



Project Phase III - GG Health

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3.1 Problem statement

Many people lack good health from eating which causes their bodies to become unhealthy. Some people don't take care of their health because they don't have time or enough knowledge. Users need to gain more information because they want to become healthy people.

So our group came up with a design to be user-friendly and accessible to people who may not have a lot of knowledge about nutrition. By inputting what they eat in a day and selecting their health concerns, users can receive tailored recommendations for their diet. One important feature of the app is the automatic calculation of nutrition requirements. This takes the guesswork out of meal planning and ensures that users are getting the right balance of nutrients for their individual needs. The app will also provide recommendations for portion sizes and suggest healthy alternatives for less healthy food choices. In addition to diet recommendations. The app will also send daily notifications to remind users to take care of their health and provide motivation to stay on track. Our health application provides a convenient and accessible solution for people who may struggle with maintaining a healthy lifestyle. By using technology to automate nutrition recommendations, users can easily incorporate healthy habits into their daily routines.

To summarize, our group focuses on developing an AI-powered calculator that can calculate the appropriate amount of food that a user should consume each day. This calculator will use data collected from a smartwatch to provide more accurate food recommendations. The smartwatch will collect various types of data, such as sleeping habits, activities, heart rate, exercise, and other information that can be used to improve the accuracy of the food recommendations. This data will be fed into the AI-powered calculator, which will use advanced algorithms and machine learning techniques to calculate the ideal amount of food for each user. The goal of this project is to provide users with a convenient and effective way to monitor their daily food intake and make healthier choices. By using advanced technology such as AI and smartwatches, our group hopes to create an innovative solution that can help people improve their health and well-being.

3.2 User Persona

Olivia Wilson is a 45-year-old film director living in California who wants to take better care of her health by eating healthy food. She has been working in the film industry for 15 years and often relaxes by socializing and eating unhealthy food. However, she recognizes the importance of nutrition and wants to access information that can help her choose healthier food.

Olivia is also addicted to using her phone, and she feels that there is a lack of applications that can provide her with complete information on nutrition and daily health needs. She is interested in an AI-powered calculator that can calculate the food she should consume each day based on her personal needs and preferences. This application will use data collected from her smartwatch, including information about her sleeping habits, activities, heart rate, and exercise, to provide personalized recommendations.

Olivia is a user who is looking for a mobile application with a user-friendly interface and calming colors that can help her relax after a hard day of work. She wants an application that can easily call up various features and cover all of her health care needs. With the right application, Olivia can achieve her goal of taking better care of her health and living a healthier life.

	Before	On-Service	After
User Action	Unplan each day meal	Use our App AI to calculate how much users need to consume in one day	Daily meal plan
Emotion	 Users are troubled by health problems caused by unplanned eating	 Eating healthy food recommended by AI for the first time, still in the process of adapting and changing the eating habits	 With our AI users have already got healthy eating plans and are no longer troubled by health problems
Touch Point	Facebook, Tiktok, Smart classroom website	Using our App's AI to find which health food is Suitable for user	Using AI to make daily eating plans
Usability Attribute	There is no efficient, easy-to-learn way for users to make a eating plan	Because of the AI recommendations it is easy for users to use and efficient	Automatic calculation by AI to recommend eating plans for users, user-friendly, efficient, and user is enjoy to use
Metadata	Food type, Price, Food brand, Taste	Calories, Exercise calorie consumption, Protein, vitamins, fiber, water, fat, carbohydrates	Calories, Exercise calorie consumption , Calories, Calorie consumption Protein, vitamins, fiber, water, fat, carbohydrates
Scenario	People need a Application that can help them complete their health plan for the daily life	AI to customize an effective exercise and nutritious diet plan for the user	Recommend a variety of diet plans to keep users feeling fresh.

Figure 1 User Journey Map of Solution I

3.3 Key Requirements

a. Functional Requirements

The functional requirements of the system as defined by the user are described below.

- The user must create an account with their email and password before log into our GG Health application.
- The user must input their general information to the GG health application.
- The user must connect their smartwatch which is Health data to the GG health application.
- The user must upload their daily meal for a week to our AI system.
- The user must be allowed to view their daily meal plan.
- The user must be able to cancel and reset the meal plan.
- The user must inform the system if there are foods to which they are allergic.
- The system must provide users with Google accounts, Twitter accounts, and Facebook accounts as login methods.
- The system must provide a re-type password for users to re-check their password in the sign up process.
- The system must provide a chat function for users to communicate with nutritionists.
- The system must be able to recommend some food based on what kind of food that user likes to eat.
- The system must provide a food description for the user.
- The system must provide a varied daily meal plan.
- The system must be able to calculate the calories and nutrition for each food to users.
- The system must be able to calculate the total calories and nutrition for a one day meal for users.
- The system must allow users to increase or reduce their daily meal plan (no less than three meals or summation of daily calories reach the limit).
- The system must provide an activity plan that includes the content of the activity, the requirements and the calorie consumption.
- The system must provide an interface to show the user's health process.
- The system must provide a reference interface which is a reliable resource from the internet.

b. Non-functional Requirements

The non-functional requirements of the system are shown below.

- The system must support the English language.
- The design must improve the user's usability.
- The user data is encrypted and protected from unauthorized access.
- The system must protect the user's sensitive information.
- The user can choose healthy food that the user likes to eat.

