

Development Of Diet & Fitness Tracking App

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A project report submitted in conformity with the requirements
for the degree of **Master's of Science in Information Technology**

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DEVELOPMENT OF DIET & FITNESS TRACKING APP

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Abstract

The "Development of Diet & Fitness Tracking App" report presents a detailed account of the conception, design, and implementation of a cutting-edge mobile application aimed at revolutionizing personal health management. With the increasing awareness of the importance of a balanced diet and regular exercise in maintaining overall well-being, this app addresses the pressing need for a user-friendly, efficient, and feature-rich platform to track and manage dietary habits and fitness activities.

This report begins with an exploration of the market landscape and existing diet and fitness apps, identifying the strengths and weaknesses of each.

The development process is described in detail, covering the selection of appropriate technologies, programming languages, and frameworks, along with an overview of the database architecture to ensure seamless data storage and retrieval. Moreover, the report delves into the user interface design, emphasizing the incorporation of intuitive and aesthetically pleasing elements for an enhanced user experience.

This report showcases the creation of a Diet & Fitness Tracking App that helps users manage their health by offering features such as diet logging, meal planning, calorie tracking, progress visualization, and personalized health recommendations.

Acknowledgments

I would like to express my sincere gratitude to everyone who contributed to the successful completion of this project. Without their support, guidance, and encouragement, this project would not have been possible.

First and foremost, I extend my gratitude to my supervisor, Nasim Hajari Ph.D, for her guidance and mentorship throughout this project journey. Her expertise, feedback, and unwavering support have been instrumental in shaping the direction of this capstone project.

I would also like to thank Concordia university Edmonton for providing the necessary resources and facilities that allowed me to conduct research and gather relevant information for this report.

Furthermore, I am grateful to my friends and family for their understanding, patience, and encouragement during the challenging phases of this project.

Last but not least, I am indebted to all the participants and respondents who willingly shared their time and insights, making this study richer and more meaningful.

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1 Introduction

In today's fast-paced world, maintaining a healthy lifestyle has become more crucial than ever. The growing awareness of the impact of diet and fitness on overall well-being has driven individuals to seek effective ways to manage their health proactively. With the significant development in advanced information communication technologies, we are witnessing an accelerated pattern of digitization in numerous areas of health. According to article from Lee, H. Erin, and Jaehee Cho [1], many scholars and practitioners have turned their attention to mobile health, also known as mHealth (Free et al., 2010). Through mobile medical devices and services, patients can receive consultations and diagnoses without directly meeting with their doctors [1]. Patients can also seek the health information they need independently and conveniently online

As a response to this demand, the project introduces the development of a Diet & Fitness Tracking App, an innovative mobile application designed to empower users in their pursuit of better health.

This introduction provides an overview of the project's core objectives, explaining the necessity for a user-friendly app that encompasses various health-related aspects. The report will delve into the step-by-step process of conceptualizing, designing, and implementing the app, emphasizing the incorporation of modern technologies and intuitive features.

Throughout this report, we will discuss the various components of the app's development, starting from the initial market analysis, which served as a foundation to identify the user demographic and app requirements. We will explore the methodologies used to create an appealing and easy-to-navigate user interface, making the app accessible to users with varying levels of technical expertise.

Moreover, the report will delve into the core functionalities of the Diet & Fitness Tracking App, such as diet logging, meal planning, calorie tracking, progress visualization, and personalized health recommendations. These features were carefully designed to offer users a comprehensive and personalized health management experience.

A significant aspect of the project was to showcase the various new technologies and APIs, and how they can be easily implemented to produce a successfully working mobile application.

The Development of the Diet & Fitness Tracking App represents a significant step towards harnessing the power of technology to support personal health management. By providing an all-encompassing solution for diet and fitness tracking, the app aspires to empower users in their journey towards a healthier and more fulfilling lifestyle. Let us now delve into the intricacies of this project, unraveling the process that led to the creation of this innovative and user-centric mobile application.

2 Literature review (and theoretical framework)

The rapid advancement of technology and the widespread use of mobile devices have led to an increasing interest in nutrition apps. This project aims to research and develop a nutrition app focused on user engagement, penalization, nutritional tracking & meal logging, data privacy, and long-term sustainability.

The market for nutrition and health mobile apps continues to grow wide as an increasing number of individuals recognize the important role of healthy eating in leading a happy and wholesome life. Research shows that the diet and nutrition apps market may reach \$10,189.62 million by 2027.[2].

Developing a nutrition app some key features need to be included. These features include:

- **Registration:** As important as anything is in app development, user registration and authentication is a key feature. Implement a user registration system where new users can create accounts by providing basic information such as name, email address, and password. Utilize secure authentication mechanisms, such as email verification or two-factor authentication, to ensure the security of user accounts.
- **Food Logging and Tracking:** Include a food logging feature that allows users to easily track their daily food intake. Integration with food databases or barcode scanning can simplify the process and provide accurate nutritional information.
- **Nutritional Database:** Maintain a comprehensive database of foods and their nutritional content, including macronutrients (protein, carbohydrates, fats), micronutrients, and calories. This information is crucial for accurate food tracking and analysis.

In my approach to building the mobile app i took into consideration these key features, also going ahead to add an extra feature which is a fitness assistant chat bot. The chat bot is an AI-powered conversational interface that can engage with users, answer queries, and provide real-time assistance. In the past years AI has had impact on how we engage in our every day activities by designing and evaluating advanced applications and devices, called intelligent agents, which can perform various functions [3]. According to an article from Brandtzaeg & Følstad, users find chat bots more friendly and attractive compared to static pages because it offer users comfortable and efficient assistance when communicating with them. [4]

2.1 ChatBot & OpenAI

When you talk about chatbot, what comes to mind is a friendly user interface that interacts with users on a human like level to help provide solutions to needs requested. Technically speaking, A chatbot is a computer program that uses artificial intelligence (AI) and natural language processing (NLP) to understand customer questions and

automate responses to them, simulating human conversation [11]. Natural language processing (NLP) is a to the branch of computer science, specifically, the branch of AI concerned with giving computers the ability to understand text and spoken words in much the same way human beings can. [13]. Its like teaching computers the human language so they can understand and interact with us in a way that makes sense. It's a bit like having a smart friend who speaks computer language and human language at the same time!

