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COLLEGE OF COMPUTER SCIENCE
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CIS 422- Human-Computer Interaction

Calories Calculator Web Application

Final Report

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CIS 422 – Group 4 – Team B

Submitted To Ms. Hina Gull

Submission date 03/05/2025

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1. Introduction

In today's world, maintaining a healthy lifestyle has become challenging. Many individuals struggle to track their daily calorie intake, monitor their nutritional balance, and stay consistent with their weight management goals. Traditional methods of tracking nutrition and weight often require manual calculations, which are time-consuming and error prone.

To address these challenges, our project focuses on developing a calorie calculator Web Application. This intuitive and user-friendly platform enables users to calculate their daily caloric intake, analyze nutritional information, and track their weight over time. The application will also provide personalized weight loss and maintenance plans based on user preferences and goals. By leveraging modern web technologies and best practices in Human-Computer Interaction, we aim to create a seamless and engaging experience that promotes healthier eating habits.

2. Literature Review

With the fast advancement of technology, the design of user interfaces has gotten more sophisticated, necessitating a thorough grasp of both aesthetic appeal and functional efficiency to assure user happiness.

The following studies examine the influence of the interface design of applications, concentrating on how various features and layouts affect users' ability to manage their diet and reach their health goals.

2.1. MyFitnessPal

MyFitnessPal is one of the most broadly utilized web and mobile applications for calorie following and nutrition analysis. The platform enables users to log their meals, track calorie intake, and monitor macronutrient distribution (carbohydrates, proteins, and fats). Moreover, it coordinates with fitness tracking gadgets to give a comprehensive outline of an individual's well-being and wellness journey. One of MyFitnessPal's qualities is its broad food database, which incorporates both generic and branded food items, permitting users to log meals with high accuracy [1].

In addition, the app supports goal setting, helping users make personalized weight management plans based on their dietary needs. The success of MyFitnessPal highlights the significance of user-friendly interfaces, real-time feedback, and data visualization in health-related applications [1].

2.2. Cronometer

The Cronometer app provides a simple and user-friendly interface for tracking diet and health while providing accurate and detailed nutritional information from verified sources [2]. Users may register meals by searching a food database, scanning barcodes, or manually inputting things, and the app will offer real-time updates on calories, macronutrients, and micronutrients. It also monitors activity and calorie expenditure. Premium services include configurable nutritional goals and sophisticated reporting [3].

The design is simple and straightforward, with color-coded nutritional breakdowns and a dark mode option. Chronometer design promotes accuracy and usability, making it an effective tool for precise nutrition tracking [3].

2.3. EatWell

EatWell is a free app available on both Apple and Android platforms that helps you track calories and your diet. It supports the journey of building a healthy lifestyle and contributes to achieving your dream of a healthy body [4].

The app interface is very simple and basic enhancing user experience. On the main interface, you can access all three meals for the day. For each meal, you can add the recipe or choose from the previously saved recipes that have been pre-calculated calorie counts [4].

Additionally, EatWell allows you to set daily goals based on your preferences, weight, and height. You can watch your progress through the trends interface which includes a user-friendly chart that makes the reading easier to understand your habits [4].

Finally, the research stresses the role of user interface design in increasing engagement and efficacy in health-tracking apps. A well-designed interface improves usability, encourages consistent tracking, and helps users achieve their health objectives.

3. Problem Statement and Proposed Solution

3.1. Problem Statement

Many people struggle with weight management due to the difficulty of tracking daily calorie consumption, making it challenging to maintain a balanced diet. They frequently struggle to keep track of the calories they consume and expend, regardless of whether they are attempting to maintain a balanced lifestyle, grow muscle, or reduce weight. Users may find it difficult to make educated nutritional decisions due to the complexity, lack of customization, or inability to give real-time feedback on existing solutions.

3.2. Proposed Solution

We propose developing an online calorie calculator that simplifies tracking daily caloric intake and expenditure. Users can get immediate feedback on their progress by entering their meals, activities, and personal objectives. To assist users in making healthier choices, the app will have a user-friendly UI, real-time tracking, and personalized recommendations.

4. User Analysis

4.1. User Analysis Table

Criteria	General User
Age	16 years old or greater.
Gender	Male- Female
Physical Abilities	No physical abilities are required.
Cognitive Abilities	- Basic problem-solving. - Ability to understand and use the application. - Basic nutritional awareness.
Education	Basic literacy (reading and understanding nutritional data).
Cultural and Ethnic Background	Users from different cultural and ethnic backgrounds with diverse dietary habits and preferences.
Training	Intuitive interface; therefore, minimal training is required.
Motivation	The desire to maintain or improve health, fitness, and well-being.
Goals	- Losing or maintaining the weight. - Tracking calorie intake to maintain a healthy lifestyle and diet. - Developing better eating habits.
Personality	Motivated, goal-oriented, health-conscious, and persistent in achieving fitness goals.

4.2. Persona

Name: Sarah Johnson.

Age: 28

Gender: Female.

Physical Abilities: No limitations.

Cognitive abilities:

- **Basic Problem-Solving:** She can analyze her eating habits and make necessary adjustments to meet her health goals.
- **Nutritional Awareness:** She understands the importance of calorie intake and portion control but relies on the app to provide detailed insights and recommendations.
- **Data Interpretation:** She can read and interpret nutritional data but prefers visual representations (charts, graphs) for better clarity.

Education: Bachelor's degree in business.

Cultural and Ethical Background: Open-minded and adaptive to diverse dietary preferences.

Training: Only 1-3 days to get used to the application.