3.4 The Most Important Tasks For Users

• Existing Tasks

The main target users of health applications such as MyFitnessPal, Google Fit, and Samsung Health are those who still lack cognition in choosing the correct food in daily life. The users have to enter their personal information into the application. Then, the users can use the option for various functionalities, whether calculating the calories for each meal or offering tips on healthy eating and incorporating user-friendly exercise for long-term health benefits.

• Newly Designed Tasks

The GG Health application has been redesigned to be more suitable for users by using “AI systems” to achieve accurate results. AI will be used to analyze and recommend appropriate eating or exercise plans for users based on information from the users who have recorded. This will help increase efficiency in nutrition planning and support users to achieve health goals. In addition, the GG health application also has a live chat system to chat directly with nutritionists. Including having references of reliable resources on the Internet for users who want to read more information.

• Learning Tasks

Users can learn how to use various functions from the information that appears on each page of the application. Each page has a feature that users can interact with the application icon and AI.

• Where Tasks are Performed

Tasks can be performed anywhere via a mobile application by using the Internet connection available. Users can use the GG Health application anywhere and anytime they

desire. In addition, if the users want to use the application offline, it has a resource storage system on the Internet for users to download data to read without the need for the Internet.

- **Communication Between Stockholders**

Users can communicate directly with nutritionists through the Live Chat function, whether it is either in the form of typing or calling. Moreover, if the users need other help than in the application, they can contact the app developer through the Contact Us function on the Help page.

- **Stockholders and Data Relationship**

Users need to register as a member of the GG Health application to input personal information, food, exercise, or daily activity life. To make AI and nutritionists can accurately assess user results. In addition, users can rate the application to improve the application quality in the future.

- **Frequency of Performing Tasks and Time Constraints**

Tasks are performed frequently by the users at least 3 times a day, the GG Health application requires users to record food eaten in one day. There are also time constraints because this application has an exercise alarm function, if the user does not follow the notification table specified by the app, it may cause Inaccurate results.

- **Contingencies**

There are three main scenarios where things could go wrong such as:

1. Sometimes users may forget or be inconvenienced updating their personal information for the application daily. Therefore, it may cause error analysis.
2. Sometimes users may cheat while on health care programs by eating fussy food in addition to the main meals that have been recorded in the app, which makes it difficult to achieve health care and does not meet the calculated schedule.
3. There are some users who input untrue or out-to-date personal information in the application, such as weight, height, and activity done on a daily basis, which may cause error analysis.

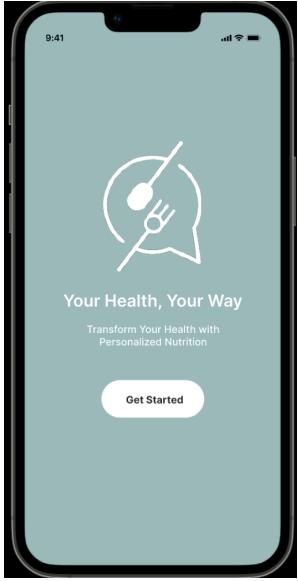
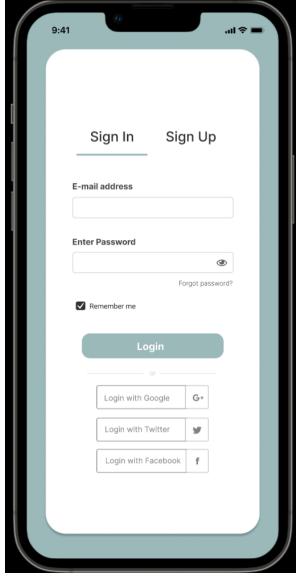
3.5 User Scenario

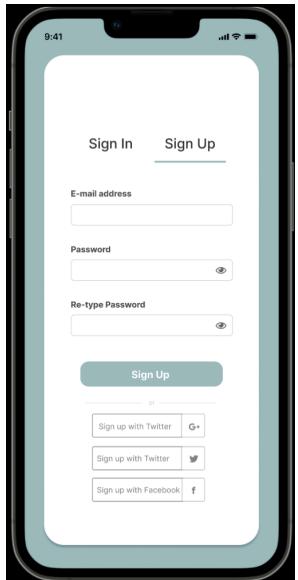
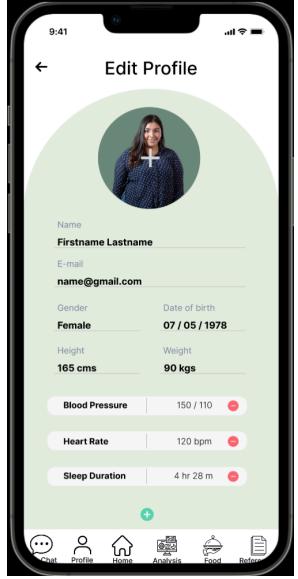
The user is a busy person who wants to improve their health to consume healthy food. First, the user should have a smartwatch to collect important data for the user meal's analysis. Second, the user has to download the GG application to help them stay on track with nutrition goals. Once the user downloads the GG application, they will have to create a profile. The user can enter their birth date, gender, height, and weight. Also, the user has to connect their smartwatch to the app to gather additional health data, such as daily step counts, blood pressure, and heart rate. By having access to this data, the application can provide even more personalized meal recommendations to the user.