This technology is almost, if not, everywhere these days, from the smart speakers at home to messaging applications in the workplace. The latest AI chatbots are often referred to as “virtual assistants”.

In the past, chatbots were text-based, and were programmed to reply to a set of simple queries with answers which were limited and had been pre-written by the developers. But over the years, chatbots have integrated more rules and natural language processing, so end users can experience them in a conversational way. Today's AI chatbots use natural language understanding (NLU) to discern the user's need. Then they use advanced AI tools to determine what the user is trying to accomplish. These technologies rely on machine learning and deep learning—elements of AI, with some nuanced differences—to develop an increasingly granular knowledge base of questions and responses that are based on user interactions.[11].

For this project I implemented the Open AI model api to deliver this fitness assistant chat bot. OpenAI is at the forefront of artificial intelligence research and development. It has led the way in the creation of cutting-edge language models that excel at interpreting and creating natural language. they provides sophisticated language models such as GPT-4, GPT-3, which is extensively used for NLP activities such as chatbot building and many more.

In the ever-growing landscape of natural language processing (NLP), OpenAI's GPT-3 models have drawn significant attention for how they could understand and generate human-like text. **Figure 1** shows the 4 models used in GPT-3

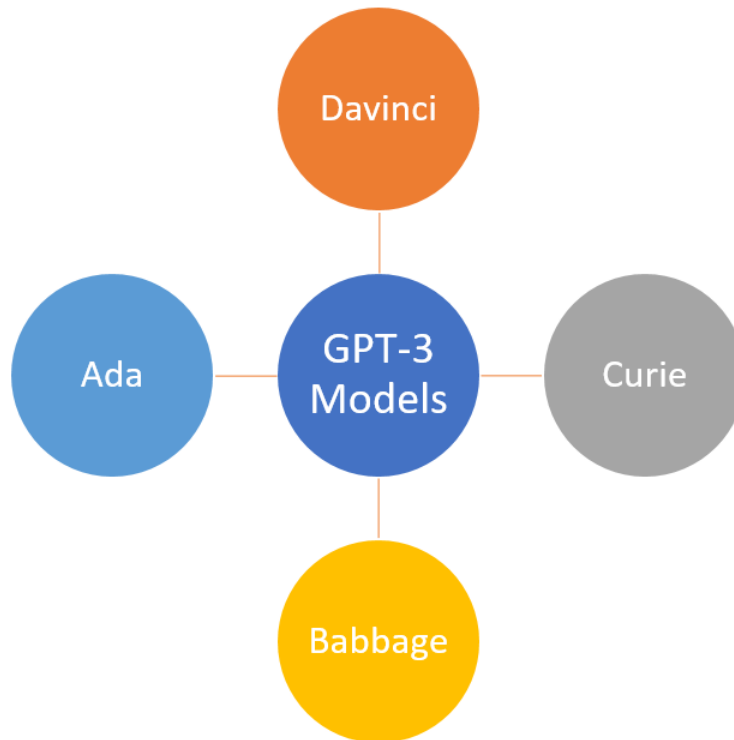


Figure 1: GPT-3 Models [5]

Amongst the four GPT-3 models: text-davinci-003, text-curie-001, text-babbage-001, text-ada-001; Davinci is the most capable, as it provides the best results and validate the value provided by Azure OpenAI [5]. Hence this is the model used for the chatbot feature of this project.

2.2 Edamam

In addition, an implementation of Edamam nutrition analysis API was used as regarding the meal logging and nutrient tracking feature. Edamam is an organization that categorises the world's food knowledge and provides nutrition data services and value-added solutions to health, wellness and food businesses. It provides real-time nutrition analysis and diet advice via APIs using a proprietary semantic technology platform. They offer nutrition data solutions via APIs and as licensed datasets. In addition to its Food Database API, Edamam also offers a Recipe Search API and a Nutrition Analysis API. [6]. Edamam's Food Database API is a comprehensive compendium of food items and ingredients, allowing developers to seamlessly integrate nutritional data into grocery and shopping applications. By offering users instant access to nutritional profiles, this API simplifies the process of making informed food choices. [6].

The Nutrition Analysis API serves as a nutritional information hub, enabling developers to extract detailed insights about food items, ingredients, and recipes. With

a focus on macronutrients, micronutrients, and calories, this API becomes an invaluable tool for health apps, dietary trackers, and recipe platforms, offering users informed choices about their nutritional intake. The API employs NLP (Natural Language Processing) which allows for extraction of food entities from unstructured text. The NLP then processes this text and return the Nutrition, as well as other important details.

In a nutshell the aim of this project is to look into how different existing technologies and systems can be combined or integrated to produce new and better innovative products to help daily lives and actives. This could also help developers unleash creativity and pave the way for groundbreaking solutions.

2.3 Related Works

In recent years, nutrition apps have become valuable tools for individuals striving to lead healthier lifestyles and improve their eating habits. The proliferation of smartphones and the increasing interest in health and wellness have led to the development of numerous nutrition apps. I will me listing some of the most prominent and noteworthy nutrition apps available.

- **MyFitnessPal:**

First, MyFitnessPal, one of the most popular nutrition apps with a vast user base. it is one of the best weight loss apps and fitness apps, helping nearly 1 million members reach their nutrition and fitness goals every year. Members use it as a calories tracker and calorie counter to log their foods, and take advantage of the app's food database that contains over 14 million foods[7]. The app also provides fitness tracking, recipe ideas, and community support. **Figure 2** show a snapshot of the app's dashboard and the weight target setter

How IT works:Based on your fitness profile, we'll recommend a daily Net Calorie target for you to achieve your weight loss (or gain) goals. Also as you eat and exercise throughout the day, you need to log your meals and exercise in their Food and Exercise diaries.

