NutriMeal Assistant

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Certificate of Approval

It is certified that the work presented in this report was performed by **Sameer Arif Khan, Shahryar Mubashar,** and **Syed Ammar Bin Farrukh** under the supervision of **Engr. Ahsan Shah.** The work is adequate and lies within the scope of the BS degree in Computer Science/Computer Engineering at Ghulam Ishaq Khan Institute of Engineering Sciences and Technology.

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ABSTRACT

This project is striving to design and develop an innovative smartphone application by incorporating gamification and AI (artificial intelligence) to provide customized recipes and nutritional information specific to the users' needs. People feed their food or food items to get tailored recipes suggestions with necessary nutritional data to even enhance cooking skills and have a better meal healthy choice. The app uses a LLM (AI model) as part of the training process to build a weekly meal plan system that has limitations from the user as much as possible in terms of calories needs and his/her recipe preferences.

ACKNOWLEDGEMENTS

We foremost are grateful to our respected mentor**, Engr. Ahsan Shah**, for his priceless contribution and valuable advice during the making course of our application floating on the waves of mobile, named NutriMeal. Engr. Shah's knowledge and insight had affected the way we looked at our vision and ensured that it could be technically possible and executable. I can say that the generosity of sharing his experience and giving us a useful advice made our mobile app better and improved its quality. We are really indebted to him for having stood by us since he extended his support and direction.

Team NutriMeal

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CHAPTER I

INTRODUCTION

PROBLEM STATEMENT

Tools for knowing about the nutritional values and the healthiest choices are not simple to reach and this causes issues such as insecurity of the food pick-up and awakening the hungry inclinations. Here is where the flexibility comes in – how to build the recipe app that generates the recipes by using only the minimal ingredients that users have at home. Recipes should be built in keeping with the idea of simplicity and the use of minimal and readily available ingredients. It helps users to get an opportunity of having a recipe where they do not have all the ingredients when they have more of the things they need to make the recipe. They can find the recipe faster.

In addition, we recommend developing and implementing a module of meal planning that will help users to get the main task of meal planning easier or to plan the complicated task of ingredient selection again. Along with offering specialized diets to have a gourmet meal with a hundred percent standard and to have some fun when making meals, the application will produce nutritious meals as well.

OVERVIEW

NutriMeal is an app meant to completely change the outlooks that you have on food. It simplifies all that's cooking related, from choosing what you're going to eat to discovering new tastes. Visualize the craving of having a chef in a form of a pocket. NutriMeal enables you to use the scatter technique or by scanning the shopping list with the help of the OCR technology. Considering what you have in stock, your choices, even your historical dinners, NutriMeal technology enables you to get recipes tailored for you. No more staring into the abyss of a fridge that is towering over you, filled with delicious possibilities, and not knowing where to begin. NutriMeal is not just about obtaining a desired recipe but provides its clients with valuable knowledge and solutions to maintain a balanced diet. Due to that, you can plan your meals in advance and by simply showing you a weeklong grocery list; it helps you to supervise your

shopping trips. Many recipes are equipped with the exact nutritional information that lets you easily follow your calorie intake and ensure success in the process of reaching your health objectives. On top of convenience, NutriMeal comes up with additional advantages. It allows a healthy lifestyle's culture to be gamed. The application used a variety of things, such as points, badges, and leaderboards, and thereby, consuming the healthy options became a game of creativity.

NutriMeal is walking the talk by enabling users to personally run their health and learn not only by the knowledge but also by enjoying the cooking. It's an all-inclusive and easy-to-use platform offering meal planning, recipe tracking, shopping list creation, and nutritional information based on age, gender, height, and activity level practically speaking for everyone.

PRODUCT PERSPECTIVE

NutriMeal is your AI-powered recipe assistant that helps you to keep the eating healthy. With its artificial intelligence, getting healthy meals will be as easy as pie! No tech knowledge required. This mobile application is developed in state-of-art (Flutter, for instance, is chosen for smooth running) which makes the interface friendly for users. Type the ingredients you have and click the photo button to show the app your grocery list. NutriMeal then employs OpenAI’s functionality to offer you recipes for its database just for you. Create a customized menu, get a grocery list conveniently auto generated, and monitor your nutrition statistics all at one point. Additionally, these functions are accompanied by the fact that healthy choices are becoming more and more interesting. Also, points, badges, and leaderboards will make healthy lifestyle more attractive which turns it into a game. NutriMeal tells you that you can quickly become the chef you never thought you'd be. You can cook literally any meal you want and spice it up with healthy ingredients.

CHAPTER II

LITERATURE REVIEW

Meal planning has been born and tracking what we eat has become in teen years as important as those who take healthy habits into account and just well-being. For example, this is exactly what the study by Smith et al. (2019) shows - these findings demonstrate that having a meal plan enables you to make more healthy food choices. The only reason behind this is that NutriMeal emphasizes meal planning ´s user-friendly features and this way you can trust yourself to make proper decisions about your diet.

Picture your platform offering a team of personal chefs, sous chefs, and their nutritionist too as one useful mobile app. Unlike an actual chef, NutriMeal phenomenon doesn't demand any specialized knowledge in cooking. It offers a realm of innovation focused on making this path enjoyable towards healthy eating. Only NutriMeal, through its app, would have to know the ingredients on hand by either typing them in or using your smartphone camera to take pictures of your pantry or fridge. Employing OpenAI technology, the AI engine now calculates wonderfully flavored recipes after considering your preferred ingredients, as well as your eating history. No need to superfluous veering of fridge full of various ingredients, uncertain of what to prepare!

Just like how a person will find the nutritional information for a certain recipe in MyFitnessPal app, NutriMeal food listing contain the nutritional information for each dish. Through this way you can monitor your calorie count and make sure that you stay on top of the health target you have set for yourself. On top of that the game elements such as points, badges, and leaderboards bring even more entertainment, thus making healthy lifestyle a fun royal way. NutriMeal — our guiding hand that will help you to turn your everyday meals into healthy and tasty delights. We will be at your service in line with your decision and will pave your way for huge and mouth-watering options.

CHAPTER III

DESIGN (SYSTEMS REQUIREMENTS/SPECIFICATIONS)

PRODUCT SCOPE

NutriMeal Assistant is designed to be your personalized culinary companion, simplifying healthy eating through a user-friendly and feature-rich mobile application. The core objective is to empower you to take control of your meals. This user-centric app prioritizes ease of use with features like multiple sign-up options (email, social media, etc.) to get you started quickly.