Goals and Motivation:

- Maintain current weight
- Track calorie intake and diet
- Develop better eating habits
- Improve overall health and well-being

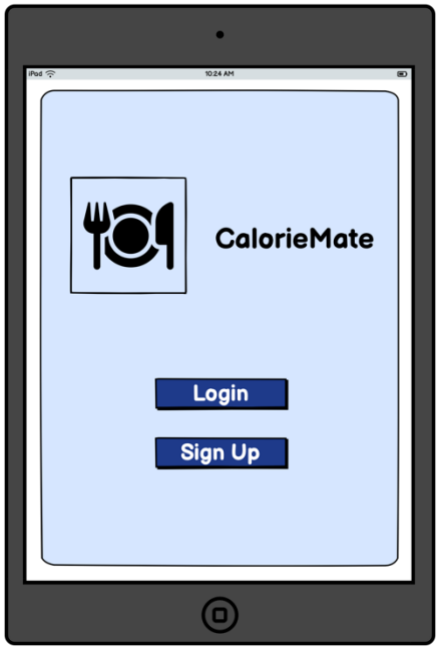
Personality:

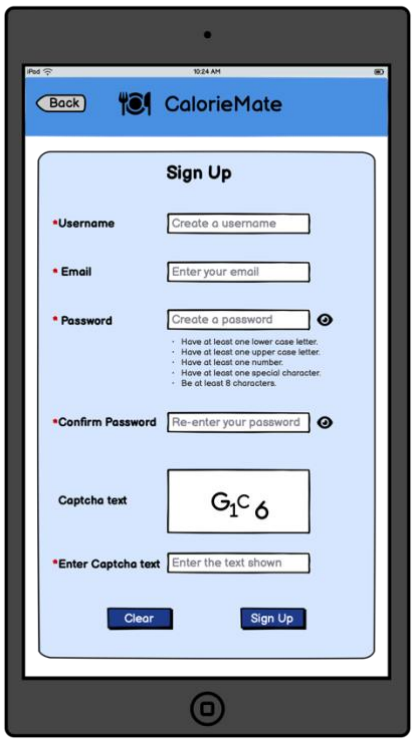
- Sarah sets clear health and fitness goals and is determined to achieve them. She enjoys seeing progress and feels a sense of accomplishment when meeting milestones.
- Sarah prioritizes maintaining a balanced lifestyle, making informed food choices, and staying active. She is mindful of her diet and fitness but not overly strict.
- Juggling a demanding job and social life, Sarah values efficiency. She prefers tools that save her time and integrate seamlessly into her routine.

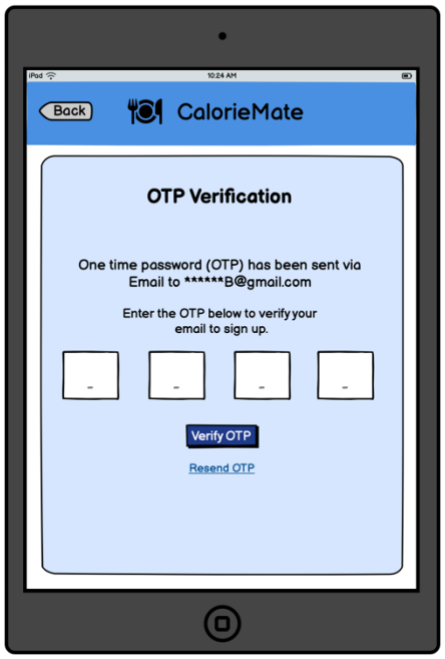
5. Task Analysis

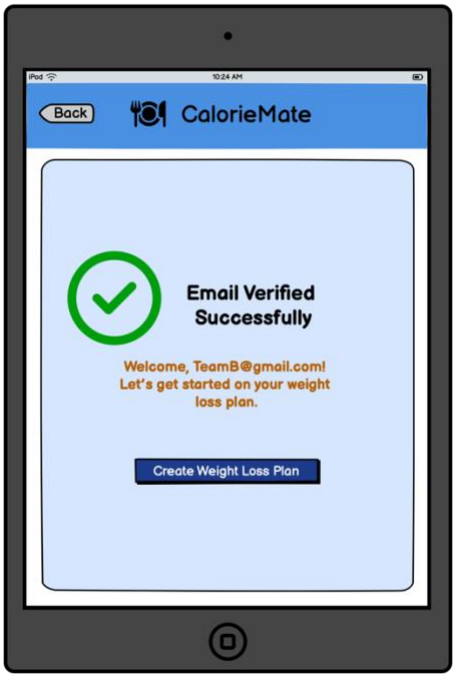
Tasks	User
Sign Up	*
Login	*
Edit Profile	**
Ingredient Search	****
Add New Ingredient	**
Meal Logging	****
Save Favorite Meals	**
Track Weight Progress	***
Create a Weight Loss Plan	**
View Nutrition Plan	****
Track Water Intake	****
Track Calories Intake	****
Log Exercise	***
Calculate BMI	****
Scan the Barcode for Nutrition Facts	**

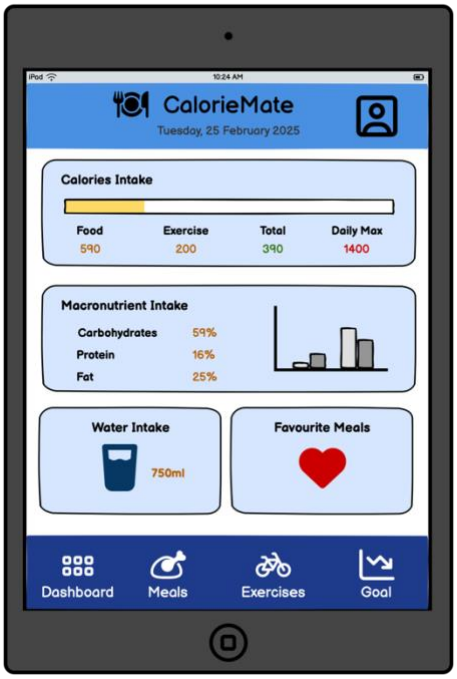
6. Paper Prototype (Balsamiq)

