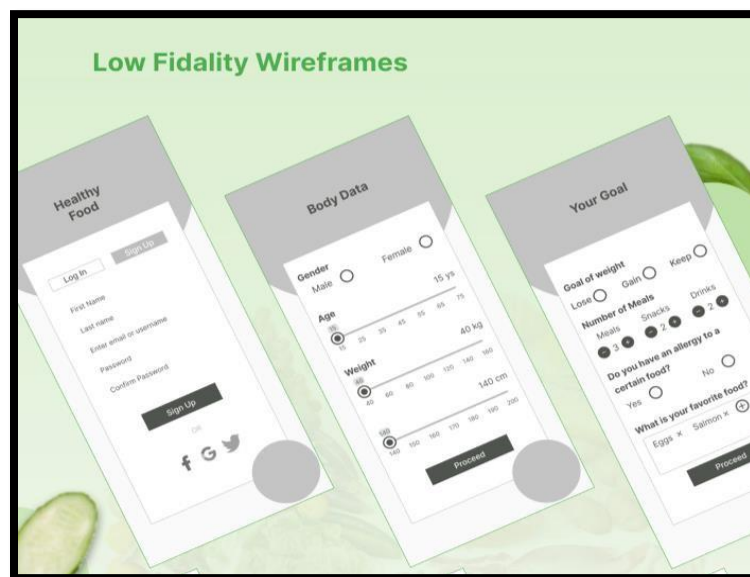


Fig 5.2 Wireframes

UI DESIGNS

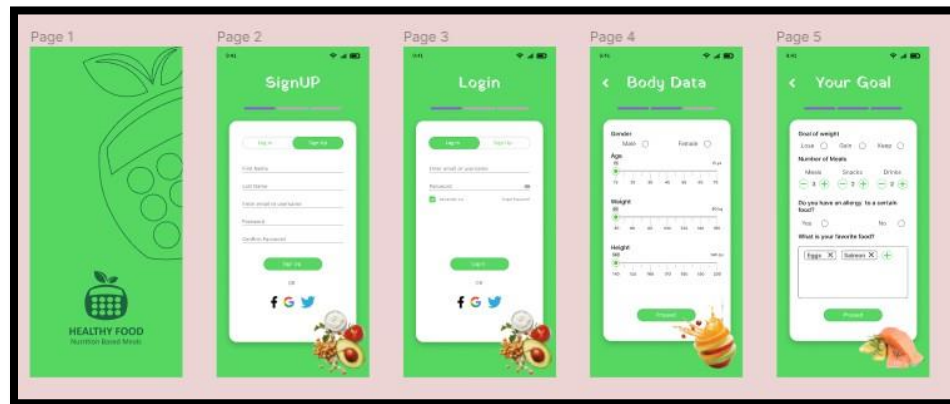


Fig 5.3 UI Designs



Fig 5.4 UI Designs



Fig 5.5 UI Designs

MOCKUPS



Fig 5.6 Mockups



Fig 5.7 Mockups



Fig 5.8 Mockups

SCREENSHOTS

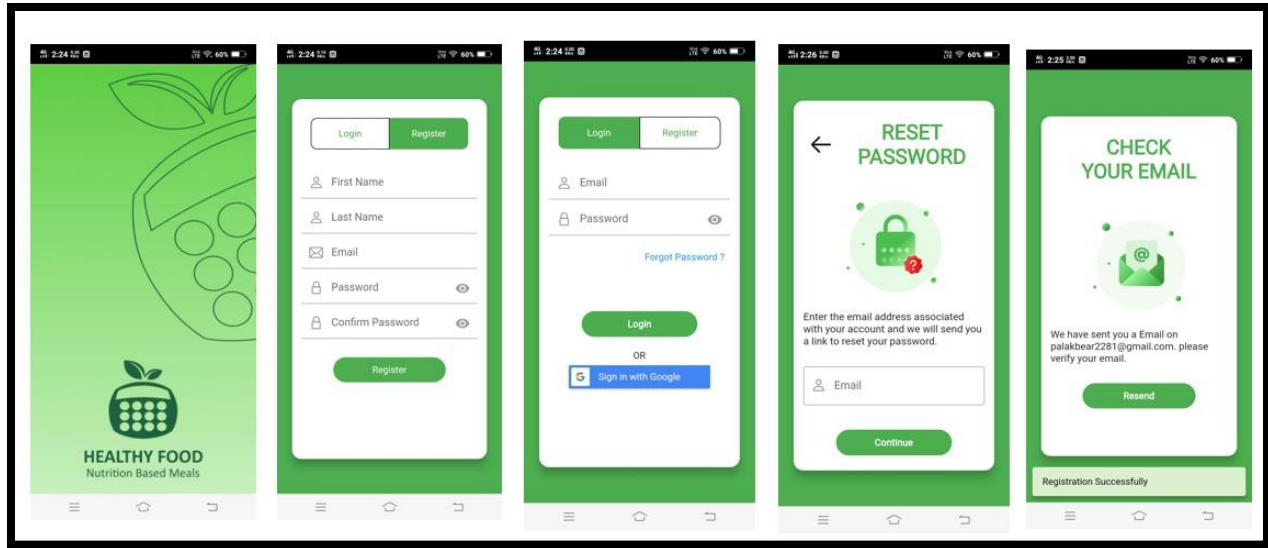


Fig 5.9 Screenshots of app

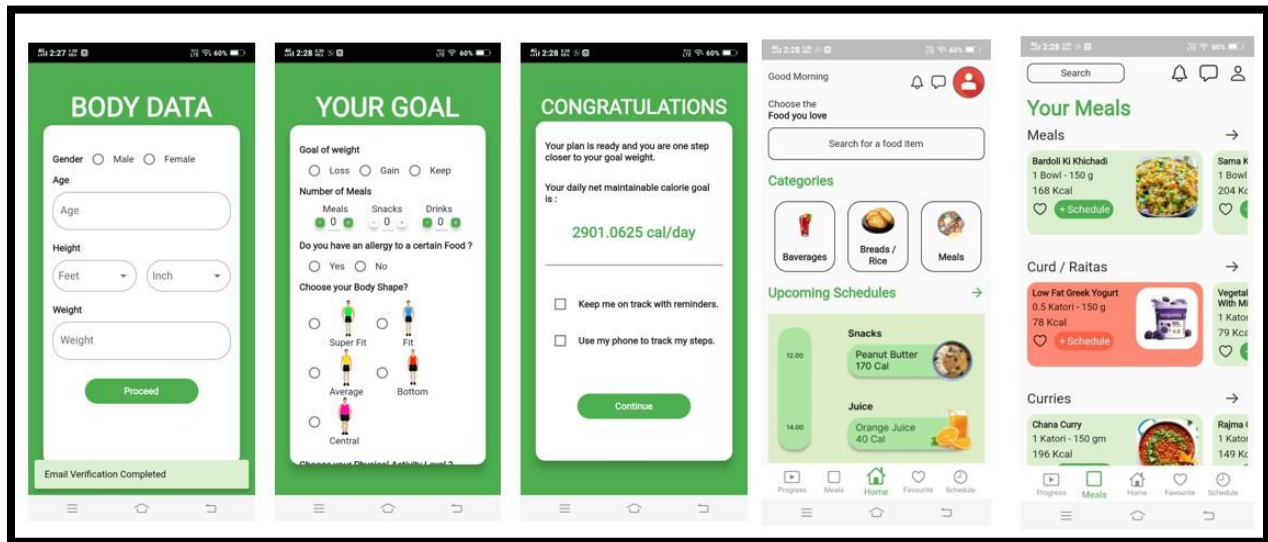


Fig 5.10 Screenshots of app

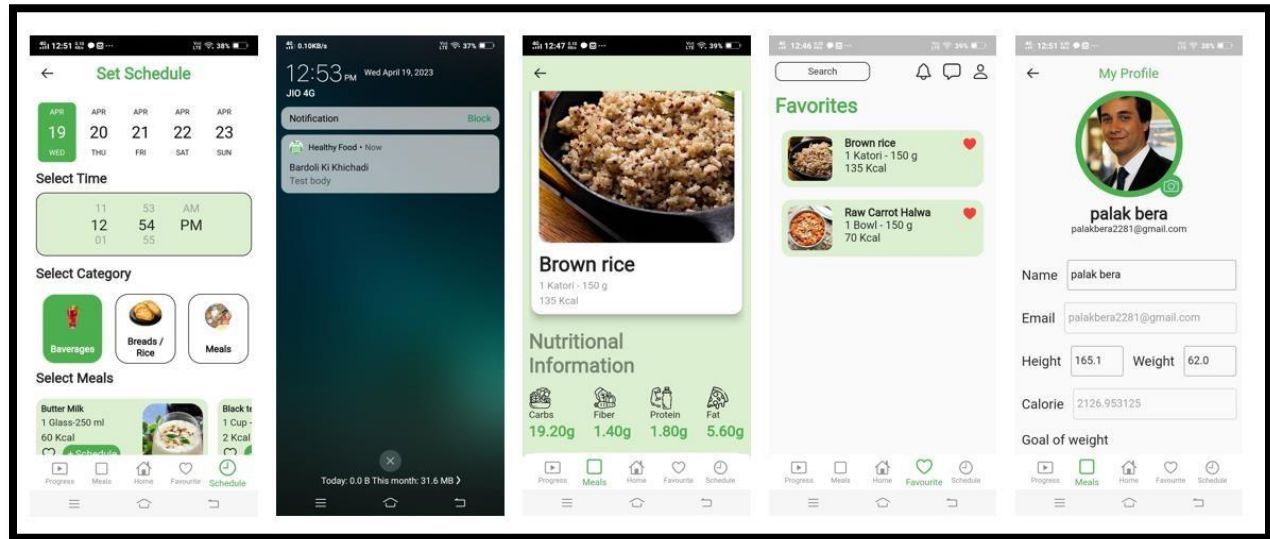


Fig 5.11 Screenshots of app

5.2 INPUT/OUTPUT AND INTERFACE DESIGN

Body data page

Choose Gender	[Radio button]
Choose Age	[Slider bar]
Choose Weight	[slider bar]
Choose Height	[slider bar]

Table 5.1 Body data page

Your Goal Page

Goal of weight	[Radio button]
----------------	----------------

Table 5.2 Your Goal

CHAPTER 6 : IMPLEMENTATION PLANNING

IMPLEMENTATION ENVIRONMENT

"Implementation" means putting your plans and ideas into action to achieve your goals. When I was learning to develop apps using Flutter and Dart, I used an online tool called Dart Pad to write and test my code. Later on, when I started working on a real project, I switched to a more advanced development environment called VS Code. With the help of VS Code and other tools, I was able to successfully develop our app and pass all the tests we had set for it.

MODULES SPECIFICATION

In our project, we have divided the codebase into different modules to make it more understandable and easier to maintain. Here are some of the modules that we have created:

Authentication Module: This module handles the user authentication and sign-in process, including validating user credentials and storing user session data.

UI module: This module contains all the widgets and user interface elements that are used throughout the app.

Database module: This module contains the code that interacts with the app's local database or any external database used by the app.

Utility module: This module contains utility classes or functions that can be used throughout the app, such as formatting dates or handling errors.