MyFitnessPal will calculate the number of calories you've consumed from food and burned from exercise and let you know how many calories you have left to eat for the day. If you stick within your calorie limits, you should achieve the weight loss (or gain) you're looking for. [14]

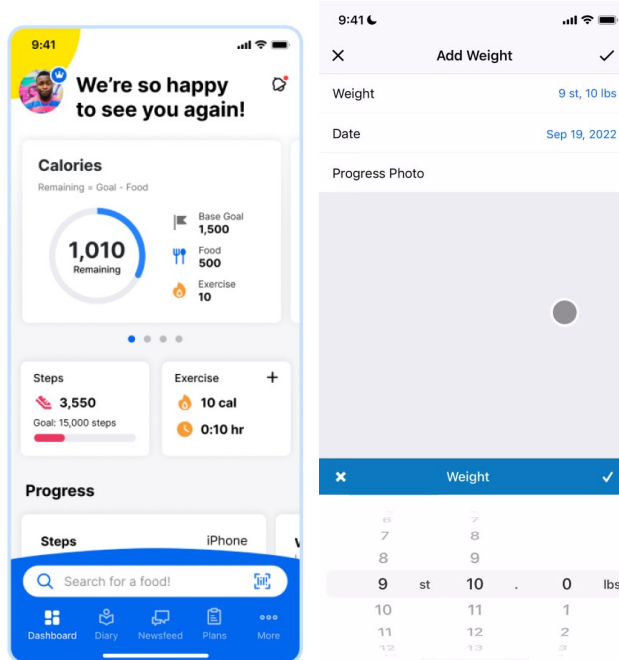


Figure 2: MyFitnessPal [14]

- **Lose It!:**

Lose It! is another widely-used nutrition app that focuses on weight loss and healthy eating. It offers a simple and user-friendly interface for logging food and exercise, with the ability to set personalized goals, as see in **figure 3**. Lose It! gives you a calorie goal to shoot for every day to lose weight. The number of calories will depend on your activity level, body composition, and overall goals. [8] Think of Lose It! as a calorie counter, like MyFitnessPal, but with features that let you create your own personal experience.

Your calorie restrictions are based your information. For some obese and pre-diabetic people, Noom might recommend its diabetes prevention program—the first mobile health program to be recognized by the Centers for Disease Control (CDC) for delivering an evidence-based type 2 diabetes prevention program. More information can be found at [15]



Figure 3: loose it [15]

- **Noom:**

Most diets cut certain things out – like carbs, calories, sugar, or fat – to help you lose weight. Noom is different. It’s a weight loss app that uses a psychology-based approach to change your eating habits for the better.[9] According to its website, Noom uses technology to "help you change not just how you eat, but how you think." The Healthy Weight Program by Noom is a well-rounded wellness plan that incorporates food, exercise, and mental health elements. Its primary focus is on transforming behaviors, leading to lasting weight loss and successful weight maintenance over the long term. [16]. **Figure 4** shows a user interface shot of the noom app

How It Works

- **Take a quiz for a customized plan:** The first step in the program is a 10-minute online quiz that asks typical questions about your height, weight, gender, age and why you want to lose weight. It also asks how active you are, how often you eat and whether you’re at risk for certain health issues like diabetes, heart disease and depression.
- **Pay, then download the app to your smartphone and create a log-in:**

Once you’ve decided to join the program and paid the fee, you must download the Noom app.

- **Meet your coaches, commit to lessons and get your calorie budget:** Noom asks you to complete 10 mini-lessons in psychology and behavioral change

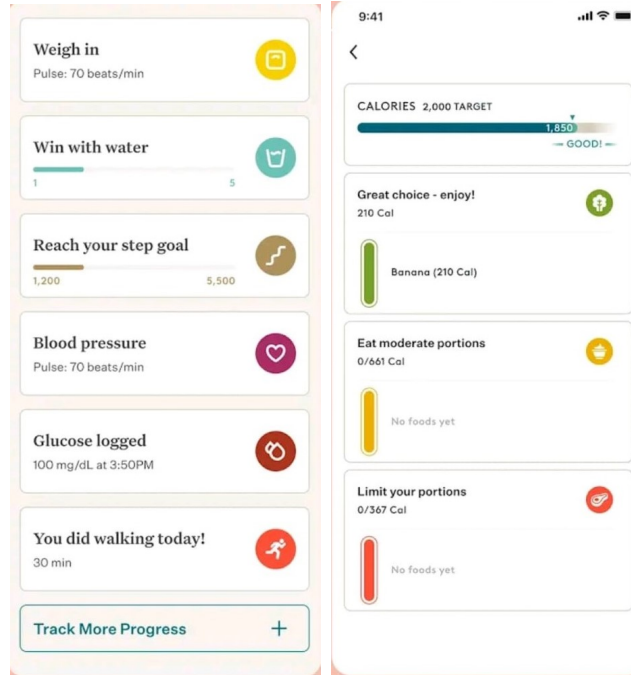


Figure 4: Noom [16]

in 16 weeks. You decide immediately if you want to spend a minimum of five minutes to a maximum of 16 minutes a day on the lessons. About two days in, you'll be connected with a goal coach who will personally reach out about twice a week to check in, ask about your progress and send motivational messages.

- **Meet your coaches, commit to lessons and get your calorie budget:**

Noom asks you to complete 10 mini-lessons in psychology and behavioral change in 16 weeks. You decide immediately if you want to spend a minimum of five minutes to a maximum of 16 minutes a day on the lessons. About two days in, you'll be connected with a goal coach who will personally reach out about twice a week to check in, ask about your progress and send motivational messages.

- **Cronometer:**

Cronometer ("cron" stands for "calorie restriction with optimal nutrition") provides an app for individuals and a separate pro version for health-care professionals to help manage clients. [17] The app offers easy tracking of calories and micro- and macro nutrients, with the goal of encouraging users to develop healthier eating habits. Every food submission is verified for accuracy, and the app offers a forum and a Facebook page where users can connect and swap tips. **Figure 5** shows the looks of the cronometer app

How It Works:

Set your nutritional targets: Cronometer comes built-in with a nutritional target wizard. Simply tell it your body details (age, weight, height, and sex), and it will automatically set recommended minimum daily values for all of the vitamins and minerals your body requires to stay healthy.