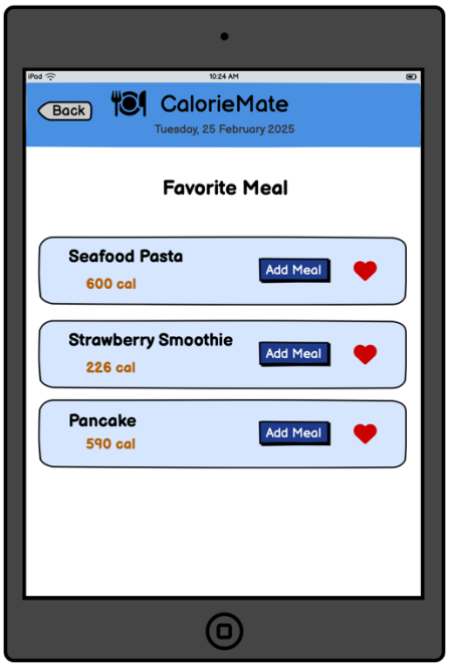






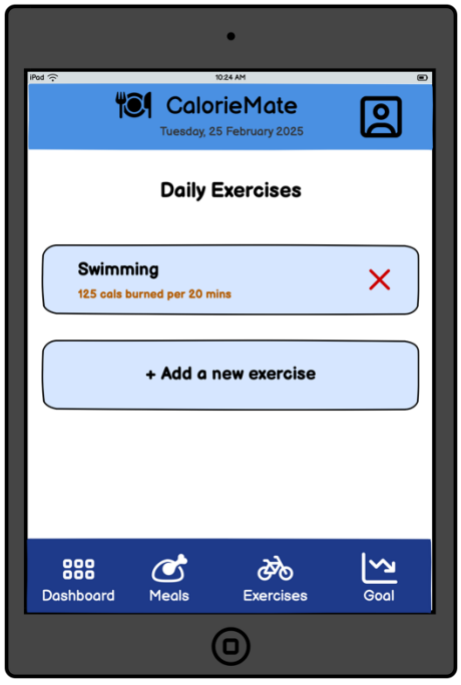


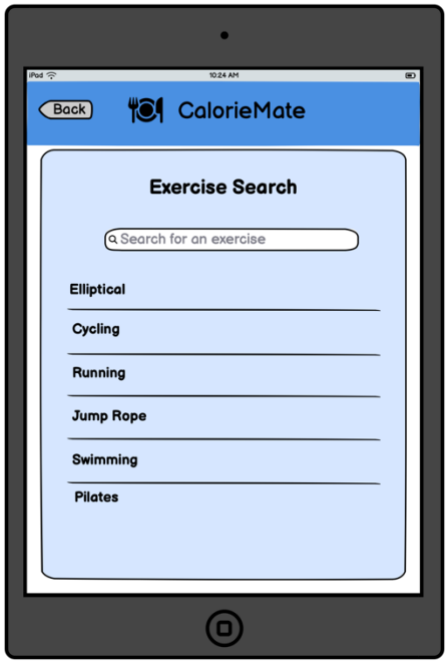


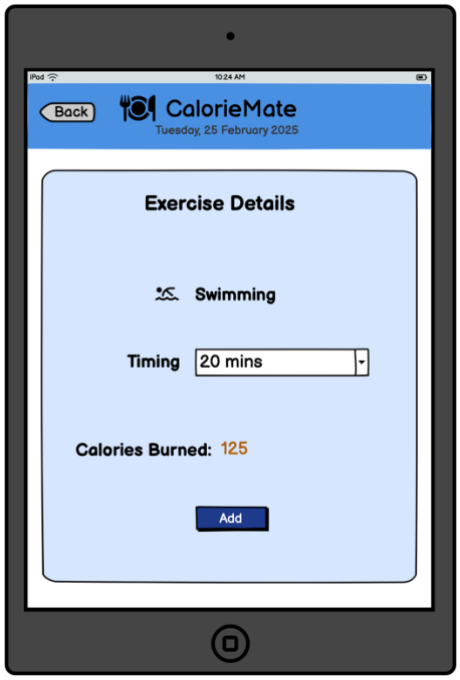

Back
CalorieMate
Tuesday, 25 February 2025
Favorite Meal
Seafood Pasta
600 cal
Add Meal
Strawberry Smoothie
226 cal
Add Meal
Pancake
590 cal
Add Meal

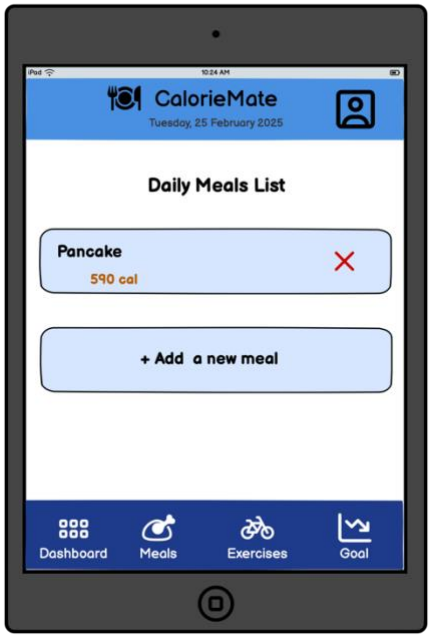

Back
CalorieMate
Tuesday, 25 February 2025
Water Intake
750ml
How much water did you drink?
Add


CalorieMate
Tuesday, 25 February 2025
Weight Progress
Current Weight
74 kg
BMI
22.8
Dashboard
Meals
Exercises
Goal


CalorieMate
Tuesday, 25 February 2025
Daily Exercises
Swimming
125 cals burned per 20 mins
+ Add a new exercise
Dashboard
Meals
Exercises
Goal


Back
CalorieMate
Exercise Search
Search for an exercise
Elliptical
Cycling
Running
Jump Rope
Swimming
Pilates

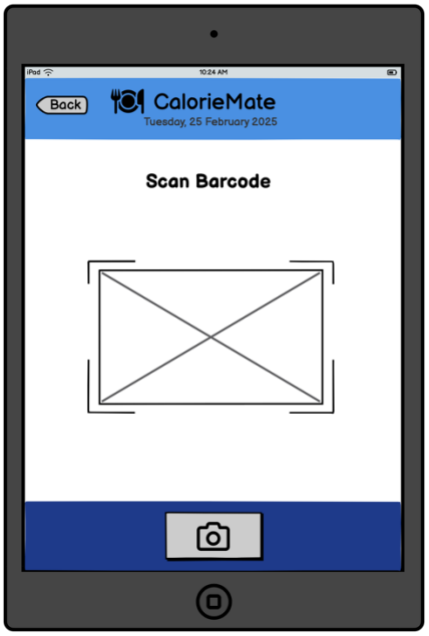

Back
CalorieMate
Tuesday, 25 February 2025
Exercise Details
Swimming
Timing
20 mins
Calories Burned: 125
Add


CalorieMate
Tuesday, 25 February 2025
Daily Meals List
Pancake
590 cal
+ Add a new meal
Dashboard
Meals
Exercises
Goal


Back
CalorieMate
Create Your Meal
*Meal name
Write your meal's name
*Ingredients
+ Add new ingredient
Total Calories
0
Nutrition Facts
Clear
Add Meal