Logic module: This module contains the business logic and algorithms that power the app's functionality. It may also include data models and other classes that represent the app's data.

Networking module: This module contains the code that communicates with external APIs or services, such as sending and receiving HTTP requests.

SECURITY FEATURES

- In our app, we have implemented email verification as a security feature to prevent users from logging into the system with a dummy or fake email address. When a user creates an account, they will receive an email with a verification link that they must click to verify their email address before they can log in.
- Email verification is an important security feature because it helps to ensure that the user is who they claim to be. By verifying their email address, we can confirm that the user has access to that email account and is not using a fake email address. This helps to prevent fraudulent or spam accounts from being created in the system, which can avoid many major data breaches.
- Also, By requiring users to verify their email address, we can ensure that the email address is valid and active, which means that we can send important notifications and updates to the user via email. This can help to keep the user engaged with the app and increase the chances that they will return to use the app again in the future.

CODING STANDARDS

When developing a Healthy Food app, it's important to follow coding standards and best practices to ensure that the code is well-organized, maintainable, and easy to understand. Here are some common coding standards which we have used to develop this project:

1. We have followed consistent naming conventions for variables, classes, and functions. This helps to make the code more readable and easier to understand.
2. We have followed the Single Responsibility Principle (SRP) when creating classes and functions. Each class or function should have a single responsibility, which makes it easier to test, maintain, and reuse the code.