Set your weight loss goal in Cronometer: You can also choose a weight loss goal. Cronometer will set your recommended daily calories to meet that goal. For example, if it calculates that your body requires 2,500 calories per day to maintain your current weight, and you want to lose one pound per week, it will recommend your calorie target to be around 2,000 calories.

Get daily exercise: When trying to lose weight, exercise serves two important purposes. First, it burns calories, so can help provide some of your caloric deficit. But secondly, if you don't exercise at all and run a caloric deficit your body may end up burning your muscle instead of fat! A little bit of daily exercise should keep your muscles stimulated and prevent muscle loss. For further understanding view [17]

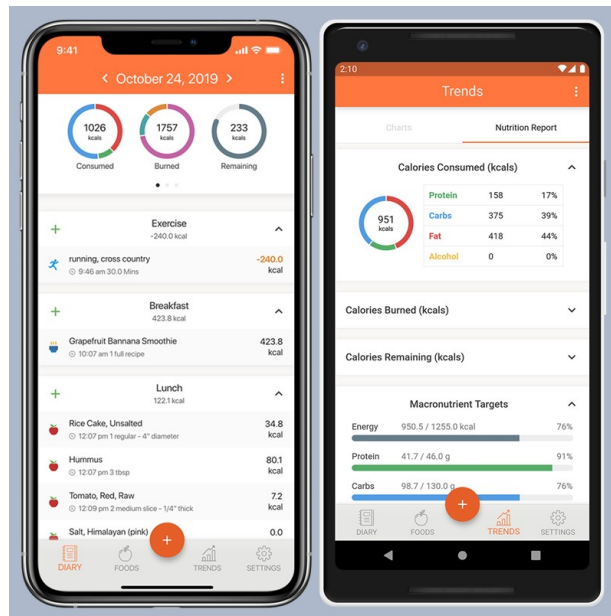


Figure 5: Cronometer [17]

3 Project Design

As stated, the project is to create a user-centric and feature-rich mobile application that empowers users to make informed and healthier dietary choices.

The development process for a diet and fitness app requires a structured and systematic approach to ensure the app's success and effectiveness. This process encompasses various stages, from design to implementation, testing, and deployment. The development process is broken into 3 major sections: Identifying core features, Front-end development and Back-end development

3.1 Objectives

The app does not differ from the existing apps out there, but with an addition of providing a user-experience reached feature to solve majority of the fitness needs. The objectives includes and not limited to:

- Promote Healthy Lifestyle
- Personalized Health Plans
- Track Fitness Activities
- Nutrition and Diet Support
- Personalized Wellness Solutions
- Bridging the Gap
- provide personalized solutions based on individual health goals

3.2 Core features

The core features will include;

- Food Logging and Nutritional Tracking: A user-friendly interface for logging food intake and monitoring nutritional values (calories, macronutrients, etc.).
- Nutritional Analysis: Real-time nutritional analysis and insights on users' dietary intake.
- Recipe Database: A collection of healthy and delicious recipes with detailed nutritional information.
- User friendly chat assistant: the chat assistant will try to provide an interactive experience to help user get quick response and recommendations
- User Profile: User accounts to save preferences, track progress, and synchronize data across devices.

3.3 Front-end

With every software development, the front-end/ user interface is very important as this is what attracts user to the product. Making it user friendly and straight forward as possible. To achieve this i made use of the technology stack:**React-Native** a JavaScript cross-platform mobile application frame work, With this development of mobile app has been made easy without worrying about additional syntax for different mobile OS. This framework was run on **Expo go app** ; an app that allows you to run and test React Native apps directly on your Android or iOS device. It allows you to open up apps served through Expo CLI and run your projects faster when developing them.

The dev server returns a JSON manifest file that describes the project. Expo Go uses this manifest to download the JavaScript bundle and any assets required to run the project. Then, the JavaScript engine executes this JavaScript bundle to render the React Native app [10].

Login & Sign up: In the development of the at the front-end the user gets the option to either login or sign up depending if they are new or existing users. A validation logic is set on both the login and sign up to ensure valid details as given before sending over to the back-end for verification or storing. **Figure 6** shows the UI for users to login or sign up(if new user) the

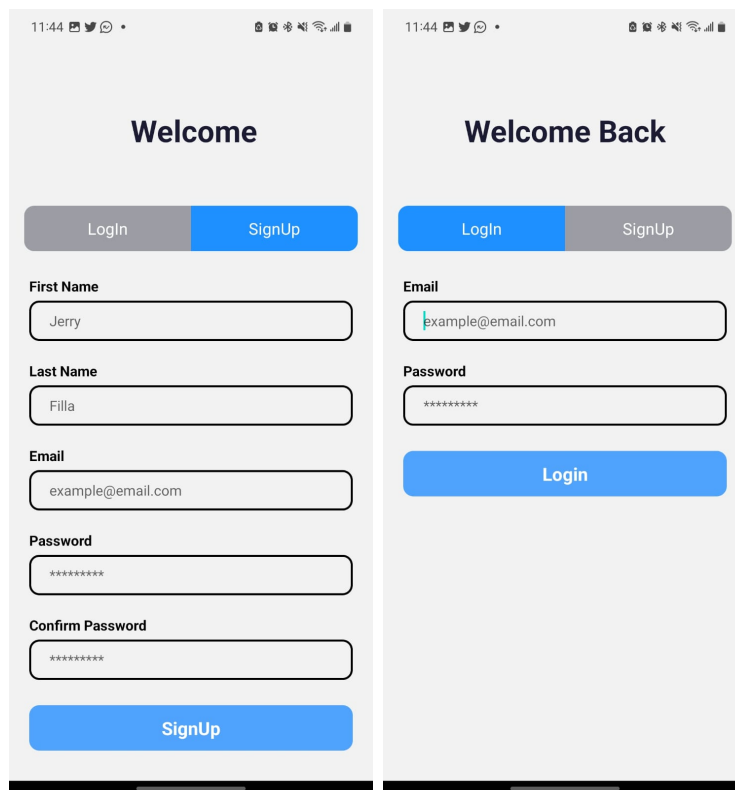


Figure 6: Login & Sign Up

Upon a successful sign up the user is directed to another pages where their height and weight information is collected for BMI calculation, as seen in **figure 7**. This is then stored and the user is directed to the home page dash board. Here the user can work within the app and make use of other features such as the meal log, connect wearbales to get step counts as well as calories burn, access the diet and fitness assistant bot and also the users profile.