NutriMeal employs state-of-the-art technology to individualize your Food shopping. You can do this either typing the ingredients in or by using the app's built in Optical Character Recognition (OCR) function to scan your grocery list found on the note. These details, along with your likes-dislikes and previous meal history, using an AI-based recipe generator. Herein, by OpenAI generator, is with the assistance of which you can be sure that the recommendations you receive would be personalized and in accordance with your desires and tastes. Besides just the recipes, NutriMeal provides for meal planning which is easy to streamline. It is even easier to use the app as you can explore various recipes and print a grocery list with the ingredients all at once, convenience being its priority. Moreover, the nutritional tracking is also present, and you can track the nutrients you are having and regulate your calorie intake by just entering the data into the app. However, NutriMeal is not limited output to functionality. The app employs playful things to keep you motivated through scoring, bites, and rankings. This trivial way of looking cleverly incentivizes healthy eating which eventually stems into a long-lasting journey, in which healthy food is treated as fun reward. The basic purpose of the NutriMeal Assistant is to assist you in achieving a great and healthy tomorrow by creating appetite-satisfying as well as healthy meals.

PRODUCT FUNCTIONS

The main functions of the "NutriMeal Assistant" include:

User Registration and Authentication:

Allows users to create accounts and log in using methods, like email, social media and more.

Ingredient Input and Recognition:

Enables users to enter ingredients or use Optical Character Recognition (OCR) technology to extract items from images.

Recipe Generation:

Creates recipes based on ingredients, user preferences and past meal history.

Meal Planning:

Assists users in creating meal plans by selecting recipes or meals. Generates consolidated grocery lists.

Nutritional Tracking:

Calculates and displays information for each meal helping users manage their goals.

Gamification and User Engagement:

Incorporates game elements to motivate users towards achieving their health and cooking objectives.

USER/SYSTEM REQUIREMENTS

External Interface Requirements

External interfaces play a role in facilitating communication and interaction with the "NutriMeal Assistant" application. This section outlines the specifications for external interfaces.

Hardware Interfaces

The "NutriMeal Assistant" app mainly depends on the components of devices. It is designed to work across smartphones and tablets. The hardware connections include:

Mobile Devices:

The app is suitable for both iOS and Android devices, such as smartphones and tablets.

Camera (Optional):

To recognize ingredients using OCR the app may utilize the camera on your device.

Software Interfaces

The "NutriMeal Assistant" interacts with software components and external sources to provide its functionalities. Some important software interfaces include:

Database Management System (Firebase):

The application relies on a database management system to store user profiles, recipes, nutritional data, and shopping lists.

Nutrition Database:

To ensure information the application connects with external nutrition databases.

OCR Engine (Tesseract):

The Optical Character Recognition (OCR) functionality is integrated with the Tesseract OCR engine, for recognizing ingredients from images.

Communication Interfaces

Communication interfaces play a role in facilitating data exchange and notifications within the application. The following communication interfaces are utilized:

Internet Connectivity:

Users need an internet connection to access real time data such as recipe updates, nutritional information, and user notifications.

Push Notification Services:

To send notifications the application connects with push notification services on both iOS and Android platforms.

Functional Requirements

Functional Requirements with Traceability information

FR01	User authentication
FR02	Ingredients or edible items input prompt
FR03	Recipe creation with recipe photos and nutritional information
FR04	Meal planning with weekly groceries
FR05	Information on nutritional value of meals and calorie restrictions
FR06	Game features and prizes
FR07	Notify user
FR08	User Reviews

Table 1: Functional Requirements

FR01: User authentication

- **User Registration**: Users can register with their email address or Google Account. When registering, you must provide an email address, username, password, and profile photo (optional).
- **Password Security**: Passwords must meet security standards, including a minimum length, a mix of upper- and lower-case letters, numbers, and special characters. Passwords are encrypted and stored securely.
- **Password recovery**: Users who have forgotten their password can start the recovery process. This process includes verifying your email address or answering security questions before resetting your password.

FR02: Ingredients or edible items input prompt.

- **Manual Entry**: Users can manually enter ingredients by typing them into a text field. The app will offer suggestions and autocomplete as users type to speed up the input process.
- **Tesseract OCR**: The Tesseract OCR (Optical Character Recognition) engine is used to read and extract items from images of handwritten or printed grocery lists.

FR03: Recipe creation with recipe photos and nutritional information

- **Algorithm**: Recipes are generated based on available ingredients, user preferences (e.g. type of cuisine, dietary restrictions), and previous meal history for Module 1.
- **High-quality images**: Each recipe comes with a high-quality photo of the dish prepared by a reliable generator (including face hugs and more).
- **Nutritional Information (Module 1 generated for individual dishes**): Nutritional information comes from a reliable nutritional database or extracted from ChatGPT and displayed per serving, including calories, macronutrients (carbohydrates, proteins, and fats), and trace minerals.

FR04: Meal planning with weekly groceries

- **Weekly Meal Plan**: Users can create a weekly meal plan by selecting recipes or meals from a list of previously generated suggestions or recipes.
- **Recipe Creation Using Machine Learning**: The app uses a machine learning model to create a weekly meal plan based on the shopping list provided by the user by extracting edible products from the list using an ML model that is trained on edibles. Product record. At the user's request, I also offer individual recipes for a meal or dish.

FR05: Information on the nutritional value of meals and calorie restrictions

- **Diet Tracking**: Nutrition data is calculated for each meal and displayed alongside the recipe. Users can view detailed information such as total calories, protein, carbohydrates, and fat.
- **Calorie Limits**: Users can set daily calorie limits and the app allows real-time tracking of these goals.

FR06: Game features and prizes

- **Points and Badges**: Users earn points by completing daily and weekly goals such as sticking to meal plans, reaching calorie goals, or trying new recipes. Achievements are rewarded with virtual badges.
- **Leaderboard**: The Leaderboard displays
  the top users, promotes friendly competition, and motivates users to achieve their health and cooking goals.

FR07: Notify user.

- **Customizable notifications**: Users can customize notification settings including
  frequency of meal reminders, goal updates, and tips.
- **Push Notifications**: Notifications are sent as push notifications to ensure users receive timely reminders and updates.

FR08: User Reviews

- **Feedback Form**: The application has an intuitive feedback form that allows users
  to send comments, suggestions, and bug reports.
- **Automatic replies**: Posted comments are confirmed with automatic replies, so users
  receive immediate confirmation that their comments have been received.

- **Follow-up notifications**:
  Users can receive further notifications based on their feedback, such as Updates to bug fixes or added features.

Nonfunctional Requirements & Software System Attributes

Performance Requirements

Response Time:

To ensure a user experience the application needs to respond with a maximum response time of 1 second, for user interactions like searching for recipes adding ingredients and creating meal plans.

Scalability:

The system should be capable of accommodating 10,000 simultaneous users without experiencing any noticeable decrease in performance.

Load Time:

When accessing the application on a 4G network it should load within 5 seconds to avoid delays during the initial loading process.

Database Query Speed:

Queries made to retrieve recipes or nutritional information from the database must execute within 300 milliseconds.

Image Loading:

Images associated with recipes should load quickly within 2 seconds when using an internet connection. This ensures that users can view high quality images without waiting times.

Error Handling:

If any errors occur while using the application, they should be handled gracefully by providing error messages within a maximum of 3 seconds after the error is encountered.