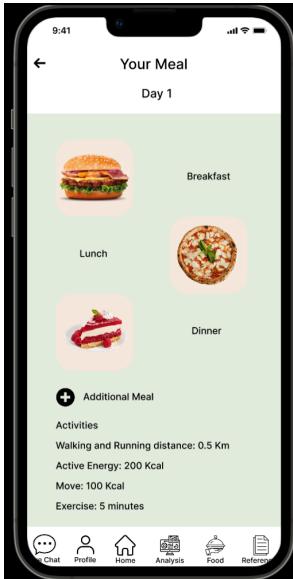
Then, the application generates a personalized nutrition plan for each user based on their health data. The app recommends a daily calorie intake and suggests meal options that fit within his calorie budget and dietary preferences. As the user begins to track their meals, the GG application provides the user with feedback on their nutrition choices. The app also provides the user with nutritional information for each meal, so they can make informed decisions about what they are eating. In addition, the application provides the option for users to connect with a personal nutritionist who can answer any questions they may have about nutrients and provide additional guidance and support. Users can communicate with them through the app's messaging feature. This allows for a more personalized experience and helps users feel confident in their nutrition choices.

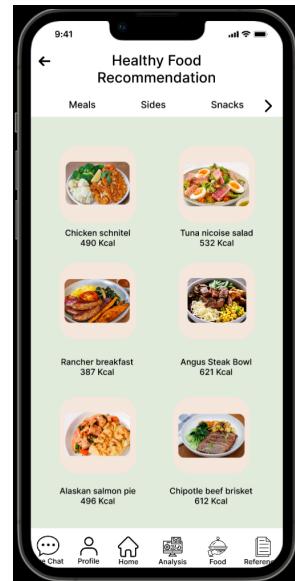
The application provides a weekly summary of the user's calorie progress and suggests adjustments for the following week, which the user appreciates and plans to continue using the GG application for better health.

Step	Description	Screen Capture
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1	<p>After the user downloads the GG application, the user needs to open the GG application and it will show an application starter page. Then, click the “Get Started” button to start the application, it will navigate to the sign in and sign up page.</p>	
2	<p>If the user already has the account, the user needs to sign in for the application which needs to input their email address and password correctly or the user can sign in via Google, Twitter, or Facebook account.</p>	

	<p>If the user hasn't had an account, the user needs to sign up to create an account which needs to input their email address, and password. Or the user can sign up via Google, Twitter, or Facebook.</p>	
3	<p>This step the user has to input their personal information including gender, age, height, weight which the user can edit all the time to keep user information updated. And the health data including steps, exercise, blood oxygen, walking distance, active energy, and resting energy will automatically fill by connecting with the user's smartwatch.</p>	 

		
4	<p>After the user input their personal information, this step the user needs to input their picture of a meal each day for a week including breakfast, lunch, dinner, and additional meals that user may eat more than three meals. This page will automatically input activities data that connect with smartwatch to collect the data.</p>	
5	<p>After the user input their meal for a week, the application will automatically calculate and show the meal recommendation each day for a week. And the user can click on the food's picture to see the detail of each food including food description and nutrition.</p>	

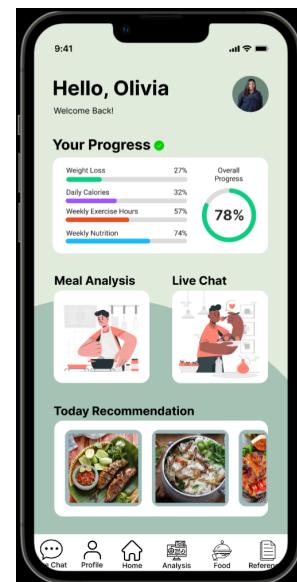


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This page is a healthy food recommendation which includes meals, side dishes, snacks, etc. The user can click on the food's picture to see more detail of the food including food description and nutrition.

7

This page will show the overall of the user analysis and goal.



8

This step provides a live chat where the user can ask specific questions to a nutritionist.



9

This step shows the reliable resources that are found on the internet. The user can click at the link and it will auto navigate for the user to read more about health.