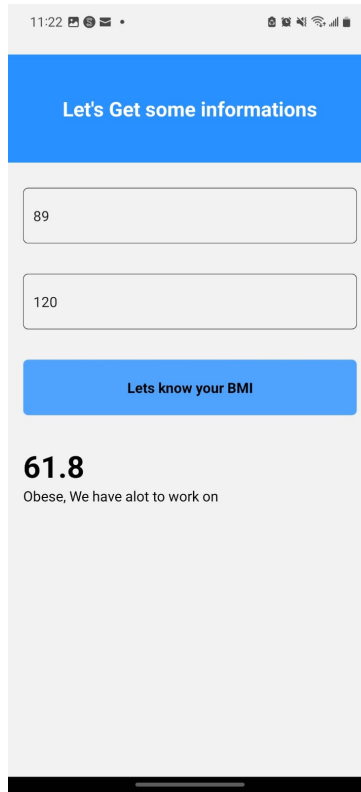


Figure 7: BMI calculator

Fit Assistant: One of the major features of the app, which is the fit assistant chat bot, is designed to respond to all diet and fitness related queries inputted by the user, and create a conversational response which helps the user understand and get all required information need. Figure 8 shows the fit assistant screen and a couple of interactions

The fit assistant chatbot uses the Davinci-text-003 of the GPT-3 model of openAI API.

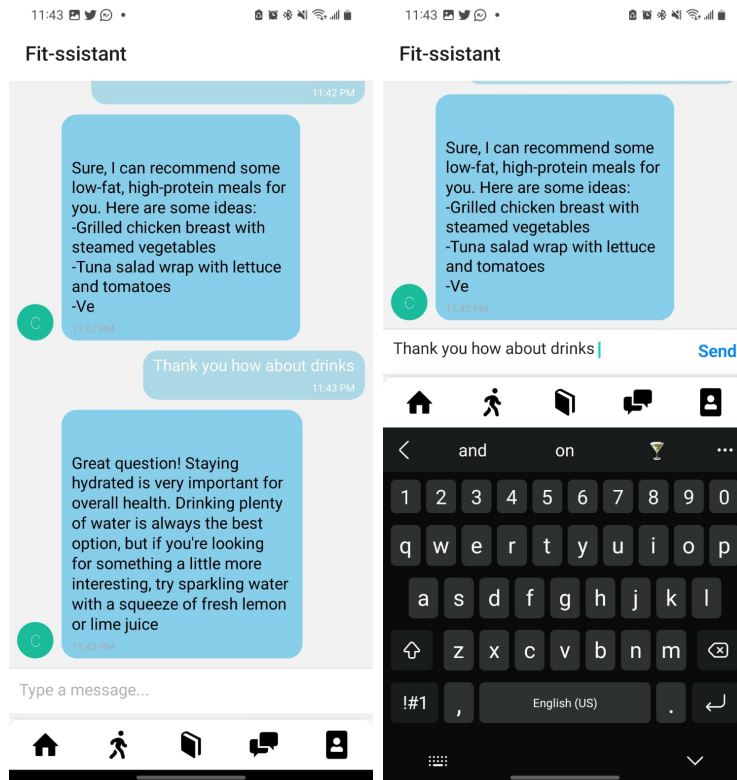


Figure 8: Fit Assistant

Meal Log: Another important feature implemented is the meal log, where users pass ingredients in text form and the nutrients and macros are given and are stored showing the total consumption readings for the day, so the user can see. This was achieved with the use of edamam API. The edamam nutrition analysis API was used to get the ingredients macros and nutrients information.

The inputs the food item, ingredient, or recipe they want to analyze and it is passed as a request in the back-end. This is done by using a POST request containing the relevant data. See **figure 9** as it shows the screen to log the meals and ingredients

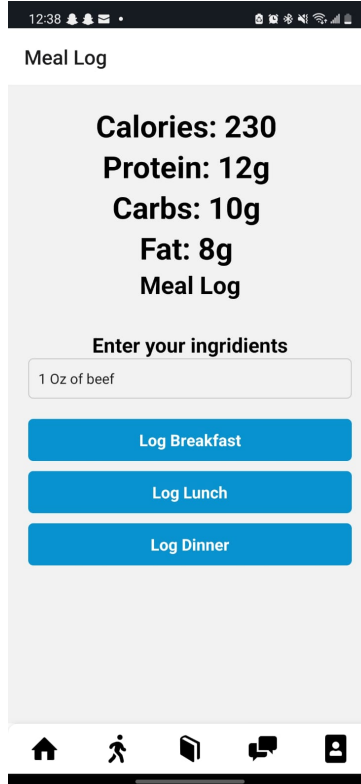


Figure 9: Meal Log

Step Counter: The step counter screen feature is needed to help users track number of steps taken and calculate the calories burnt. This is to be integrated with the wearable like, apple watch, google fits, fitbit et.c. This feature is very important as it gives users that power to know how active they are the average amounts of steps and calories they burn per day. Figure 10 shows the UI screen to track steps and distance covered, getting its reading from a wearable device

The importance of the feature is its ability to help users with insights on their activity levels for a given time. By tracking the number of steps taken and calculating the calories burned, the users understands how physically active they are on a regular basis. This information acts as a valuable measure for assessing their general activity levels, enabling them to establish fitness objectives, make knowledgeable choices regarding their workout regimens, and track their advancement over an extended period.

