Health and Online Cookbook App (We-Cook)

Team #12

Project Website: https://github.com/users/rtumalle0518/projects/1
Software Engineering 14:332:452

Group Members:

Randy Roque Sanchez
Randy Tumalle
Muhammad Raza
Charles Trangay
Naomie Popo
Asim Malik
Ayo Obaisi
Tyron Tucker
Memphis Chen
Asim Malik
Arshad Vohra

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Work Assignment

What are the key skills of each team member?

a. Randy Roque:
    i. Backend Languages: Python, Java
    ii. Front End Languages: HTML, CSS, JavaScript
    iii. Databases: MongoDB
    iv. Website Development: Flask
b. Randy Tumalle:
    i. Backend Languages: Java, Python
    ii. Frontend Languages: HTML5, CSS, Beginner Javascript
    iii. Databases: No experience
    iv. Website Development: No experience
    v. Version Control: Git
c. Muhammad Raza:
    i. Front End: HTML5, CSS, Javascript
    ii. Backend: Python, Java, C++
    iii. Databases: (Beginner) MySQL
    iv. Website development: No experience
    v. Version Control: Git
d. Charles Trangay:
    i. Backend Languages: Java, C++
    ii. Frontend Languages: HTML5(Novice)
    iii. Databases: PostgreSQL(Novice)
    iv. Website Development: No experience
e. Naomie Popo
    i. Backend Languages: C++
    ii. Frontend Languages: Javascript (Beginner)
    iii. Databases: No experience
    iv. Website Development: no experience

f. Ayo Obaisi
    i. Backend Languages: Java
    ii. Frontend Languages: Node.JS
    iii. Databases: R, MySQL
    iv. Version Control: Git
g. Tyron Tucker
    i. Backend Languages: C++, Java, Python
    ii. Frontend Languages: Beginner JavaScript
    iii. Databases: No experience

iv. Website Development: No experience
v. Version Control: Git

h. Memphis Chen
    i. Backend Languages: Java, Python
    ii. Frontend Languages: HTML5, CSS, Beginner JavaScript
    iii. Databases: No experience
    iv. Website Development: No experience
    v. Version Control: Git

i. Asim Malik
    i. Front End Languages: Python, HTML5, Java
    ii. Backend Languages: C++, C#, Python
    iii. Databases: A little of MySQL
    iv. Website Development: Have a little experience not too much
    v. Version Control : Git

j. Arshad Vohra
    i. Backend Languages: Java, C, Python
    ii. Frontend: A bit of Angular.js experience
    iii. Databases: MySQL, PostgreSQL
    iv. Website Development: Worked on backend of a website
    v. Version Control: Git
    vi. Other : REST APIs, Spring-Boot framework,

Sub-Teams:

Online Cookbook: Randy Tumalle , Naomie Popo, Tyron
Personalized Meal Plan: Randy Tumalle, Randy Roque, Tyron
Databases: Ayo Obaisi, Randy Roque
Onboarding and General UI: Ayo Obaisi, Memphis Chen,Muhammad Raza

1.1 Customer Problem Statement

In this day and age, an average person may find it increasingly difficult to maintain a proper healthy lifestyle. Complications may occur that make it easy to forget to take care of your health. We plan to help with one of the major components of a healthy lifestyle - diet. Ignoring one's diet will have dire consequences in the near future, as we can see in the following statistics.

In the United States, 3 out of the top 10 leading causes of death are heart disease, cancer, and diabetes and most of these deaths are actually linked to poor nutrition. According to the CDC, 40% of the adult population and 19% of young people aged 2 - 19 have obesity. Being in a state of obesity puts people at risk for heart disease, specific types of cancers, and type 2 diabetes. Additionally, two of the leading causes of heart diseases are high blood pressure and cholesterol, which occur as the result of an unbalanced diet. All of these harmful, life-threatening conditions can be prevented and treated with watching how you eat and maintaining healthy nutritional habits.

People want to be the best version of themselves and having a healthy diet is an essential part in doing so. However, we understand that starting a diet is a daunting task. Nowadays, we have so many resources and information available to use that we don't ultimately know what to

process. This can lead into frustration and potentially lead a user to stop their diet and take harmful steps towards their dream diet.

However, with We Cook, you can avoid these dilemmas as our app is extremely straightforward. All we need from the user is their height, weight, age, and some other varying factors. Our app will create a platform for you to monitor your diet and learn more about nutrition and how to lead a healthy life. Our vision is to make a good healthy lifestyle a standard. We can help you start your journey to a healthier lifestyle.