3. We have used comments and documentation to explain the purpose and behavior of the code. This makes it easier for other developers to understand how the code works and how it should be used.
4. We have used error handling and exception handling to handle errors and unexpected behavior in the app. This helps to prevent crashes and improves the user experience.

CHAPTER 7 : TESTING

TESTING PLAN

A testing plan for a Healthy Food Flutter app should include various types of testing to ensure that the app is functioning as expected and meets the requirements of the project. Here are some key areas that should be covered in a testing plan for a Healthy Food Flutter app:

1. **Functional Testing:** This type of testing verifies that the app functions correctly based on the requirements and specifications. This includes testing things like navigation, user interface components, and the functionality of different features such as calculating calorie based on user's data and also scheduling meals and get on on-time notifications.
2. **Performance Testing:** This type of testing verifies that the app runs smoothly and efficiently, even under heavy load or stress. This includes testing the app's speed, responsiveness, and memory usage, among other things.
3. **Compatibility Testing:** This type of testing verifies that the app works correctly on different devices, operating systems. This includes testing the app on different screen sizes, resolutions, and aspect ratios.
4. **Usability Testing:** This type of testing verifies that the app is easy to use and understand for the end-users. This includes testing user interfaces, the navigation flow, and the ease of use of the features.

In summary, a testing plan for a Healthy Food Flutter app should include functional, performance, compatibility, security, usability. By performing these tests, developers can ensure that the app meets the requirements, functions correctly, is secure and easy to use for the end-users.