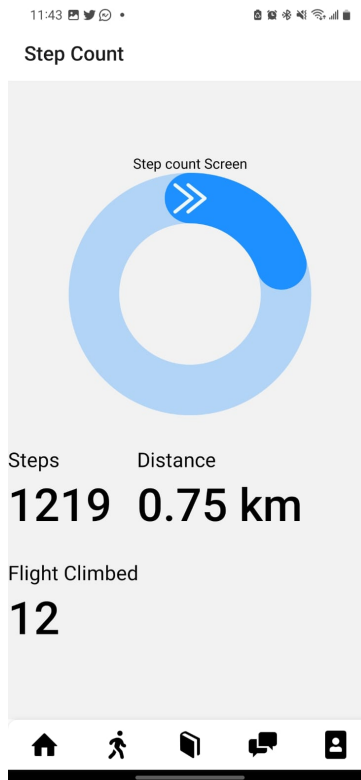


Figure 10: Step counter

3.4 Back-end

As important as the front-end is the back-end is equally as important as it where the logic and backbone for the application is defined. To achieve this I made use of **Node.js and Express**, and other JavaScript run time for server-side logic and API calls and development. In this section this is where all major logics that lets the app process and store data are created.

Here the front end react-native app send requests based on users input or action using **axios**, a promised-based HTTP client for JavaScript that has the ability to make HTTP requests from the browser and handle the transformation of request and response data. The back-end server receives this request, processes it and send a response based on the conditions and logic set. One of the major functionality of the back-end server is to store and query users data stored on the database. As we all know, in developing an application that involves storing and retrieving records we need a database. For this **MongoDB** was used for data storage and retrieval. To access this database, a Node.js based Object Data Modeling (ODM) library **Mongoose** was used. When a user attempts to login, the server queries the database to compare if any user exist with given credential, if yes the user is granted access.

Another functionality is the meal log logic. As this project tries to showcase the

combination of various existing technologies, the API from **Edamam** was implemented for the nutrient analysis of logged meal ingredients. Here when the user sends inputs on meal ingredients the server makes an Axios API request to edamam nutrition analysis endpoint passing the ingredients as the parameters. The Edamam Nutrition Analysis API is a tool that allows developers to integrate nutrition analysis capabilities into their applications. It provides a way to analyze the nutritional content of food items based on their names or ingredients. The API using its NLP model extracts the relevant information from the text and returns all required information in a JSON format. See **figure 11** After, the server with its own custom logic, extracts and stores only the need information and sends a response back to the front-end.

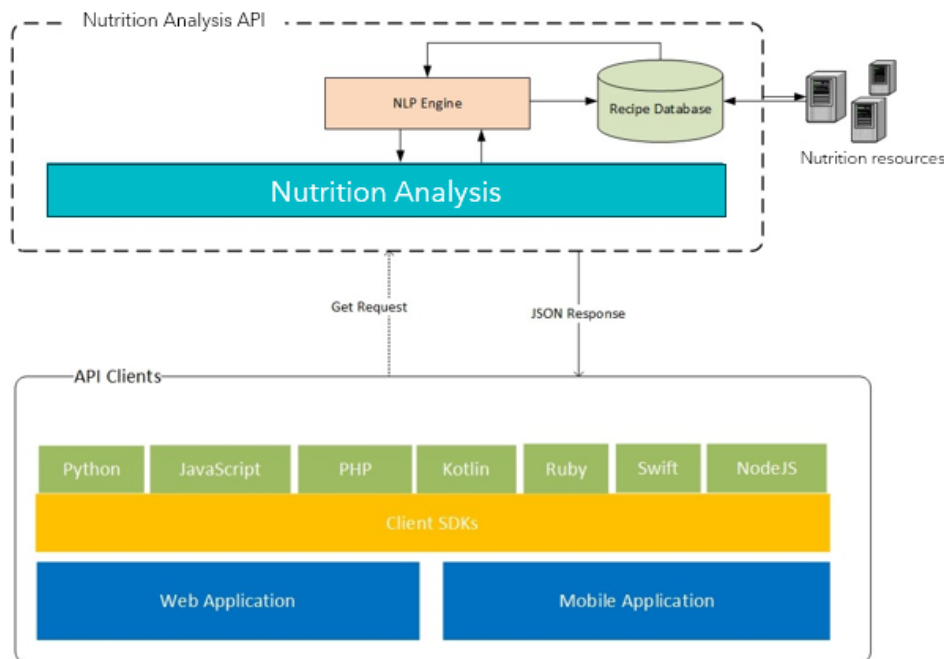


Figure 11: Edamam nutrition API [6]

Another API used was **OpenAI** API for the chat assistant feature of the app. As stated earlier OpenAI has led the way in the creation of cutting-edge language models that excel at interpreting and creating natural language. It provides a user friendly discussion dialog using its advanced NLP models. In the case of this development I made use of the text-davinci-003 model, which is trained to provide precise and accurate response on matters given. It also takes in a prompt that channels it to more focused on specific topic, in a case like this project where it is required to know

about health and fitness topics. This API was implemented directly at the front-end as all informations gotten from the response are relevantly needed to give that dialog flow. **Figure 12** show a simplified process of how GPT3 model process text



Figure 12: OpenAI API [12]

All these components and technologies coming to makes the success of this project project. To bring all this together VScode to write all needed logic for development and API calls, like wise making use of Node Package Manager (NPM) to install all dependencies to help with the development.

As seen in the use case model diagram **figure 13**, all the user either login or sign up, if first time user, then the user is directed to a get the body mass index(BMI) and stores the information in the users database. Upon successful sign up/login the user is taken to a dashboard and can access all the functionalities, such as, meal log, calories counter, step counter, and fit assistant chatbot.