Back
CalorieMate
Create Your Meal
*Meal name
Pancake
*Ingredients
1 Egg
1 cup Yoghurt
2 tbsp Oil
1 tbsp Vanilla
1 cup Flour
½ tsp Baking Powder
+ Add new ingredient
Total Calories
590
Nutrition Facts
Clear
Add Meal


Back
CalorieMate
Ingredients Search
Search for an ingredient
Egg
78 cal Each
Flour
400 cal per cup
Black Coffee
0 cal per cup
Add new ingredient
Scan Barcode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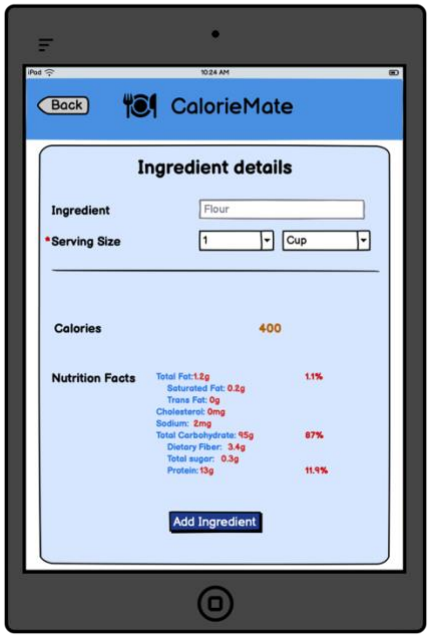
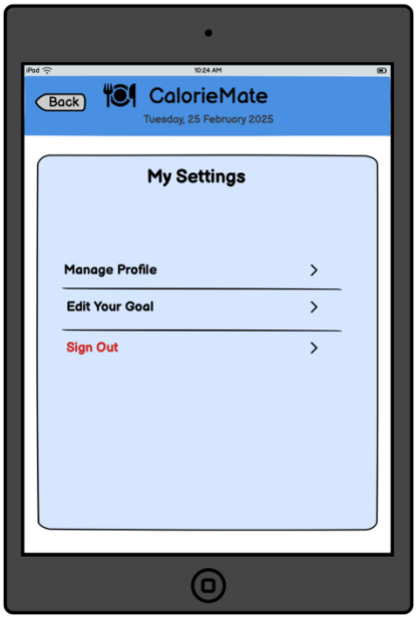
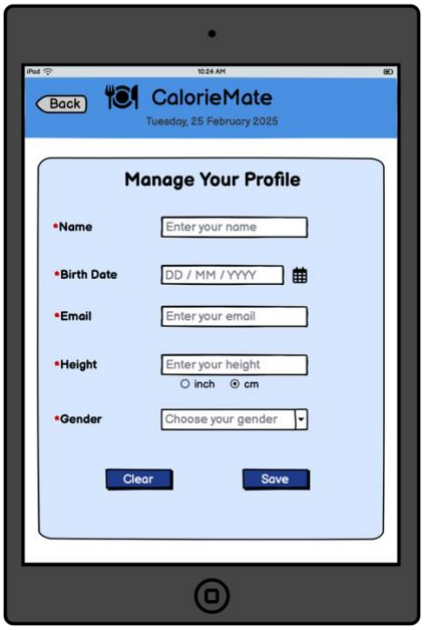
CalorieMate
Tuesday, 25 February 2025
Scan Barcode

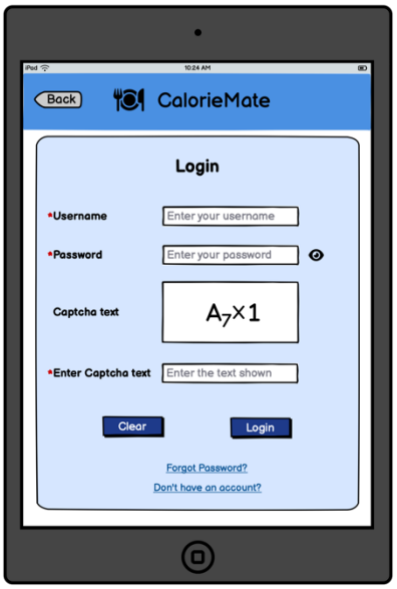

Back
CalorieMate
Ingredient details
Ingredient
Flour
*Serving Size
1
Cup
Calories
400
Nutrition Facts
Add Ingredient

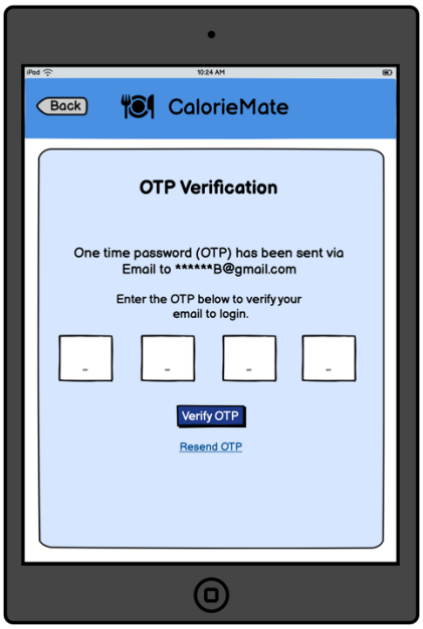

Back
CalorieMate
Add a New Ingredient
*Ingredient
Enter ingredient name
*Serving Size
Amount
Measurement
*Calories
Enter the calories
Nutrition Facts
*Total Fat:
*Saturated Fat:
*Trans Fat:
*Cholesterol:
*Sodium:
*Total Carbohydrate:
*Dietary Fiber:
*Total Sugar:
*Protein:
Clear
Add Ingredient

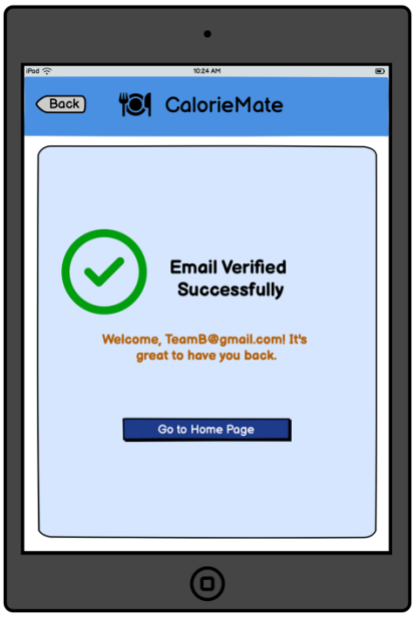

Back
CalorieMate
Tuesday, 25 February 2025
My Settings
Manage Profile
Edit Your Goal
Sign Out