Search Speed:

The search functionality for finding recipes needs to deliver search results within 1 second for used queries. This allows users to quickly access recipe options without delays.

Data Synchronization:

To provide an experience across devices data synchronization should occur in the background with minimal impact on user usage and complete within 30 seconds.

User Profile Loading:

After selecting their profile users should have their profiles loaded swiftly within 1 second to avoid waiting times.

ARCHITECTURAL DESIGN

The architecture of NMA means based on component communications have access and execute to achieve the features required. We refer to the architectonics that encompass the functions such as scalability, a maintainable one, and utility.

Concerning the "NutriMeal Assistant", we have thusly decided to choose the Microservices Architecture. This mindset refers to the approach that the single app is divided into the services, which handle functions or parts of the application. In case of the microservices, there is each service responsible for the features, which allows for the agility, scalability, and makeup up the software maintenance simpler.

Some key components of the Microservices Architecture for the "NutriMeal Assistant" include:

User Management Microservice:

This service takes care of user registration, authentication, and profile management.

Recipe Generation Microservice:

It generates recipes based on ingredients and user preferences.

Meal Planning Microservice:

This service handles the creation of meal plans. Generates consolidated grocery lists.

Nutritional Tracking Microservice:

It presents information for meals while keeping track of user’s dietary goals.

Gamification Microservice:

This service implements gamification features, like points, badges, and leaderboards to engage and motivate users.

Why did we choose Microservices Architecture Design?

The decision to adopt the Microservices Architecture for "NutriMeal Assistant" was based on factors:

Scalability:

Microservices enable scaling of components ensuring that resources can be allocated as needed to handle increased user demand.

Maintainability:

Breaking down the application, into smaller services simplifies maintenance and updates. Changes made to one microservice do not necessarily impact others.

Flexibility:

The modular nature of microservices allows for development and deployment of features or improvements without disrupting the entire application.

Performance:

Microservices optimize performance by allocating resources resulting in response times for users.

Fault Isolation:

In case of a failure or issue in one microservice the overall application can still function properly, enhancing system reliability.

Technology Diversity:

Different microservices can utilize technologies that are best suited for their tasks allowing for diversity within the application.

MODULE IDENTIFICATION

The "NutriMeal Assistant" follows a structure that aligns with the microservices outlined in the design. Each microservice represents a module that handles functionalities:

User Management Module:

This module takes care of user registration, authentication, and profile information.

Recipe Generation Module:

It generates recipes based on ingredients and user preferences.

Meal Planning Module:

Users can. Manage meal plans using this module, which also generates grocery lists.

Nutritional Tracking Module:

This module. Displays information to help users track their dietary goals.

Gamification Module:

It incorporates gamification elements to encourage user engagement and motivation.

4+1 ARCHITECTURE VIEW MODEL

In this section, you draw the architecture using the views defined in the "4+1" model.

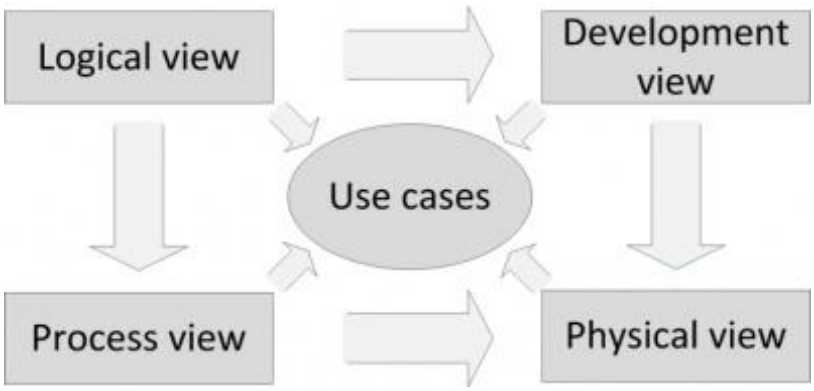


Figure 1: 4+1 Architecture View Diagram

Use Case View

This is a list of use-cases that represent major functionality of the final system:

i. UC-1

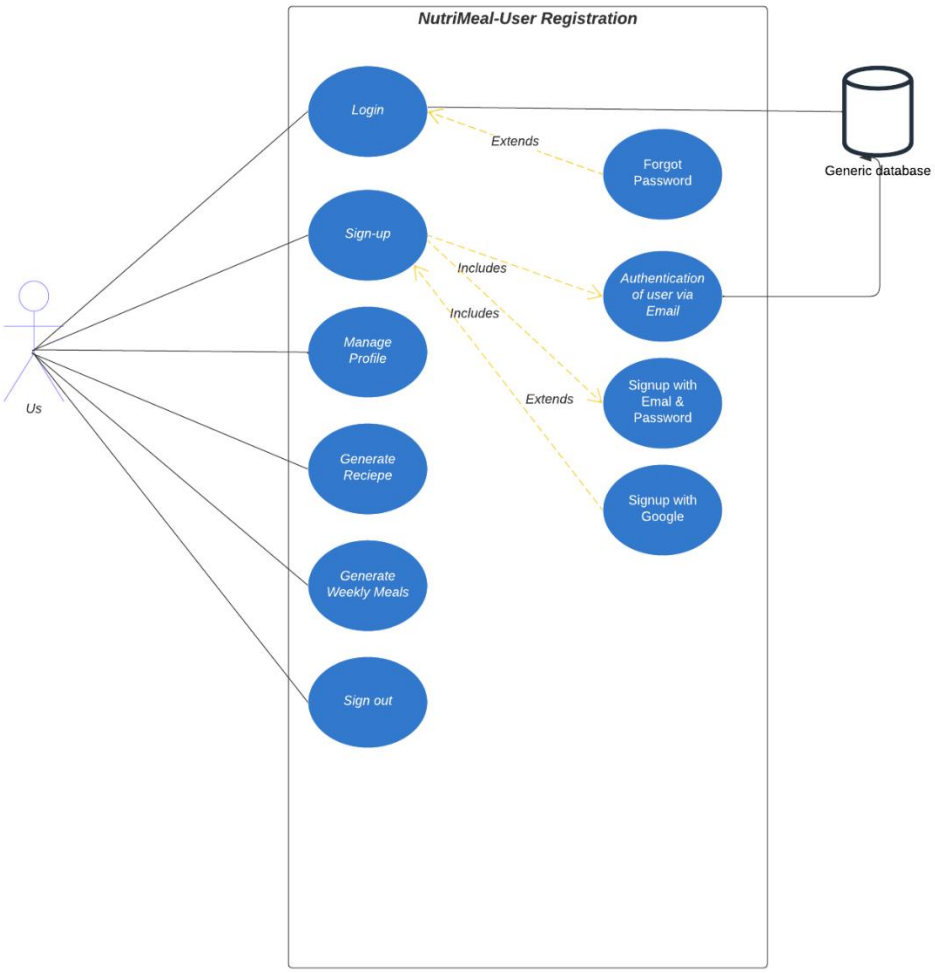


Figure 2: Use Case Diagram (A) for user registration.