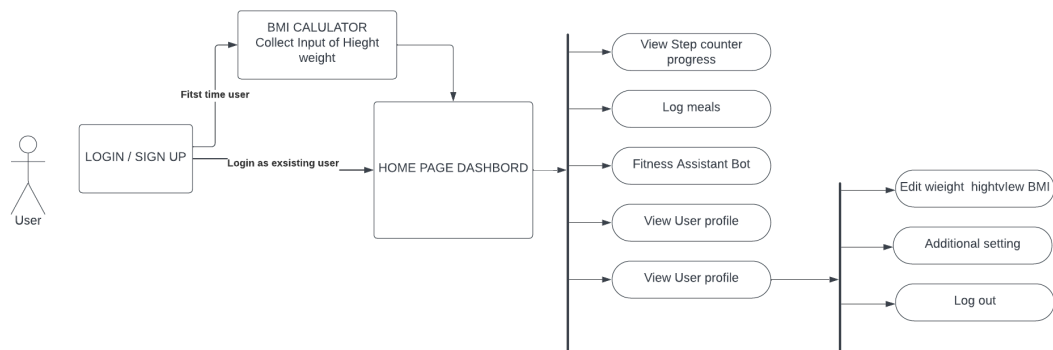


Figure 13: Use case model

4 Codes & Logics

Here i will be showing and discussing the codes and logic used:

4.1 Axios Request

Axios is a popular JS library used for making HTTP requests from Node.js. It provides an easy-to-use and efficient way to interact with APIs, fetch data from servers, and handle responses. Axios is widely used in web development due to its simplicity, flexibility, and powerful features. it is first installed using npm, and can be used anywhere within the code as seen below in **Listing 1** :

```
1 // #1 This first file is the clinet.js file where the base url and
  axios is located
2 import axios from "axios";
3
4 export default axios.create({ baseURL: "http://10.21.220.248:3000 "
  });
5
6 // #2 Example usage for creating user
7 import client from "./client";
8 import AsyncStorage from "@react-native-async-storage/async-storage"
  ;
9
10 export const SignedIn = async (email, password) => {
11   try {
12     const signInRes = await client.post("/signIn", {
13       email,
14       password,
15     });
16
17     if (signInRes.data.success) {
18       const token = signInRes.data.token;
19       await AsyncStorage.setItem("token", token);
20       return signInRes;
21     }
22   } catch (error) {
23     console.log("error inside signin method", error.message);
24   }
25 };
```

Listing 1: Axios Use

In the #1 the axios.create is used to define the base url where all other files will be accessing to call APIs, while #2 shows an example how the clinet.js file, which hosts the base url is called and used. Axios can be used for making request, handling responses and sending data, using GET, POST PUT,PATCH and DELETE.

4.2 Edamam Nutrition Analysis API

This endpoint was accessed using both POST and GET method from my backend. The POST request gets the information from the users input then sends the information gotten to the edamam API as a GET request to receive the nutritional information and is sent back to the backend as a json format. **Listing 2** show the code snippet for the request

```
1 import express from "express";
2 import axios from "axios";
3 import { MealLog, User } from "../models/user.js";
4 import { isAuth } from "../middlewares/auth.js";
5
6 const router = express.Router();
7
8 async function getMealNutrients(meal) {
9   try {
10     const options = {
11       method: "GET",
12       url: "https://api.edamam.com/api/nutrition-data",
13       params: {
14         ingr: meal,
15         Accept: "application/json",
16         app_id
17         app_key
18         "nutrition-type": "cooking",
19       },
20     };
21
22     const response = await axios.request(options);
23     return response.data;
24   } catch (error) {
25     console.log(error);
26   }
27 }
28 router.post("/meal-log", async (req, res) => {
29   try {
30     const {
31       userId, // = "64bf17249a967f92192a79fc",
32       mealType, // = "breakfast",
33       ingr,
34     } = req.body;
35
36     // #3 LOGIC TO GET REQUIRED INFORMATION
37     const mealNutrients = await getMealNutrients(ingr);
38     console.log(mealNutrients);
39     const { calories, totalNutrients, ingredients } = mealNutrients;
40     const ing = ingredients[0].parsed[0];
41
42     const newMealLog = new MealLog({
43       ingr: ing.food,
44       measure: ing.measure,
45       quantity: ing.quantity,
```

```

46     macros: {
47         protein: ing.nutrients.PROCNT.quantity,
48         carbohydrates: ing.nutrients.CHOCDF.quantity,
49         fats: ing.nutrients.FAT.quantity,
50     },
51 });
52 await newMealLog.save();
53 console.log(newMealLog);
54
55 try {
56     const user = await User.findById(userId);
57
58     if (!user) {
59         return res.status(404).json({ message: "User not found" });
60     }
61
62     //Save the new meal log document to the corresponding array
63     if (mealType === "breakfast") {
64         const updatedUser = await User.findOneAndUpdate(
65             { _id: userId },
66             { $push: { "mealLogs.breakfast": newMealLog } },
67             { new: true }
68         );
69
70
71     }
72     if (mealType === "lunch") {
73         const updatedUser = await User.findOneAndUpdate(
74             { _id: userId },
75             { $push: { "mealLogs.lunch": newMealLog } },
76             { new: true }
77         );
78     }
79     if (mealType === "dinner") {
80         const updatedUser = await User.findOneAndUpdate(
81             { _id: userId },
82             { $push: { "mealLogs.dinner": newMealLog } },
83             { new: true }
84         );
85     }
86
87     return res
88         .status(201)
89         .json({ message: "Meal log saved successfully", newMealLog
90 });
91 } catch (error) {
92     console.log("error on save", error);
93     return res.json({ message: "error", error });
94 }
95 } catch (error) {
96     console.error(error);
97     return res.json({ message: "error", error });
98 }

```

```

98 });
99 export const mealLog = router;

```

Listing 2: Edamam API call

After the API call is done and information is received by the back-end, another logic is written to extract the required information to be stored in the database, where the user can retrieve each information of meal log. Image example of a request and response after all logic are implemented is seen in **figure 14**