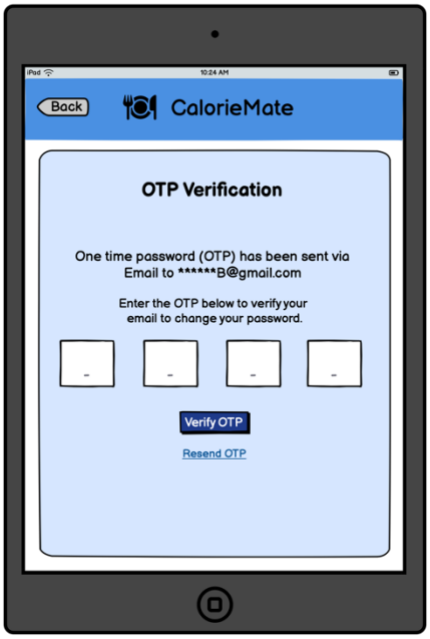

Back
CalorieMate
Tuesday, 25 February 2025
Manage Your Profile
*Name
Enter your name
*Birth Date
DD / MM / YYYY
*Email
Enter your email
*Height
Enter your height
inch
cm
*Gender
Choose your gender
Clear
Save

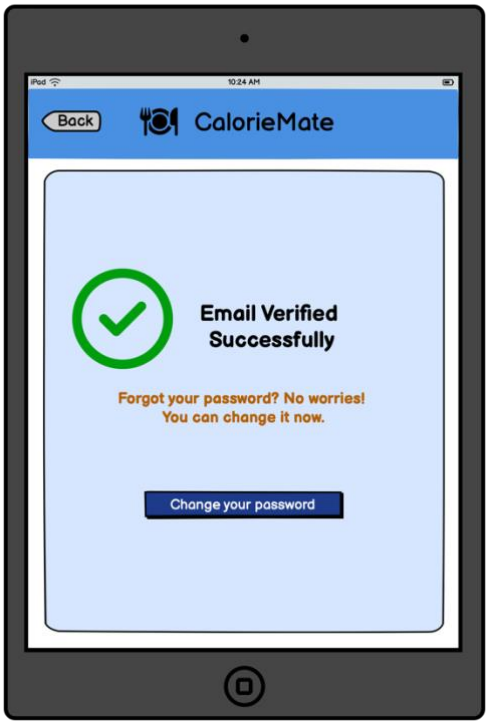

Back
CalorieMate
Tuesday, 25 February 2025
Create a Weight Loss Plan
*Current Weight
Enter current weight
lb
kg
*Desired Weight
Enter goal weight
lb
kg
*Reach your goal in
Choose the period
Clear
Create Plan


Back
CalorieMate
Login
*Username
Enter your username
*Password
Enter your password
Captcha text
A7x1
*Enter Captcha text
Enter the text shown
Clear
Login
Forgot Password?
Don't have an account?


Back
CalorieMate
OTP Verification
One time password (OTP) has been sent via Email to ******B@gmail.com
Enter the OTP below to verify your email to login.
Verify OTP
Resend OTP


Back
CalorieMate
Email Verified Successfully
Welcome, TeamB@gmail.com! It's great to have you back.
Go to Home Page


Back
CalorieMate
OTP Verification
One time password (OTP) has been sent via Email to ******B@gmail.com
Enter the OTP below to verify your email to change your password.
Verify OTP
Resend OTP


Back
CalorieMate
Email Verified Successfully
Forgot your password? No worries! You can change it now.
Change your password

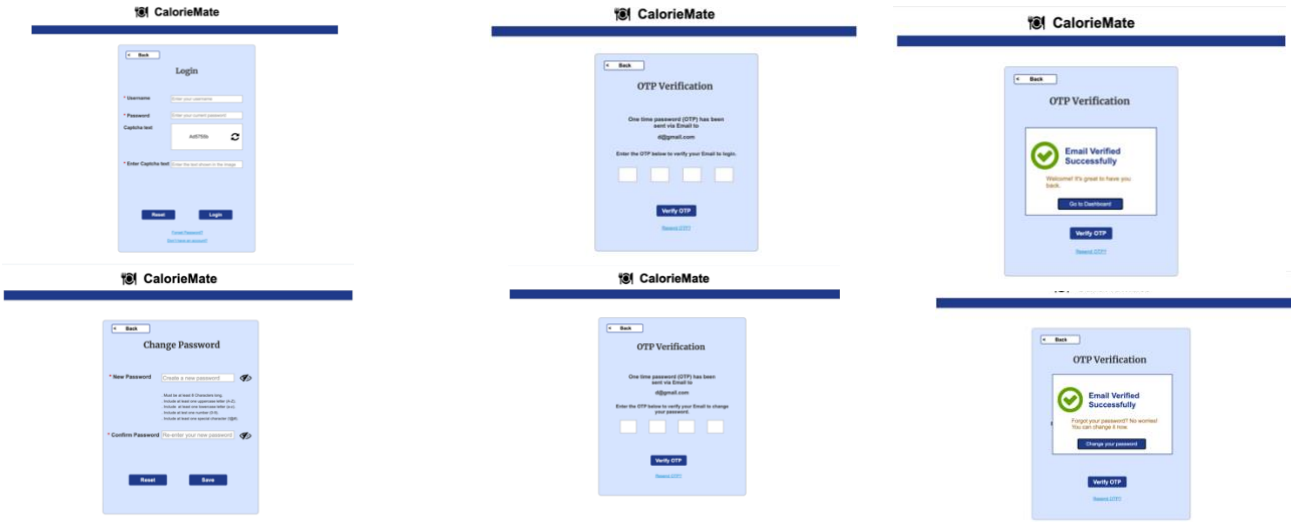

Back
CalorieMate
Change Password
*New Password
Enter your new password
Have at least one lower case letter.
Have at least one upper case letter.
Have at least one number.
Have at least one special character.
Be at least 8 characters.
*Confirm Password
Re-enter your password
Clear
Save

7. Software Prototype (Axure)

Home Page

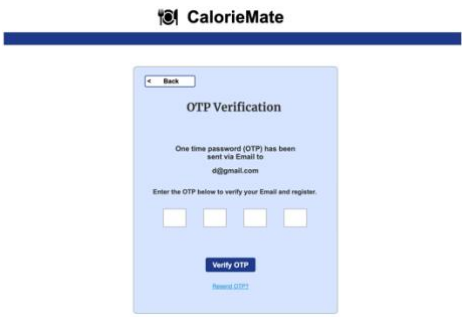
- Through the home page, the user can send a message, go to the login page, or create an account.
- Using the anchors in the menu bar, the user can navigate smoothly to different sections in the page.
- All form fields will be validated and checked if empty. If so, an appropriate message will be displayed.