3.6. System Prototype Description

a. Wire frame

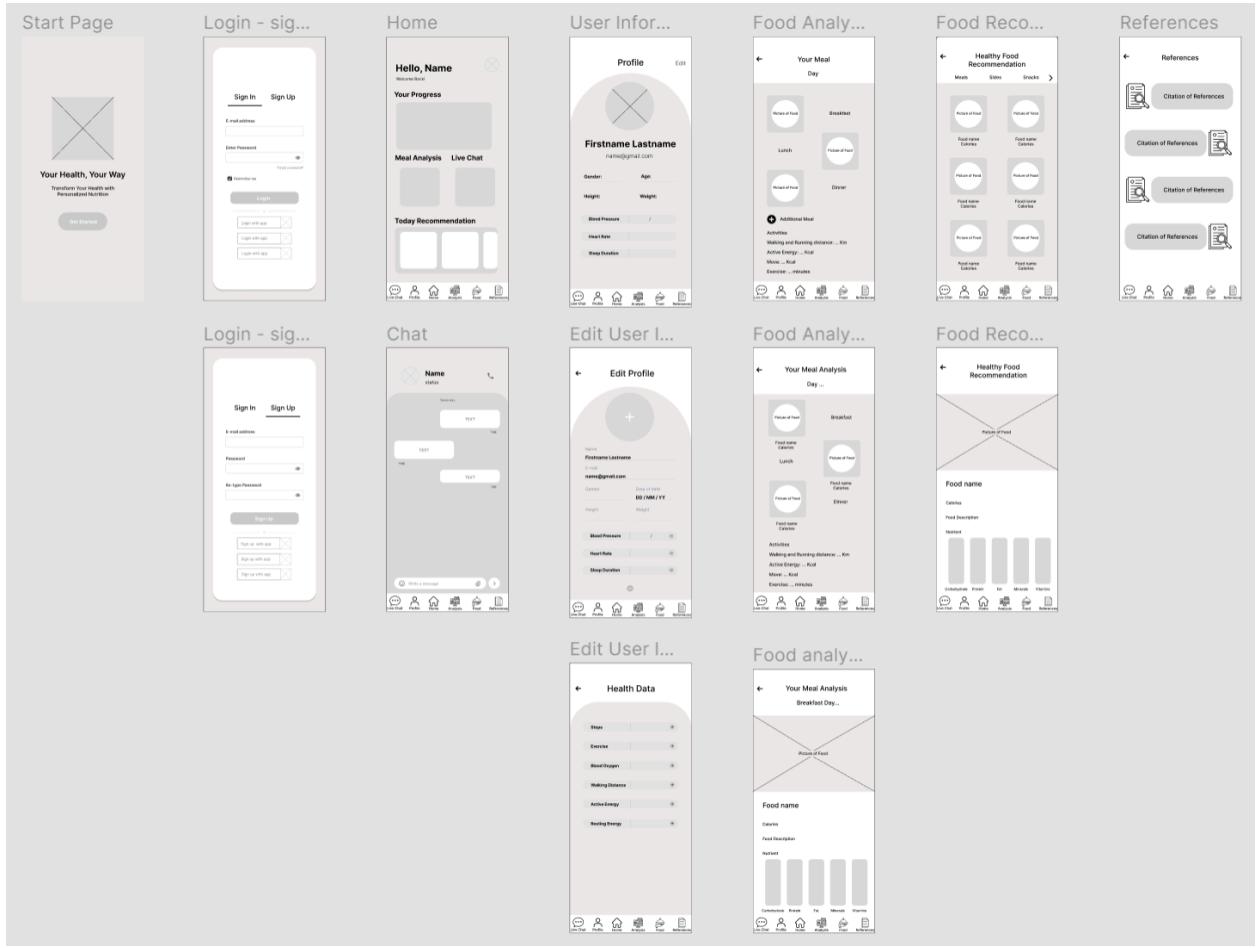


Figure 2 Wire frame of GG application [1]

b. Prototype

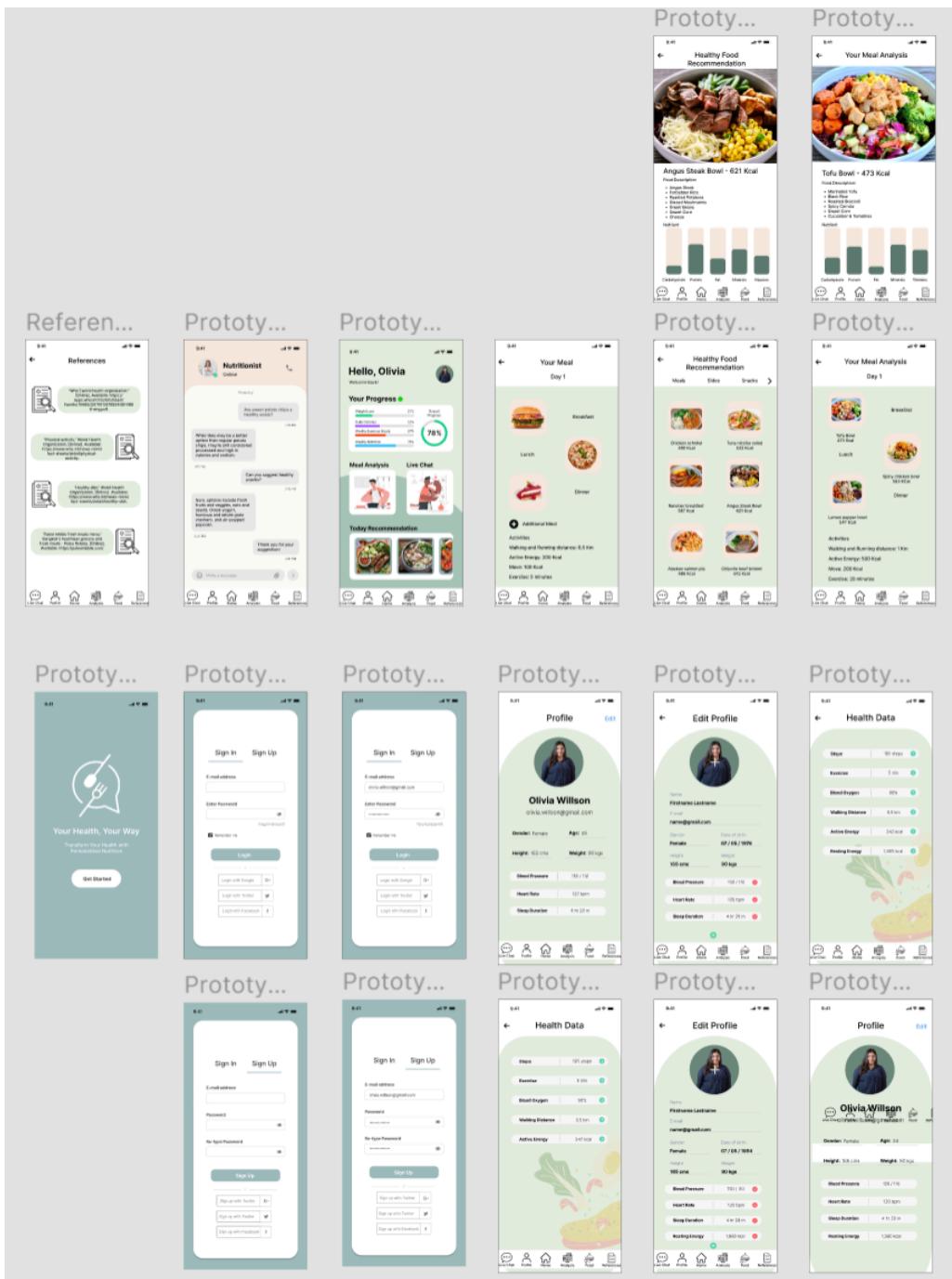


Figure 3 GG Application Prototype [2]