ii. UC-2

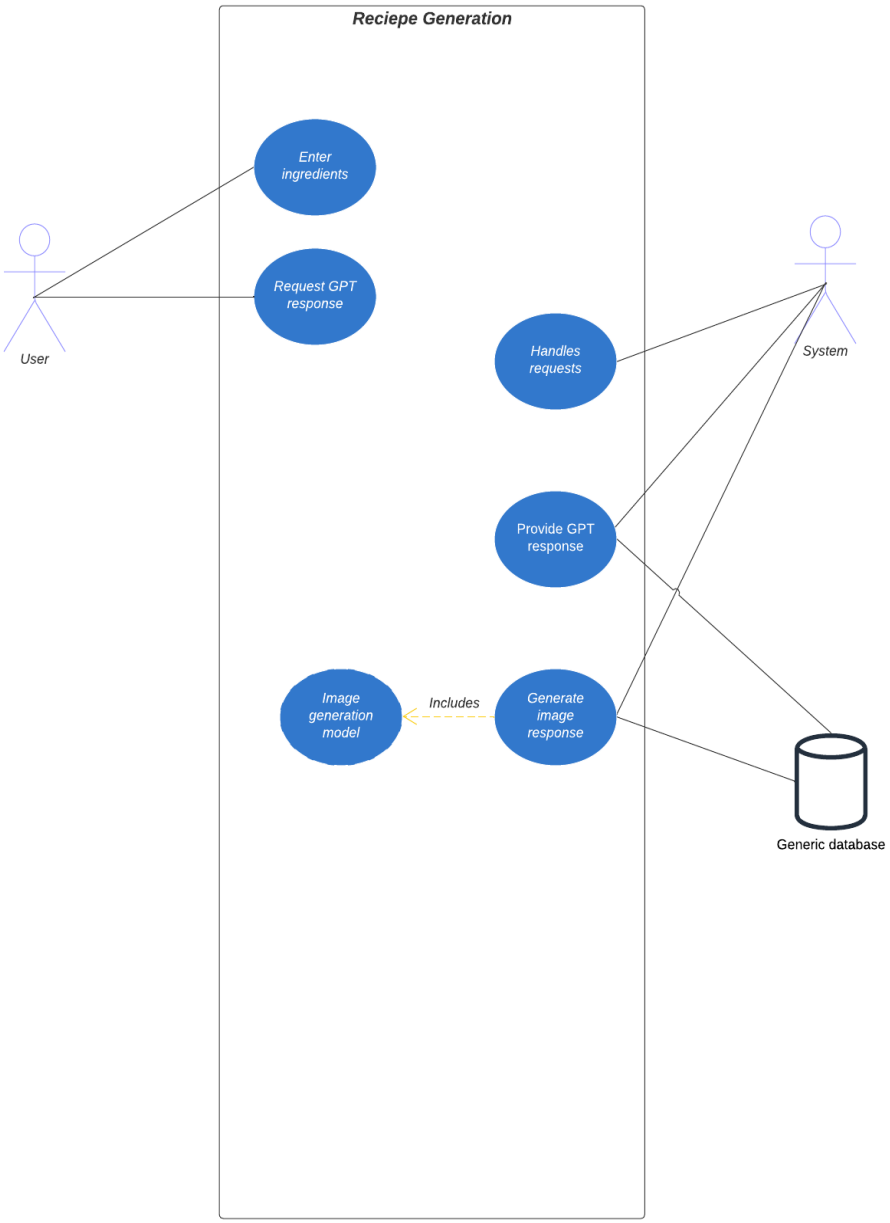


Figure 3: Use Case Diagram (B) for recipe generation.

iii. UC-3

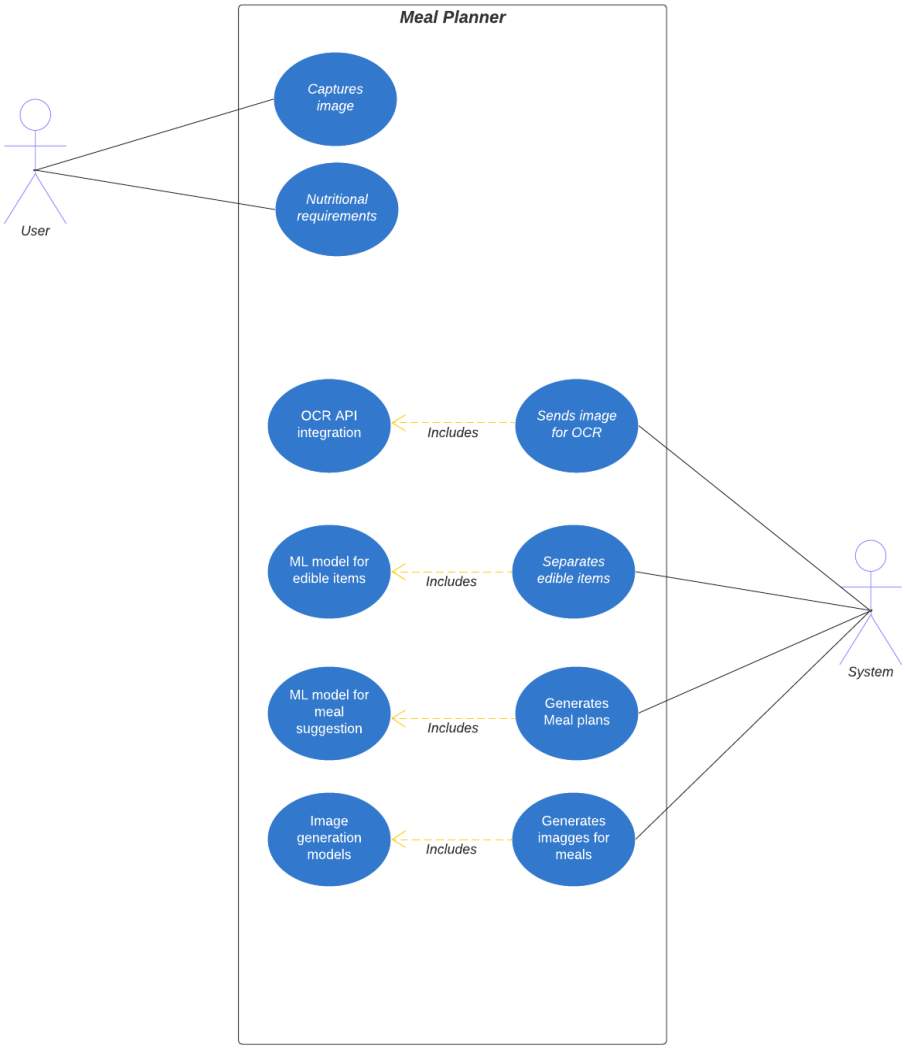


Figure 4: Use Case Diagram (C) for weekly meal planner.