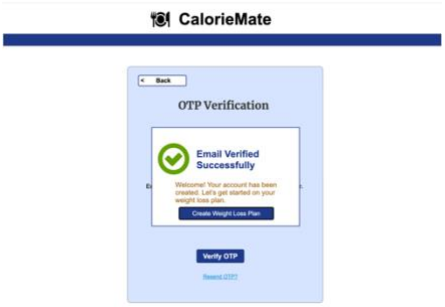
Logging In



- If the user has an account, he/she will be redirected to the OTP page (OTP = 1111), then to the dashboard.
- Captcha text can be changed using the refresh icon.
- Login credentials will be validated against the username and password entered during the creation of an account. If the fields entered are invalid or a field is empty, an appropriate error message will appear.
- If the user forgot his/her password, he/she can change the password, which will be checked against the displayed criteria. If the fields entered are invalid or a field is empty, an appropriate error message will appear.
- After creating a new password, the user will be redirected to the “Log In” page so he/she can enter his/her account.

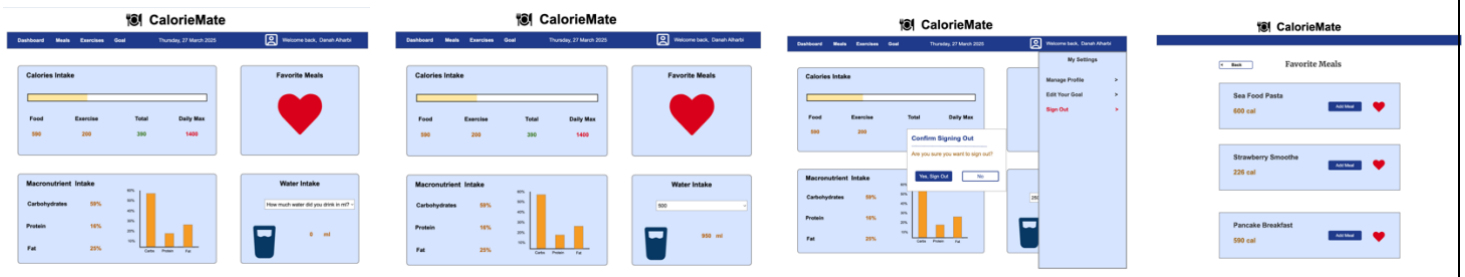
Create an Account (Signing Up)





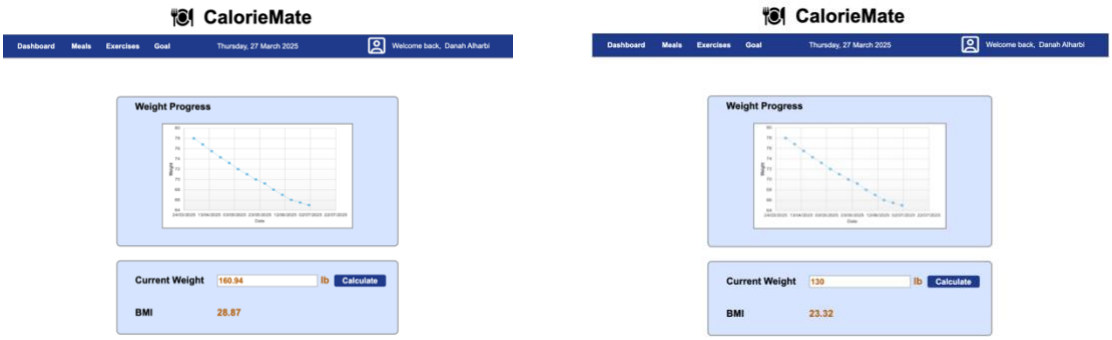
- The user can create an account by entering his/her information. All information will be validated, and fields will be checked if empty. An appropriate error message will appear.
- Also, a tooltip is utilized to inform the user of the reason his/her email is required.
- Captcha text changes when the user presses the refresh icon.
- When the user goes to the previous page, entered information will be displayed.
- Ex. If you finish filling in “Step 1,” then go to “Step 2,” then go back to “Step 1,” your information will be there.
- After creating an account, the user will be redirected to the OTP page (OTP = 1111). If the user entered the wrong OTP code or didn’t fill in all fields, an error message will be displayed. Otherwise, a pop-up window will be displayed confirming the creation of the account.
- Next, the user will create a weight loss plan. If the user enters invalid information or leaves a field empty, an appropriate error message will appear. Otherwise, a pop-up window will be displayed confirming the creation of the weight loss plan, and the user will be redirected to the “Dashboard.”