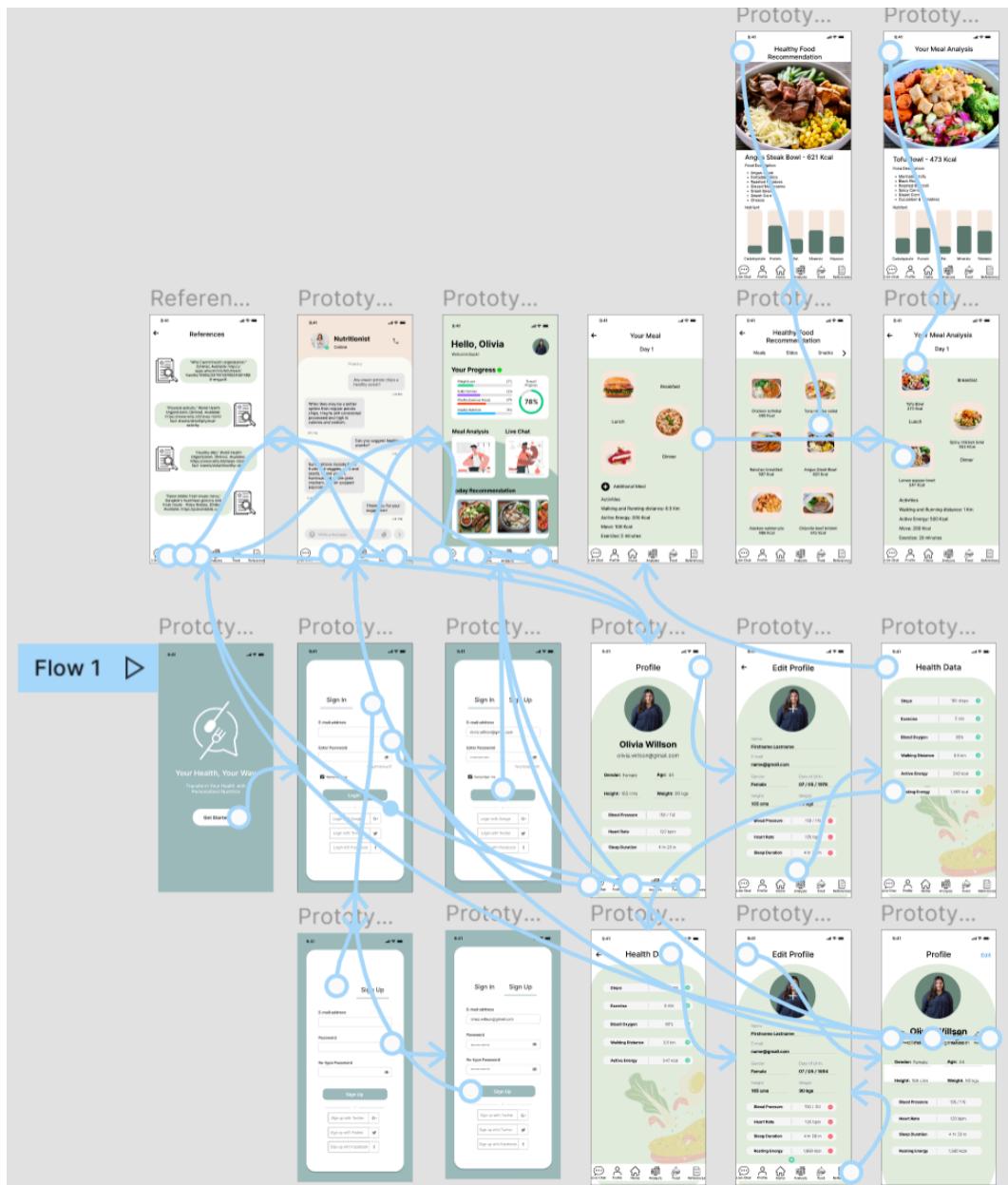


Figure 4 - GG Application Prototype with connectors [2]

c. System Prototype Explanation

I. Sign in and sign up Page

The GG application's initial page provides an overview of the application, and clicking the "Get Started" button leads to the Sign-In page. Users with an existing account can log in using their email and password, or through their Google, Facebook, or Twitter accounts. For users who don't have an account, clicking the Sign-Up button will redirect them to the Sign-Up page, where they can create a new account by providing their email and password or through their Google, Facebook, or Twitter accounts. Once the account is created, they can log in to the app through the Sign-In page using their existing account.

Related functional requirements:

- The user must create an account with their email and password before log into our GG Health application.
- The system must provide users with Google accounts, Twitter accounts, and Facebook accounts as login methods.
- The system must provide a re-type password for users to re-check their password in the sign up process.