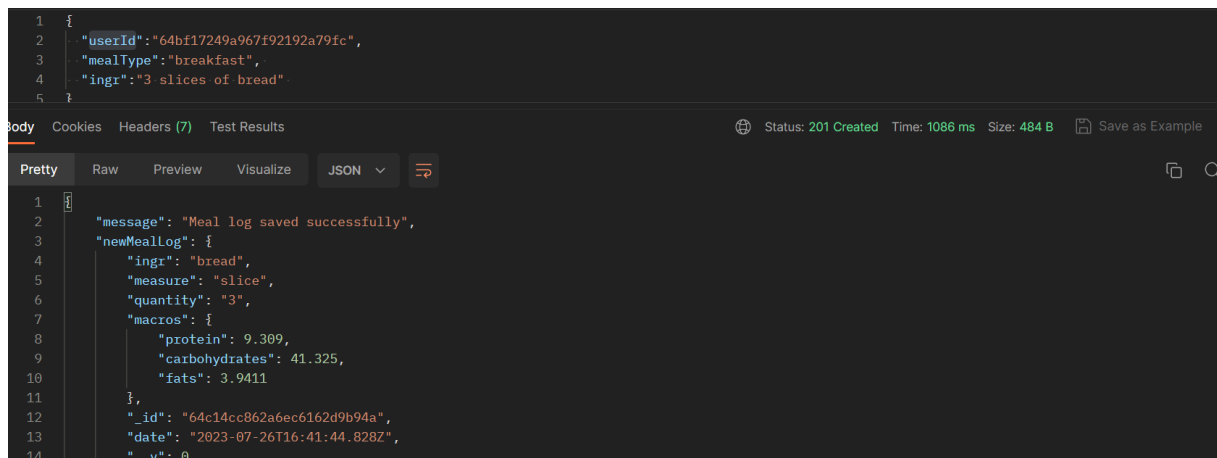


Figure 14: Postman request and response

4.3 OpenAI API

The OpenAI API allows pack installation using npm which saves the use of Axios route. The package is installed and imported and used in the code, as seen in the following code snippet in **Listing 3** and **Listing 4**:

```

1 import "react-native-url-polyfill/auto";
2 import React, { useState, useEffect } from "react";
3 import { GiftedChat, Bubble, Avatar } from "react-native-gifted-chat";
4 import { Configuration, OpenAIApi } from "openai";
5 import { View, StyleSheet } from "react-native";
6
7 const GPT3_API_KEY = Process.env.GP3API_KEY;
8
9 const configuration = new Configuration({
10   apiKey: GPT3_API_KEY,
11 });
12 const openai = new OpenAIApi(configuration);

```

Listing 3: OpenAI API call 1

Lines 1-5: These lines import necessary modules and components from various libraries. It's using the "react-native-gifted-chat" library for creating chat interfaces,

and it seems to have an issue in the import path where hyphens are used instead of dots.

Line 7: Defines a constant `GPT3_API_KEY` that is presumably intended to hold the API key for accessing the OpenAI GPT-3 API. The value of this constant is expected to be read from an environment variable named `GP3API_KEY`. However, there seems to be a typo in `Process.ENV`, it should be `process.env`.

Lines 9-12: Creates an instance of the OpenAI configuration using the provided API key.

```
1 // Make API call to GPT-3
2   const response = await openai.createCompletion({
3     model: "text-davinci-003", // or any other GPT-3 model
4     prompt: 'The following is a conversation with an AI
5 assistant. The assistant is helpful, creative, clever, and very
6 friendly in terms of diet, fitness and heathly tips ${userMessage}
7 ',
8     max_tokens: 50, // Adjust this based on the desired response
9     length
10    temperature: 0.7, // Adjust this to control response
11    randomness
12  });
13 //
```

Listing 4: OpenAI API call 2

The code then proceeds to demonstrate how to make an API call to the GPT-3 model using the OpenAI API.

Line 2: An asynchronous function is presumably wrapping this block, but it's not included in the snippet. The `await` keyword suggests that this code is within an asynchronous context.

Line 3: The `openai.createCompletion` method is called to send a completion request to the GPT-3 model.

- **Model:** Specifies the GPT-3 model to be used. In this case, it's "text-davinci-003". I made use of the text-davinci-003 as the response given is as close to accurate as possible.
- **Prompt:** The prompt is where the user passes the query they want response to, but before that it important to pass a pre-comman that tell the model where to concentrate it knowlegde on. This totally depends on the sector the chatbot is under. For my development it focuses on health diet and fitness.
- **Temperature:** Controls the randomness of the response. A higher value (e.g., 0.7) makes the output more random, while a lower value makes it more deterministic
- **Max_tokens:** Limits the response to a certain length, in this case, 50 tokens. Adjusting this value will control the length of the response.

This were the important logics needed for the development of this application. Coupled with other existing logics like saving newly registered users and retrieving user information upon request actions.

5 Future Works

In the future, my focus will be on expanding the capabilities and features of the diet and fitness app providing more comprehensive and personalized health and fitness experience for users. The following points outline our planned future work:

- Implementing warbles: integrating wearable devices, such as smartwatches and fitness trackers, to enable seamless tracking of users' activities and step counts. By harnessing the power of wearables, the app's target is to provide real-time and accurate data that enhances users' understanding of their fitness progress and motivates them to achieve their health goals.
- Providing a better user interface: Improving the user interface is a key area of focus. conducting user feedback sessions and usability tests to identify areas for improvement.
- AI automatic meal recommendation based on user's dietary restrictions and logs
- Workout routine and AI personal trainer: Introducing a personalized workout routine feature that tailors exercise plans based on users' fitness levels, goals, and preferences. Also, an AI virtual trainer will provide guidance, during workouts to ensure safe and effective exercise sessions

6 Conclusions

In conclusion the aim for developing this app is not only to empower individuals in managing their well-being (looking from the user point of view), but also to see how new technologies can be brought together and integrated to provide an all in one solution to everyday problems.

The Development of this diet and fitness app opens alot of opportunities to developers out there, giving them the flexibility and creative space while using existing technologies to build different applications and/or products

Things that have been learned as a result of the work you have done. You should check once again how well the major components are linked: research questions, literature review, choice of appropriate method and techniques, and findings.

Recommendations are usually found in reports. They include a set of actionable steps with goals associated along with possible solutions.

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