Logical View:

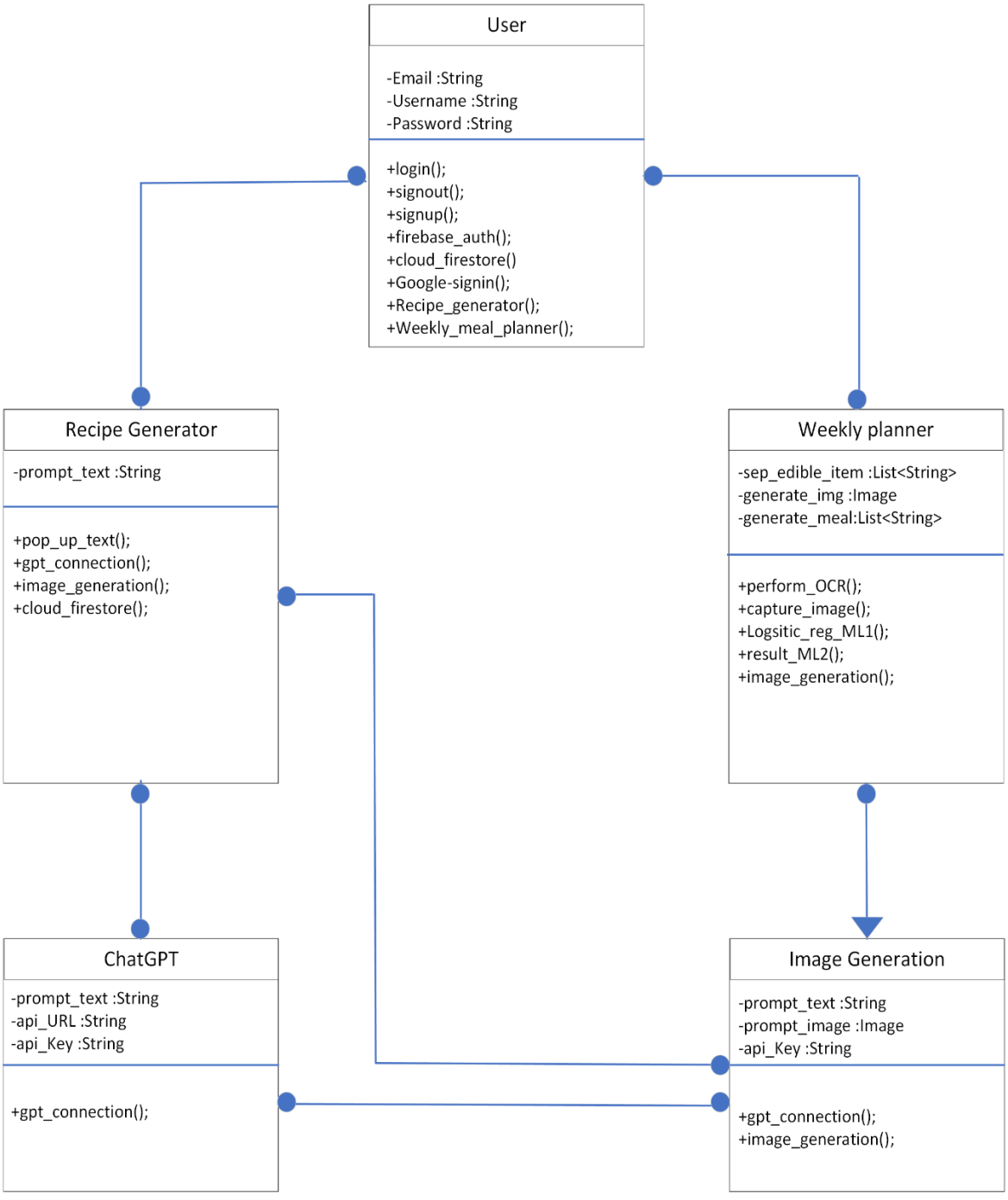


Figure 5: Class Diagram

Development View

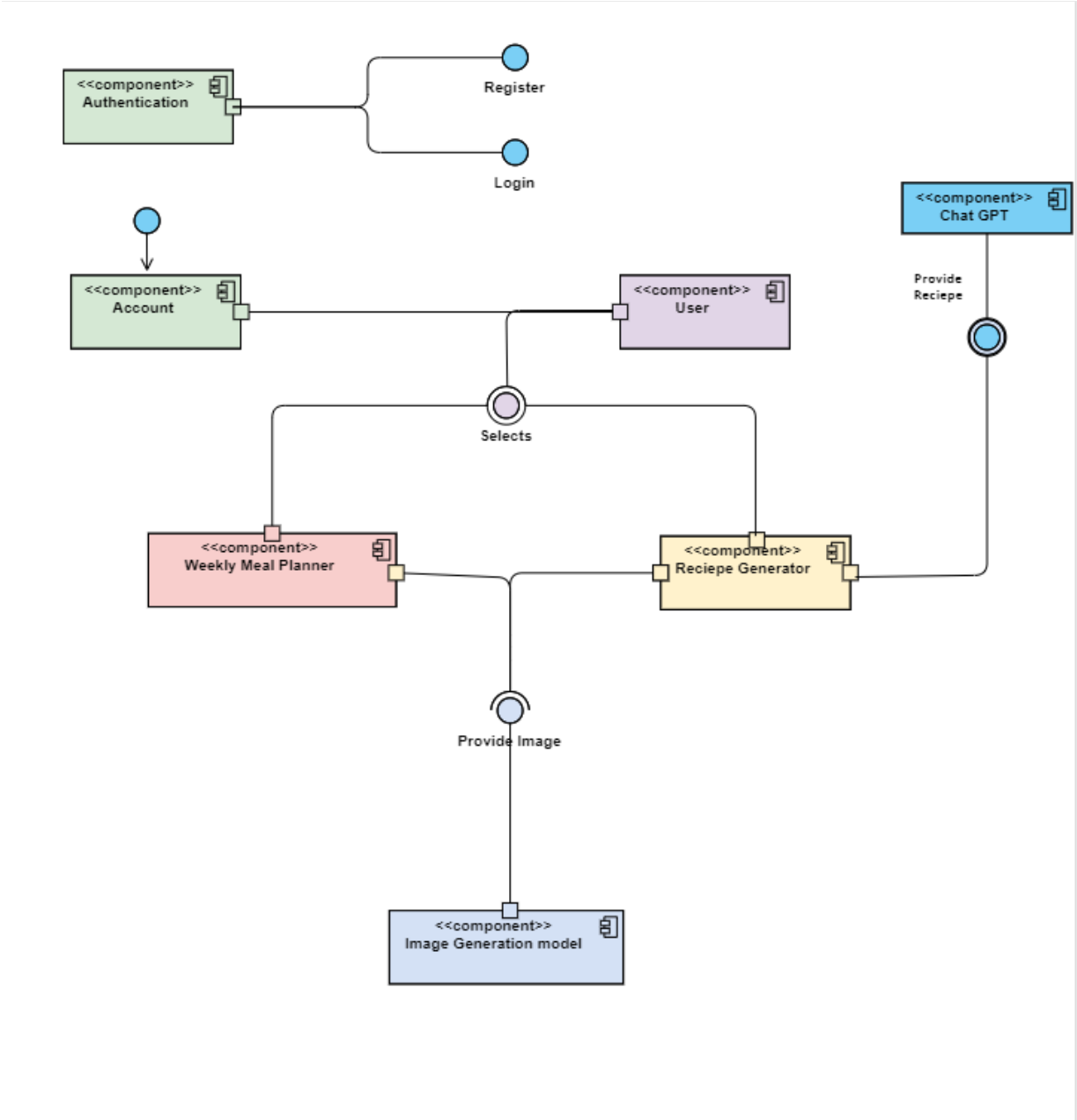


Figure 6: Component Diagram

Process View

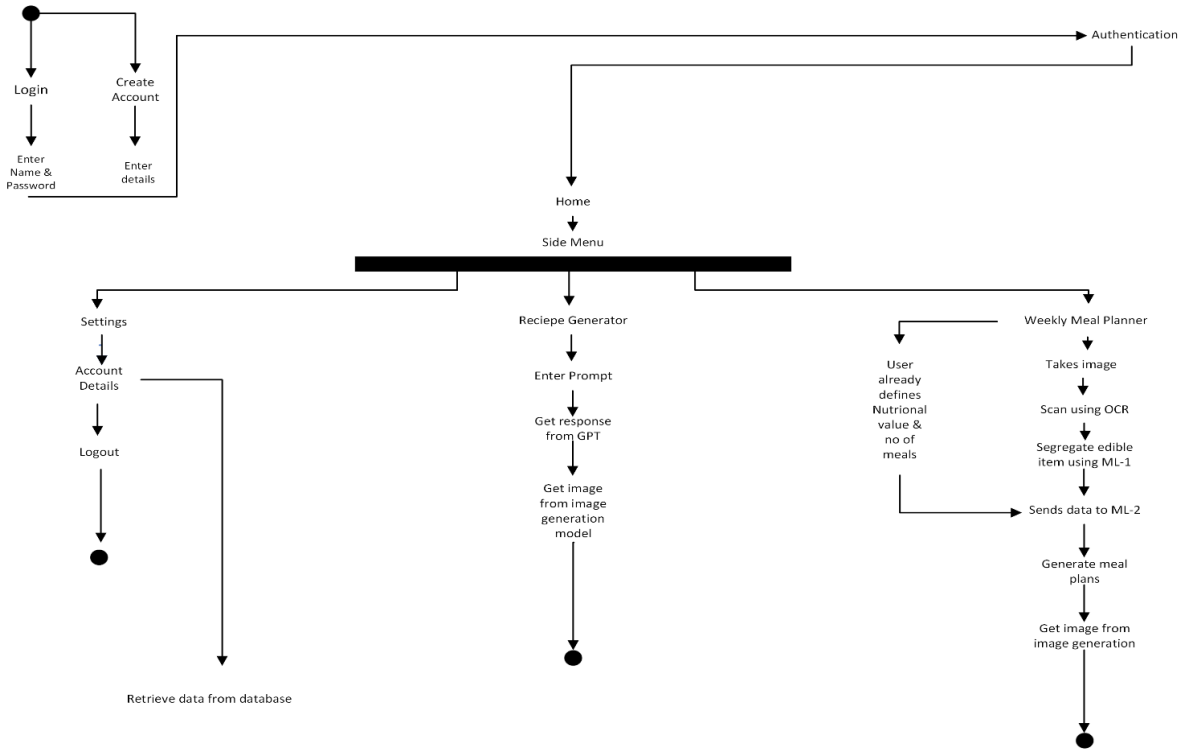


Figure 7: Activity Diagram

Physical View

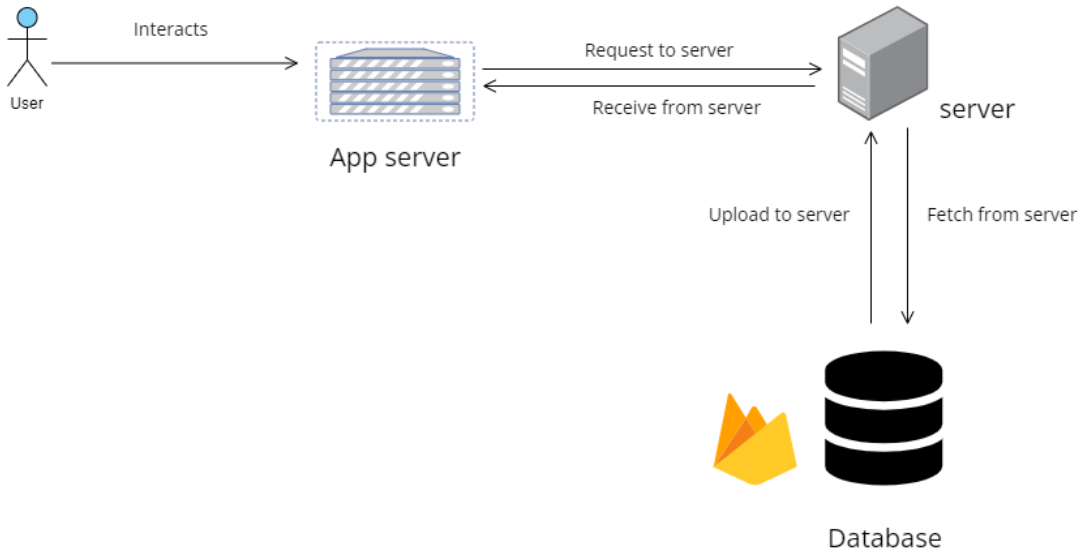


Figure 8: Deployment Diagram

CHAPTER IV

PROPOSED SOLUTION

PROPOSED SOLUTION:

Fighting the battle of limited ingredients and unhealthy choices? Struggling with the time-consuming task of meal planning? NutriMeal is your proposed solution, a mobile application designed to empower you with healthy and informed meal choices. Many recipe apps overwhelm users with options, leaving them frustrated with limited ingredients. NutriMeal tackles this head-on by prioritizing efficiency. Simply tell the app what you have on hand, either by typing them in or using the built-in scanner. Our AI engine, powered by OpenAI, then generates personalized recipes specifically tailored to your limited ingredients. No more wasted food or last-minute grocery store runs! But NutriMeal goes beyond just recipes. We understand the struggle of meal planning. Our user-friendly app streamlines the entire process. Create personalized meal plans by selecting recipes you like, and NutriMeal automatically generates a consolidated grocery list. This eliminates the hassle of sifting through recipes and wondering what ingredients you will need for the week. NutriMeal prioritizes your health. Each recipe comes packed with detailed nutritional information, allowing you to track your calorie intake and maintain a balanced diet. This empowers you to make informed choices and achieve your health goals. We know healthy habits can sometimes feel like a chore. NutriMeal injects some fun with gamification elements like points, badges, and leaderboards. These features keep you motivated, turning healthy eating into a rewarding adventure. NutriMeal is not just another recipe app; it is your partner in creating a delicious and nutritious future. With NutriMeal, you will overcome the challenges of limited ingredients and embrace a world of culinary possibilities, all while simplifying meal planning, maximizing ingredient use, and prioritizing your health.