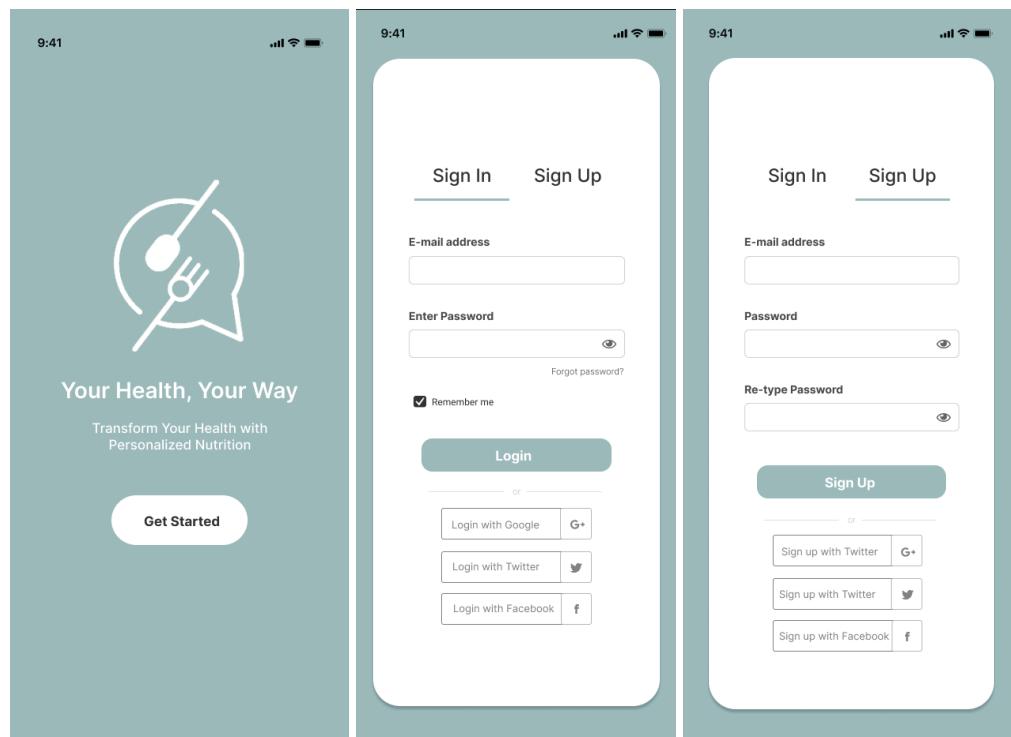


Figure 5 Starter, Sign in and Sign up Page

II. Home Page

The GG application's home page displays various features to help users track their progress toward their health goals. The page includes a weekly calories

progress tracker, meal analysis, a live chat section with a personal nutritionist, healthy food recommendation for additional selection, and daily food recommendations suit to the user's preferences and dietary needs. This provides a comprehensive overview of the user's health journey and helps them stay on track toward their goals.

Related functional requirements:

- The system must provide an interface to show the user's health process.

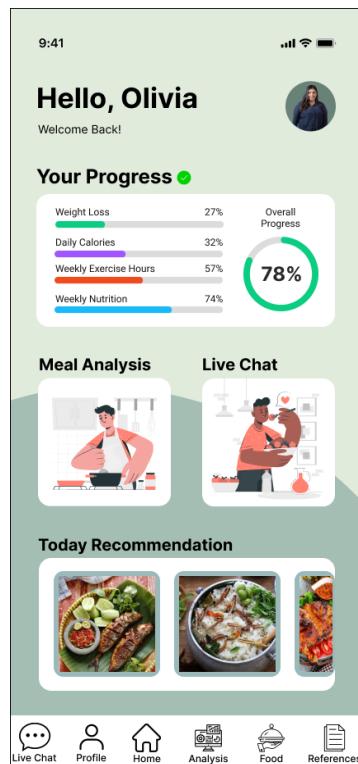


Figure 6 Home Page

III. Chat Page

The chat page with the nutritionist is a feature of the GG application that allows users to communicate with a nutritionist to get personalized advice and answers to their nutrition questions. Users can initiate a chat session by

selecting the chat icon on the application's homepage or by navigating to the chat feature within the application's navigation bar. Once the chat has been initiated, the user can type their question or concern and the nutritionist will respond with evidence-based information and recommendations tailored to the user's specific needs and preferences. This feature is designed to provide users with the support they need to make informed and healthy dietary choices.

Related functional requirements:

- The system must provide a chat function for users to communicate with nutritionists.

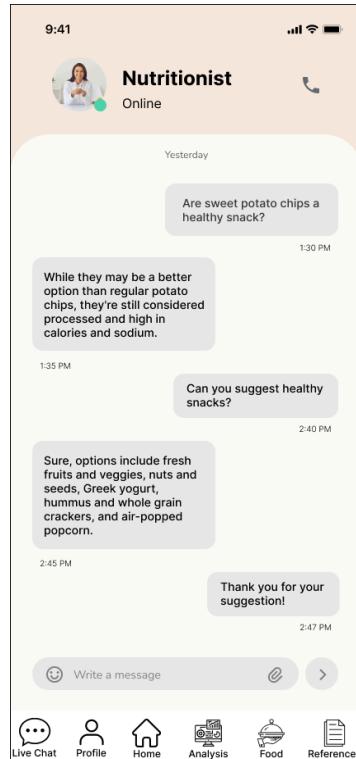


Figure 7 Chat Page

IV. User Information Page

The User Information Page on GG application presents the user's details, including gender, height, weight, date of birth, and current health status. Furthermore, the application accesses the user's health data from their synced smartwatch to provide a complete overview of their health condition. The user has the option to modify their health data settings to include or exclude

specific health information which they want to view on their User Information Page.