Dashboard



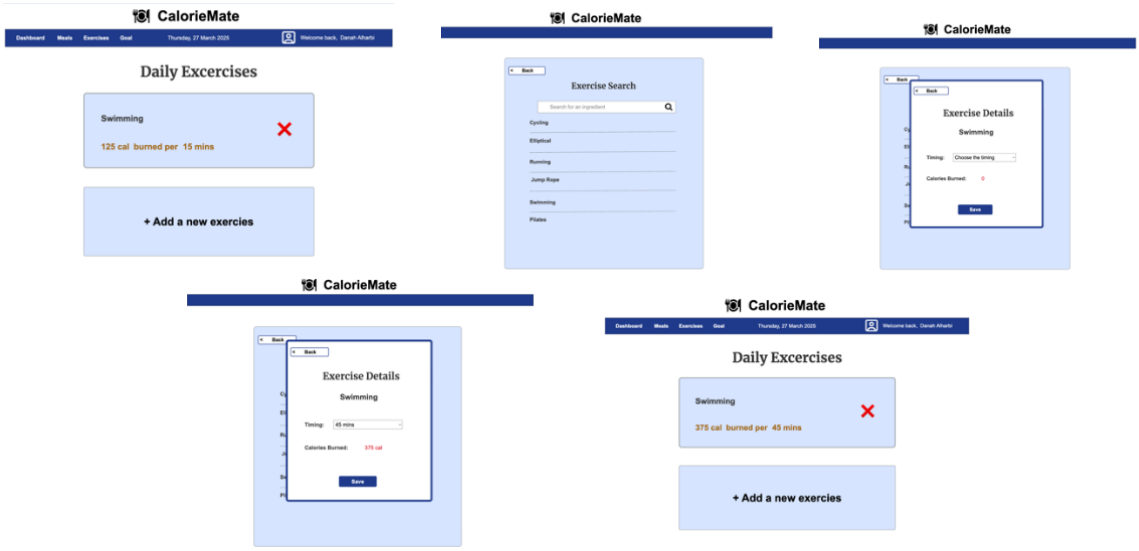
- In the dashboard, the user will be welcomed with his/her name. Also, by clicking on the "user icon," a side menu will appear, enabling the user to go to the "Manage Profile Page," "Edit Your Goal Page," or sign out. The side menu can be displayed on the "Dashboard," "Meals," "Exercises," and "Goal" pages.
- Using the drop list in the "Water Intake" wedge, the user can add the amount of water that he/she has drunk. If an invalid choice is chosen, an error message will appear.
- The user can also display his/her favorite meals. By pressing on "Add Meal," the "Meals" page will be displayed.

Goals Page



- When the page is displayed, the user's BMI will be calculated.
- The user can change his/her current weight and press "Calculate" to display the new BMI and save his/her weight. If the field is left empty or an invalid number is entered, an error message will be displayed.

Exercises Page

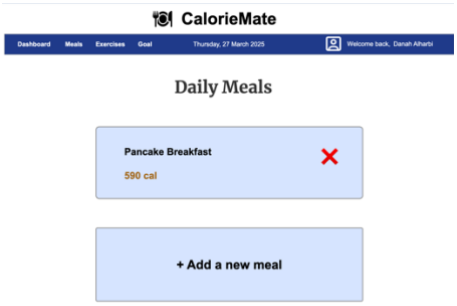


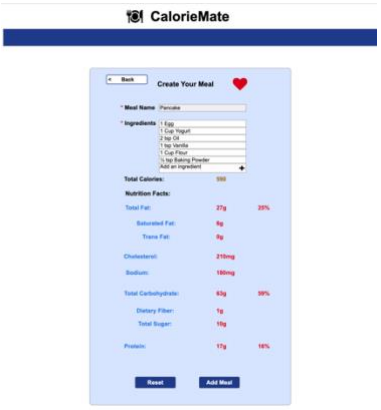
- When the user presses on “Add a New Exercise,” the “Exercise Search” page will be displayed.
- When choosing swimming, a pop-up window will be displayed, enabling the user to choose the exercising time, which will later be displayed on the “Exercises” page.
- If the user chooses an invalid choice, an appropriate message will be displayed.

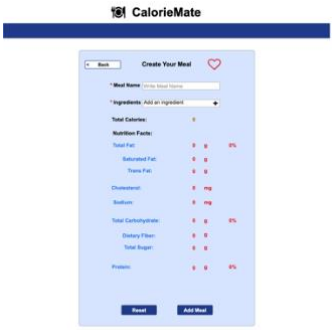
Manage Profile and Edit Goal Page

- As either page gets displayed, the information saved at account creation will be displayed, and the user can change it and save his/her new information.
- If the user enters an invalid input or leaves a field empty, an appropriate message will be displayed.

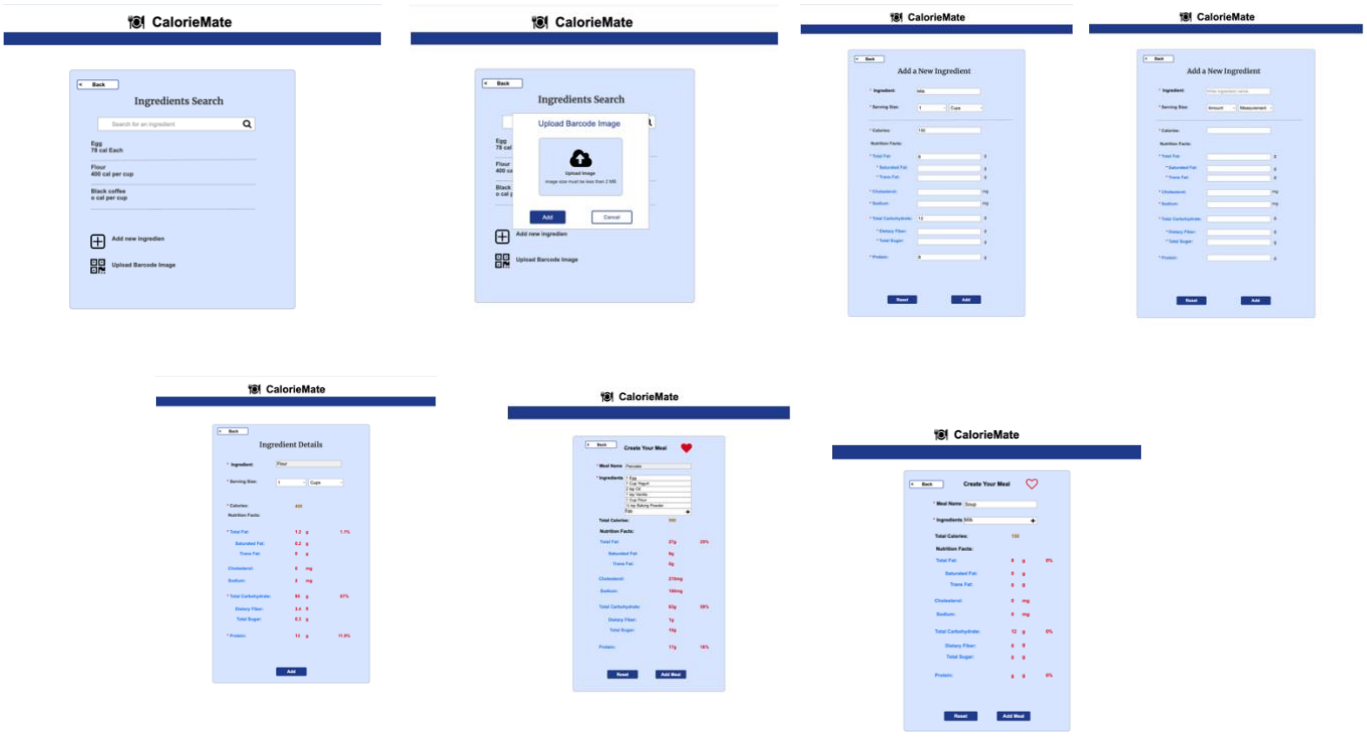
Meals and Ingredients Management







- The user can create a new meal or display the “Pancake” page.
- The user can add a new ingredient by pressing on the plus sign beside the “Add an Ingredient” label, which will redirect him/her to the “Ingredient Search” page.