WORK BREAKDOWN STRUCTURE:

1.1. Requirements Analysis

- Gather and document functional and non-functional requirements.

- Identify user personas and their needs.

- Define project scope and objectives.

1.2. Design and Architecture

- Determine the application's architecture (Microservices).

- Create wireframes and design mockups for the user interface.

- Develop the data model and database design.

- Define the technology stack and software tools.

1.3. Development

- Implement user registration and authentication.

- Build the ingredient input and recognition features.

- Develop the recipe generation and meal planning components.

- Create the nutritional tracking and shopping list management functionalities.

- Integrate gamification elements.

- Ensure cross-platform compatibility (iOS and Android).

1.4. Testing

- Perform unit testing for each microservice.

- Conduct integration testing to ensure components work together seamlessly.

- Carry out user acceptance testing to verify user workflows.

- Implement automated testing where possible.

1.5. Deployment

- Set up production and staging environments.

- Deploy microservices to cloud or hosting platforms.

- Configure database and server resources.

- Ensure data security and privacy measures are in place.

1.6. User Documentation and Training

- Create user guides and manuals.

- Develop tutorials and onboarding materials.

- Provide user training sessions or resources.

1.7. Quality Assurance and Bug Fixes

- Monitor the application for issues and bugs.

- Address user feedback and bug report promptly.

- Implement updates and improvements.

1.8. Marketing and User Acquisition

- Develop a marketing strategy and promotional materials.
- Launch the application in app stores.
- Run advertising and promotional campaigns.
- Encourage user referrals and reviews.

1.9. User Support and Feedback

- Set up user support channels (email, chat, etc.).
- Respond to user inquiries and issues.
- Collect and analyze user feedback for continuous improvement.

1.10. Project Management and Administration

- Coordinate project tasks and timelines.
- Manage project resources and budgets.
- Monitor progress and adjust plans as needed.
- Ensure compliance with project goals and objectives.

1.11. Project Closure

- Review project outcomes and deliverables.
- Conduct post-project evaluation and lessons learned.
- Prepare final documentation and reports.
- Archive project data and materials.

1.12. Maintenance and Updates

- Plan and implement regular updates and feature enhancements.

- Monitor application performance and user engagement.

- Address emerging technology trends and user needs

DESIGN AND IMPLEMENTATION CONSTRAINTS:

- **Platform Availability:** In the initial launch, NutriMeal will be available exclusively on Android devices. Support for iOS devices will be a priority for future development.
- **Language Support:** Currently, NutriMeal's interface and features are optimized for English only. We are actively working on expanding language support in future versions.

USER DOCUMENTATION:

Video Tutorial:

We will be providing a video tutorial on the usage of the application which will in depth covers all the application also explaining the constraints which a user might face using this mobile application.

ASSUMPTIONS AND DEPENDENCIES:

The NutriMeal mobile application is designed to be used by every phone even the low-end ones with a connection to the internet, for the time being the application is only available for the android phones but in the later versions, IOS version will also be made available.

PROPOSED USER INTERFACES:

All the designed user interfaces of the application which include login/sign-up screen as well as the recipe generation module and the weekly meal generation screen are shown below:

Figure 9: Proposed User Interface of the complete Application.

CHAPTER V

RESULTS AND DISCUSSIONS

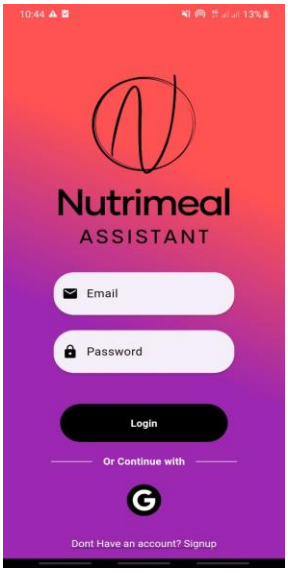
Unfortunately, as NutriMeal is a proposed solution and not yet a fully developed application, we cannot discuss concrete results or user data. However, we can explore potential discussions based on the features and functionalities of the application.

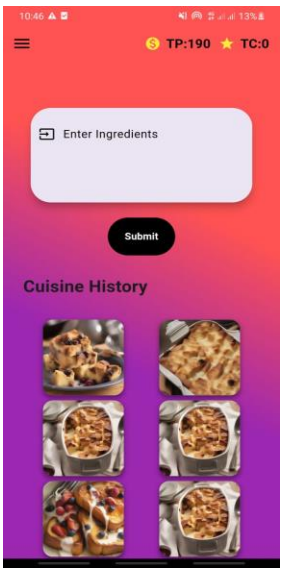
Here are some areas for discussion:

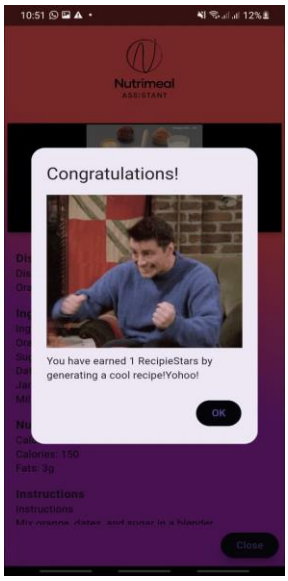
- **User Adoption and Engagement:** How readily will users adopt NutriMeal? Will the user-friendly interface and gamification elements effectively engage users and promote consistent app usage?
- **Recipe Generation Effectiveness:** Can NutriMeal's AI-powered recipe generation successfully create delicious and satisfying meals based on limited ingredients? How well will it cater to diverse dietary needs and taste preferences?
- **Impact on Meal Planning and Healthy Eating:** Does NutriMeal's meal planning module and focus on healthy recipes with nutritional information lead to users making healthier choices and successfully planning balanced meals?
- **Future Development Considerations:** Based on user feedback and app usage data, what future features or functionalities would be most beneficial to users? How can NutriMeal be further optimized to improve the overall user experience?

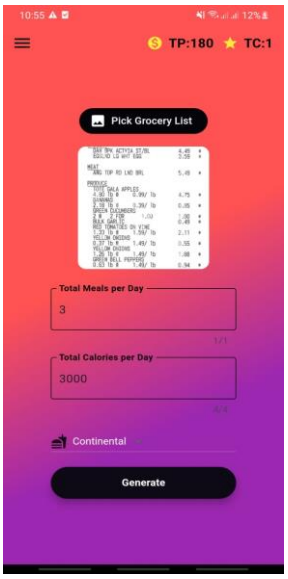
By gathering user feedback and analysing usage data after launch, the NutriMeal team can hold discussions on these points and make informed decisions on future development and improvements.