Related functional requirements:

- The user must connect their smartwatch which is Health data to the GG health application.

The image displays three screenshots of a mobile application interface, likely for a smartwatch or a companion app, showing various health metrics and profile management features.

Screenshot 1: Profile View

This screen shows a circular profile picture of a woman named Olivia Willson. Below the picture, her name "Olivia Willson" and email "olivia.willson@gmail.com" are displayed. Underneath this, there are sections for gender ("Female"), age ("34"), height ("165 cms"), weight ("90 kgs"), blood pressure ("150 / 110"), heart rate ("120 bpm"), and sleep duration ("4 hr 28 m"). At the top right, there is an "Edit" button.

Screenshot 2: Edit Profile View

This screen is similar to the first but allows for editing. It includes fields for "Name" (Firstname Lastname) and "E-mail" (name@gmail.com). It also shows "Gender" (Female), "Date of birth" (07 / 05 / 1989), "Height" (165 cms), "Weight" (90 kgs), "Blood Pressure" (150 / 110), "Heart Rate" (120 bpm), and "Sleep Duration" (4 hr 28 m). A green "+" button is located at the bottom right.

Screenshot 3: Health Data View

This screen displays various health metrics with green "+" buttons next to each value. The metrics listed are Steps (185 steps), Exercise (5 min), Blood Oxygen (90%), Walking Distance (0.5 km), Active Energy (342 kcal), and Resting Energy (1,980 kcal). The background of this screen features a colorful illustration of a meal.

At the bottom of each screen, there is a navigation bar with icons for "Live Chat", "Profile", "Home", "Analysis", "Food", and "References".

Figure 8 User Information and Edit Page

V. Food Analysis Page

Before a user can receive food analysis and recommendations, they will need to input the food they consume each day for a week. This will allow the AI-powered calculator to analyze the user's current eating habits and provide personalized recommendations. Once the user has input their food intake data for a week, the AI-powered calculator will use this data to calculate the ideal amount of food the user should consume each day. The results will be displayed in the application, along with a detailed list of the recommended foods and their ingredients and nutrition information. This information will help users make informed decisions about their food choices and ensure they are getting the proper nutrition they need to maintain good health.

Related functional requirements:

- The user must upload their daily meal for a week to our AI system.
- The user must inform the system if there are foods to which they are allergic.
- The user must be allowed to view their daily meal plan.
- The user must be able to cancel and reset the meal plan.
- The system must be able to recommend some food based on what kind of food that user likes to eat.
- The system must provide a food description for the user.
- The system must provide a varied daily meal plan.
- The system must be able to calculate the calories and nutrition for each food to users.
- The system must allow users to increase or reduce their daily meal plan (no less than three meals or summation of daily calories reach the limit).

- The system must be able to calculate the total calories and nutrition for a one day meal for users.



Figure 9 User's daily meal and user meal's analysis Page

VI. Food Recommendation Page

The food recommendation page will provide users with a variety of healthy food options to choose including main dishes, side dishes, snacks, etc. Each healthy food will be accompanied by a detailed description of the food's ingredients and nutrition information. This information will help users make informed decisions about their food choices and ensure they are getting the proper nutrition they need to maintain good health.

Related functional requirements:

- The system must provide a food description for the user.
- The system must be able to calculate the calories and nutrition for each food to users.
- The system must be able to calculate the total calories and nutrition for a one day meal for users.
- The system must provide an activity plan that includes the content of the activity, the requirements and the calorie consumption.

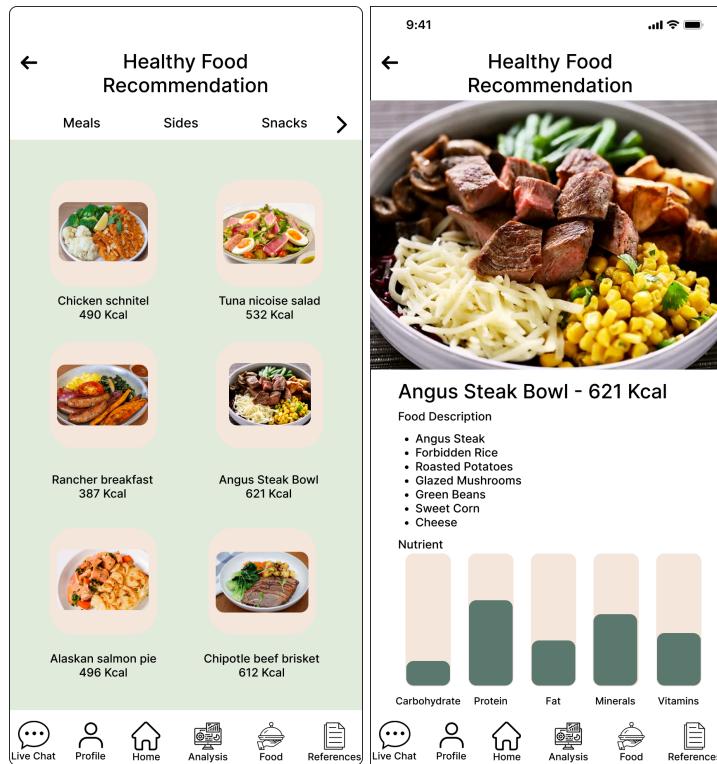


Figure 10 Food recommendation Page

VII. References Page

The references page will provide users with a list of reliable resources that have been researched and vetted by the development team. These resources

may include trusted health organizations such as the World Health Organization (WHO), as well as other reputable sources of information on health and nutrition. Each resource on the references page will be accompanied by a brief description of the information it provides, and users will be able to click on a link to access the resource and read more. This will allow users to gain a deeper understanding of the topics related to health and nutrition and make informed decisions about their food choices.