- The user can add a new ingredient, upload a barcode image, or add an existing ingredient (flour).
- If the user leaves fields empty or enters an invalid input, an appropriate message will appear.
- The chosen ingredient will be displayed in the list of ingredients. Also, if it is a new meal, nutrition facts will change based on the added ingredient.

8. Project Implications

8.1. What are the issues faced by that organization which are going to be solved through your application/website?

- **Difficulty in Tracking Daily Caloric Intake and Exercise**

  Many users struggle with accurately tracking the calories they consume daily and the calories they burn through exercise. Traditional methods are either cumbersome or prone to error, leading to inefficient tracking and incorrect data.

- **Lack of Motivation and Accountability**

  Maintaining motivation to achieve weight goals is a challenge many face, and it can be difficult to stay accountable without measurable progress.

- **Complexity in Managing and Tracking Nutritional Information for Meals**

  Users often find it difficult to keep track of meal nutrition, especially when trying to manage multiple ingredients and calories.

- **Difficulty in Setting and Monitoring Fitness Goals**

  Many individuals struggle to set realistic and achievable weight goals or don't have a system to track their progress effectively.

8.2. What are the technological features that you have included in the application/website to solve these problems?

- **Calories calculator system**

  We added a calorie calculator that can help the user know how many calories they are consuming per meal.

- **Goal tracking page**

  Also add a Goal tracking page to see the progress, and that will motivate the user.

- **Dashboard for creating calorie-counited recipes.**

  We added a dashboard for creating recipes and counting calories for each recipe.

- **Dashboard tracker**

  So, users can track how much water their intake is per day. Add a set goal page so the user can decide in how many months he can get to his desired weight.

8.3. List down additional problems/challenges which may result due to your system?

Functional Challenges:

1. Captcha Usability:
    - If not implemented with accessibility in mind, the refreshable captcha may frustrate users with visual impairments or cognitive difficulties.

Technical Challenges

1. Session Handling:
    - Retaining user data across pages (e.g., going back to Step 1 and seeing previous data) may lead to inconsistent behavior if session storage isn't managed correctly.
2. Page Redirections:
    - Multiple redirections (e.g., account creation to OTP to weight loss plan to dashboard) may lead to loading issues or broken navigation if not carefully implemented.

User Experience (UX) Challenges

1. Nutritional Feedback Timing:
    - Real-time updates of nutrition facts based on added ingredients may lag or confuse users if not clearly indicated.

Privacy & Data Issues

1. Sensitive Health Data Storage:
    - Storing personal health data (e.g., weight, meals, exercises) requires secure encryption and handling to avoid data leaks.

8.4. How the tools used in phase 2 and phase 3 helped you to design an appropriate system?

In Phase 2, we used Balsamiq to create low-fidelity wireframes that allowed us to explore layout ideas and focus on user experience. It helped us in defining important system elements including the dashboard, login, registration, home page, and meal management capabilities. The simplicity of Balsamiq made it easy to make quick changes based on group feedback and iterate until we reached a structure that satisfied our functional goals.

In Phase 3, we transitioned to Axure to develop high-fidelity, interactive prototypes based on our initial designs. Axure helped us to mimic realistic user interactions such as form validation, OTP login, BMI calculations, navigation menus, and pop-up confirmations. This interactivity helped us in evaluating usability, testing user flows, and ensuring intuitive error handling—all of which allowed us to improve the system to be user-friendly and practical prior to final development.

8.5. Professional Issues:

For our Calories Calculator Web Application, it is important to follow professional standards in software development. This means focusing on user interface design, user experience, and coding best practices. The application must be reliable, easy to use, and created by knowledgeable experts. To build trust with users, we need to be open about the features and limitations of the app, ensuring that users understand how it works.

8.6. Ethical Issues:

When handling user data in our health and nutrition app, we face important ethical concerns. It is essential that users know how their information will be used to protect their privacy and help them make informed choices. Additionally, the app should encourage healthy habits and avoid promoting unhealthy behaviors or unrealistic diet plans. Our goal is to support users in making positive lifestyle changes.

8.7. Legal Issues:

We must comply with legal requirements, including data protection laws such as GDPR and local regulations. This means taking all necessary steps to keep users' personal information—like dietary preferences and health data—secure. Furthermore, we should ensure that any health claims made by the app are based on credible sources to avoid potential legal issues. Adhering to these legal standards is crucial for protecting both users and the app itself.

8.8. Security issues

While the Axure prototype currently does not retain actual user data, it is essential that future iterations of the application emphasize user privacy and data security, particularly if personal health information is involved. This entails secure data management, anonymization whenever feasible, and adherence to data protection regulations to avert unauthorized access or misuse.

8.9.Societal Issues

Tools associated with diet and health can significantly affect user behavior. Therefore, it is crucial to design the interface and feedback mechanisms in a manner that fosters healthy habits without promoting obsession or unhealthy eating behaviors. Attention must be given to users of varying ages, body types, and health conditions to ensure the tool is inclusive and does not endorse unrealistic standards.

8.10. Responsibilities

As developers, we bear the responsibility of ensuring that the information provided is accurate and derived from reliable sources (such as scientific dietary guidelines). Any limitations of the tool should be transparently communicated to users. Additionally, we have an obligation to prevent misleading users by clarifying that this tool is not a substitute for professional medical or nutritional advice.

9. Concluding Discussion

In conclusion, the Calories Calculator Web Application successfully addresses the challenges of calorie tracking and health management by providing a user-friendly and interactive platform. Through the integration of thoughtful design, intuitive navigation, and real-time feedback, users are empowered to set goals, monitor their progress, and make informed dietary choices. The use of Balsamiq and Axure greatly contributed to visualizing and shaping the interfaces and their functionalities.

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