The actual screenshots of the application are shown below:









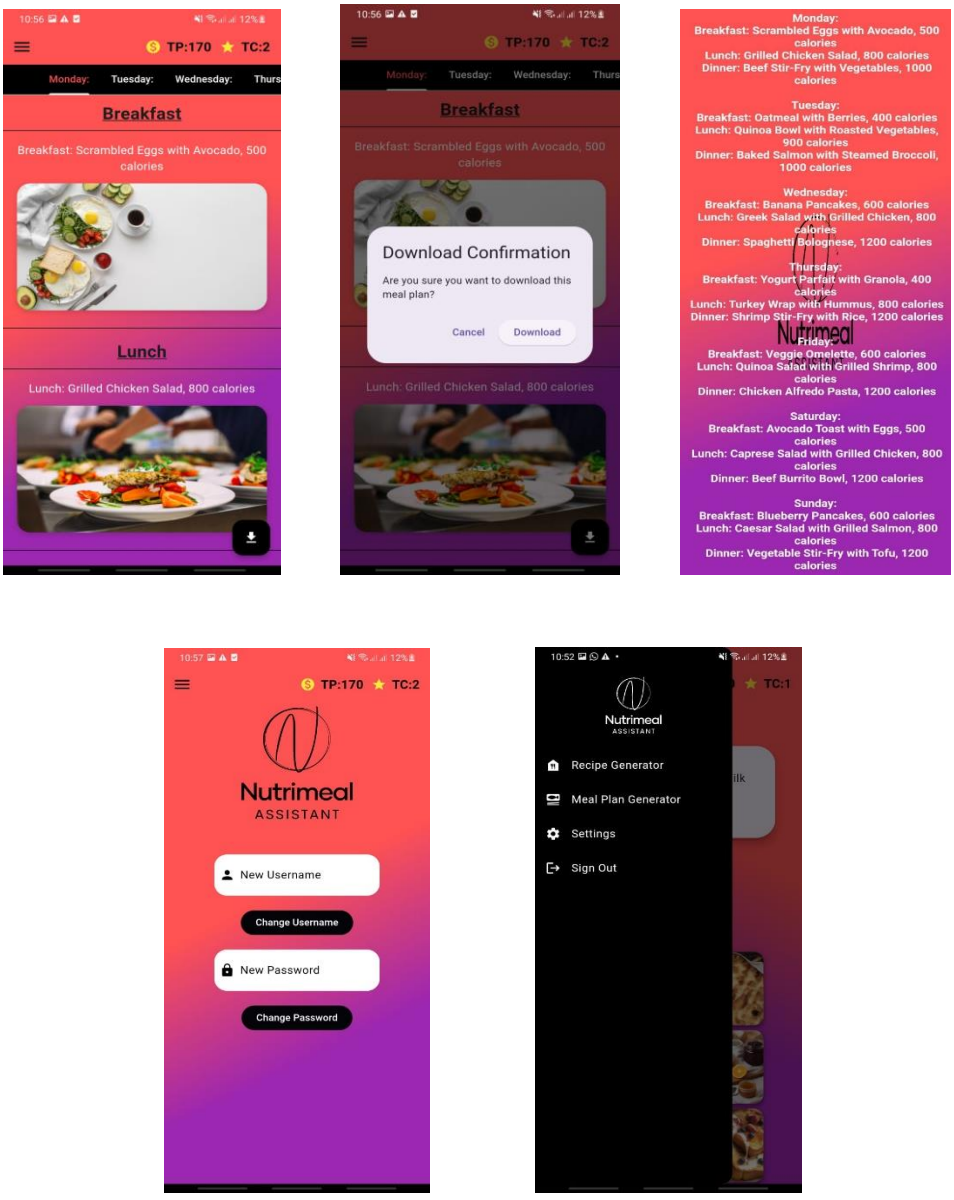


Figure 10: Actual screenshots of the application.

CHAPTER VI

CONCLUSION AND FUTURE WORK:

NutriMeal aspires to be your one-stop shop for a delicious and nutritious future. This mobile application tackles the challenges of unhealthy choices and inefficient meal planning by offering a comprehensive suite of features designed to empower users.

Key Functionalities:

- **Ingredient Flexibility:** NutriMeal diligently fights ingredient availability's issue by looking at it through an efficiency perspective. Do you wonder how to develop your own personal roadmap to implementing a keto diet? Simply tell the app you have some spare and its AI engine, powered by OpenAI, creates personalized recipes specifically designed to meet your needs. This is no more wasted food or the last-minute searching for a big business to find a missing element.
- **Personalized Meal Planning:** Planning healthy meals is often a tedious task that we normally try to avoid. But NutriMeal makes the process a breeze. Make tailored plans by selecting your preferences, the list of groceries is then merged into one document, this makes your shopping list simple, short and sees to it that your kitchen holds everything for the week.
- **Nutritional Tracking:** NutriMeal comes in as a priority to your body well-being. With each recipe, you will have access to the complete nutritional information such as the calorie intakes enabling you to know the number of calories you consume. Whomever follow this way, gain the power to choose in accordance with what they do and that would reflect on their health goals.
- **Gamified User Experience:** NutriMeal app developer understands a day-to-day routine of healthy lifestyle behaviours might be perceived as a saying. Basic elements such as points, badges and leaderboards are added that will bring out smiles, and in the process good eating is made a fun adventure when you are trying to be healthier.

Future Development:

Best meal is Nutri Meal's long-term dedication to innovation and customer comfort. Here are some exciting possibilities for future development: Here are some exciting possibilities for future development:

- **Expanding Platform Availability:** At first, the NutriMeal app would be available only for Android devices. However, there are also plans to add the functionality of iOS phones to the app to reach a bigger audience in future.
- **Multilingual Functionality:** Nowadays NutriMeal is optimized only for English, so in the future the team will strive to expand language support to attract customers from all over the world.
- **Advanced Recipe Customization:** Subsequent versions might enable directing the users towards the process that will allow for the addition of food allergies and taste as criteria for the generation process.
- **Integration with Wearables and Smart Devices:** The possibility also exists to carry NutriMeal with interface of wearable health trackers and smart kitchen appliances allowing the user to have a holistic platform for the management of health and culinary tasks as well.

NutriMeal has committed to being a dependable partner in moving towards a delectable and nutritious era. It will sustain its efforts, adapting to user feed, and updating its innovations accordingly. Thus, nutrition meal plan offers you to shelve junk food items and instead expanding the variety of meals. Furthermore, it is of paramount importance to simplify home cooking and keep the health in the first place.

GLOSSARY:

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