TESTING STRATEGY

a testing strategy for a Healthy Food Flutter app involves defining the test objectives, developing test cases, selecting testing tools, performing manual and automated testing, and generating a test




report. By following a testing strategy, developers can ensure that the app meets the defined requirements, functions correctly, and is secure and easy to use for the end-users.

Testing Phase	Objectives
Unit Testing	This type of testing involves testing individual components or functions of the app. Unit testing helps to ensure that the individual components are functioning correctly and as intended.
Widget Testing	This type of testing involves testing individual UI elements or widgets in the app. Widget testing helps to ensure that the UI elements are displaying correctly and functioning as intended.
Integration Testing	This type of testing involves testing the integration of different components or modules of the app. Integration testing helps to ensure that the different components of the app are working together correctly.
Performance Testing	This type of testing involves testing the app's performance under various load conditions. Performance testing helps to ensure that the app is responsive and performs well under heavy loads.
Compatibility Testing	This type of testing involves testing the app's compatibility with different devices, operating systems.

Table 7.1 Testing Phase & objectives

TEST SUITES DESIGN

7.3.1 Test Cases

Test Id	Test Condition	Expected Output	Actual Output	Remark
1	Calculating maintainable calorie	Display maintainable calorie on congratulations and profile screen.		YES
2	Scheduled meals	Display snackbar when successfully scheduled meals.		YES
3	Send Notification	Displayed notification in mobiles's status bar		YES

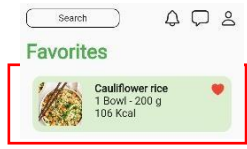
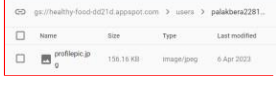
4	Add Meals in Favourite list	Displayed meals in favourite section of app.		YES
5	Upload profile photo in data base	Displayed profile pic in users folder in Firebase.		YES

Table 7.2 Test Cases

CHAPTER 8 :

CONCLUSION & DISCUSSION

SELF ANALYSIS OF PROJECT VIABILITIES

At the start of the project, we were relatively inexperienced with the technologies we planned to use. However, as we progressed through the project and gained hands-on experience, we quickly learned about the different frameworks and tools available to us, which helped to streamline the development process.

Throughout the project, we faced various challenges where we had to think creatively and come up with innovative solutions. We encountered several scenarios where certain modules were not feasible or not supported by the technologies we used. In such situations, we conducted in-depth research and brainstorming sessions to identify alternative solutions that could be implemented effectively.

Overall, the project provided us with a deep understanding of how each line of code and module works with one another, instilling a sense of confidence in our abilities and the technology we used. Through the experience gained during this project, we are better prepared for future endeavors in the field of technology.

PROBLEM ENCOUNTERED AND POSSIBLE SOLUTIONS

Problem 1 : Unable to provide the best recommendations for meals and combos based on the user's data.

Solution : Can't able to solve due to lack of machine learning knowledge.

Problem 2 : Unable to display the notifications.

Solution : Read the documentation of awesome_notification package and applied some relative changes to solve this problem.

SUMMARY OF PROJECT WORK

In conclusion, we have gained a lot of knowledge about different technologies and their application in our project. Although we faced some challenges, we were able to overcome them by conducting thorough research and seeking logical solutions. This experience has motivated us to further explore the vast field of technology and continue expanding our knowledge.

Furthermore, this project has taught us how to effectively work in teams in the IT industry. We learned the importance of clear communication, collaboration, and delegation of tasks. By working in a team, we were able to leverage each other's strengths and overcome our weaknesses, ultimately leading to the successful completion of the project.

Overall, this project has provided us with valuable experience and has prepared us for future endeavors in the field of technology.

CHAPTER 9 :

LIMITATIONS & FUTURE ENHANCEMENT

LIMITATIONS

- The user is unable to generate a personalized diet plan based on their requirements.
- Only the admin can add new dishes, the user cannot do so.
- The user is not able to receive the best recommended food options.
- The user is only able to track the amount of calories they intake, but they cannot track the number of calories burnt.

FUTURE ENHANCEMENT

- Allow users to generate personalized diet plans based on their specific requirements, such as dietary restrictions or fitness goals.
- Implement a feature that allows users to submit new dishes for consideration by the admin. This feature could include a review process to ensure that the dishes meet certain criteria, such as nutrition information and culinary standards.
- Develop an algorithm that provides users with the best recommended food options based on their dietary needs and preferences. This feature could use machine learning and data analysis to make personalized recommendations to each user.
- Provide a feature that allows users to track the number of calories they burn throughout the day. This could be done through integration with fitness tracking apps or devices, or by allowing users to input the type and duration of their physical activity manually.

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