Related functional requirements:

- The system must provide a reference interface which is a reliable resource from the internet.



Figure 11 References Page

3.7 Usability Challenges, Implementation Challenges, and Opportunities

a. Becoming Familiar

During our design process, our group kept in mind the needs and abilities of a diverse range of users, including those who may not have extensive knowledge about nutrition and exercise. We aimed to create a user-friendly interface that is intuitive and easy to navigate, with clear and concise instructions for users of all skill levels. Overall, our group's design is aimed at creating an inclusive and user-friendly experience for all users, regardless of their level of knowledge or ability.

b. Achieving Objectives

GG Health is an exceptional tool that aids individuals in maintaining optimal health. The application provides valuable recommendations for healthy foods and engaging video exercises that are suitable for daily routines. Furthermore, the app sends timely notifications to remind users to prioritize their health, thereby assisting them in developing healthy habits. With these features, GG Health offers a convenient and effective way for people to improve their overall well-being.

c. Recalling User Interface

A well-designed recalling user interface can significantly enhance the user experience of the product, making it easier and more efficient for users to achieve their goals, regardless of their level of knowledge or ability. Therefore, the recalling user interface in GG Health is designed to provide a personalized and efficient user experience, while also being accessible to users of all skill levels and abilities.

3.8 Evaluation Plan

a. Evaluation Techniques and Procedure

The chosen evaluation method is usability testing. Usability testing is an evaluation method used to assess the usability and user experience of a product design by observing how actual users interact with the product. It is a vital component in the design process, as it provides insights into how users interact with the product and identifies usability issues that may not have been apparent during the design phase. By incorporating usability testing into the design process, we can ensure that our products are user-friendly and meet the needs and expectations of our target audience.

b. Usability Specification

The below attributes are used to measure the usability specifications.

1. **Learnability** - the ease with which a new user can learn to use the product.
 - a. Measuring Instrument: - (An interviewer will inspect it manually).
 - b. Measuring Parameter: The number of questions users have while taking the test.
 - c. Satisfaction Level: The users have no questions during the test.
2. **Efficiency** - the speed and accuracy with which users can perform tasks using the product.
 - a. Measuring Instrument: Digital timer.
 - b. Measuring Parameter: The time to complete all benchmark tasks.
 - c. Satisfaction Level: The time to complete each benchmark must be in the range of predefined time.
3. **Memorability** - the ability of users to remember how to use the product after an extended period of not using it.
 - a. Measuring Instrument: Digital timer.
 - b. Measuring Parameter: The time to complete all benchmark tasks after a period of not using the product.
 - c. Satisfaction Level: The time to complete each benchmark must be less than the recorded time of the efficiency measurement.
4. **Satisfaction** - the overall user satisfaction with the product's design and functionality.
 - a. Measuring Instrument: Google Form.
 - b. Measuring Parameter: Satisfaction score (from 1 to 5 points).

c. Satisfaction Level: The average score must be greater than or equal to 4 points.

Usability	Measuring Instrument	Measuring Parameter	Task	User's Satisfaction	Target Satisfaction	Observed Results
Learnability	-	Number of questions	All tasks	? question(s)	0 question	
Efficiency	Digital Timer	Time	Navigating to the profile management page	? sec	x sec	
			Editing the profile	? sec	y sec	
			Viewing health data	? sec	z sec	
Memorability	Digital Timer	Time	Navigating to the profile management page	? sec	$\leq x$ sec	
			Editing the profile	? sec	$\leq y$ sec	
			Viewing health data	? sec	$\leq z$ sec	
Satisfaction	Google Form	Score (1-5)	All tasks	? points	≥ 4 points	

c. Benchmark Tasks

Task	Description
Using Profile Management	

Navigating to the profile management page	The benchmark tests the accessibility of navigating to the profile management page to evaluate the ease of access and usability.
Editing the profile	The benchmark evaluates the difficulty users encounter when editing their profiles.
Viewing health data	The benchmark aimed to evaluate the understandability of users when exploring their health data.
Using Meal Analysis Function	
Navigating to the meal analysis page	The benchmark tests the accessibility of the user to navigate to the meal analysis page.
Inputting day-ordinary meal information	The benchmark tests the difficulty of inputting meal information from the user's perspective.
Expanding information on each recommended meal	The benchmark evaluates the ability of users to explore the results of the meal recommendation function.
Using Healthy Food Recommendation Function	
Navigating to the healthy food recommendation page	The benchmark tests the accessibility of the user to navigate to the food recommendation page.
Expanding information on the list of recommended food	The benchmark tests the ability to view the food recommendation list of the user.

References

- [1] "Wireframe GG App," *Figma*, 06-Apr-2023. [Online]. Available: <https://www.figma.com/file/lZD9SR1ydVBFnVUohhjyjw/Wireframe-GG-App?node-id=0%3A1&t=Q8Hx9Gu1FqxKWrqh-1>. [Accessed: 07-Apr-2023].

[2] “Prototype GG App,” *Figma*, 06-Apr-2023. [Online]. Available: <https://www.figma.com/file/PJyOVrvZOurA7ZPjMBD4vp/Prototype-GG-App?t=rrcpIYZJlrLbLABz-1>. [Accessed: 07-Apr-2023].