The app offers a centralized platform to look up recipes within your diet for easy meal planning, store personalized recipes that you may have created and share/provide a rating on other person's uploaded recipes you have tried. Here we go into depth into the different functions:

"We-Cook" offers a convenient way to stay on track with living a healthy life while exposing you to a world-class cooking experience. During a hectic day, it can become time consuming thinking or looking for meal ideas that fit a user's diet restrictions. The app supports many of the popular dietary preferences of users such as gluten-free, pescatarian, vegetarian, and a vegan plant-based diet. To even better tailor to individuals personalised eating habits, popular allergies such as peanuts, shellfish, soy, tree nuts, eggs, wheat and milk are considered before creating a meal plan. Not taking into account allergies and dietary preferences can hinder a user's ability to properly diet, so we make sure to include these important preferences. From a user's weight and height, the app can take into account a regular calorie intake for persons looking to lose weight, gain weight or maintain their weight.

If a user is looking to utilise ingredients already in their kitchen, the app can generate simple meals that use those ingredients offering a great solution for last minute meal ideas. By taking in a user's preferences for diet and weight goals, the app will be able to provide different healthy meals that fulfill the user's dietary requirements ensuring that the user obtains key macronutrients and calories to sustain them. Having easy to follow recipes, this functionality allows users to expand their cooking options and try new and exciting meals.

Having a place where users can share their recipes/meals they cook can make the application be very interactive and increase user activity. It can also inspire other people on their diet to keep going and living that healthy lifestyle. We live in a world where social media has become part of our daily lives and it's widely available. This technology allows users to connect with others and share things they do in their lives. Similarly, creating a social media instance in our app will make those users feel familiar with the technology and create new ways of sharing their experiences. This application will let them rate specific recipes, look for new meals to cook, as well as share their recipes they cook at home. This can also open a lot of doors to those who have a passion for cooking and would like to share the world with their gift, just like Tik Tok does for those who like to make videos about dances, trends, or specific topics.

When you first open the app, the layout would be more mostly simple at the beginning. Questions would be asked with the input of a keyboard. These questions would be simple at first and ask for things like height and weight. Later, more complex questions will be asked and that will start to form an individualized profile for the user. The profile section of the app will have most of the information that the user typed along with a button to click for recommendation.

More information answered by the user will help make the recommendations more unique to the user. More detailed personalization information will be on a separate page called the recommendation page. With this information organized in the website for the user, it will help save a tremendous amount of time.

1.2 Decomposition into Sub-problems

- **Meal planning Aspect of App:** This group would be in charge of creating the meal planning functionality. This function will help users create different recipes/meals depending on their diet, allergies, and food preferences.
    i. Students: Randy Roque, Charles Trangay, Randy Tumalle, Tyron, Asim Malik, Arshad Vohra, Muhammad Raza
- **Social Media Aspect of App:** This group would be responsible for creating a mini search engine, to browse through other people's recipes. They are also responsible for creating a feature to allow users to publish their recipes, and also give them the ability to rate other people's recipes.
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- **Personalization Aspect of App:** This group would be in charge of creating the UI of when you first open the app. This group would be in charge of features like creating a profile on what preferences you have, your height, gender, weight, allergies, etc., and using your initial preferences the app will curate a personalized meal plan.
    i. Students: Randy Tumalle, Charles Trangay, Ayo Obaisi, Naomie Popo, Asim Malik, Memphis Chen,Tyron, Arshad Vohra

1.3 Glossary of terms

Obesity - the condition of being grossly fat or overweight.

Nutrition - the process where an organism uses energy from food as fuel to support its life

Diet - the usual food and drink consumed by an organism. Can also refer to a specific restriction one is going to to reach a certain bodily goal.

BMI (Body Mass Index) - a value derived by calculating the weight of a person (kgs) divided by their height (m). Used to screen for different weight categories.

User Profile - An individualized outline for the user, based on their height, weight, dietary restrictions, allergens, etc.

Pescataraian - a person who doesn't eat any meat except fish and seafood

Gluten free - a diet that excludes food that contains the protein gluten.

Vegetarian - a person who doesn't eat meat

Vegan - a person who doesn't eat animal products - includes meat, eggs, dairy products, etc

Allergies - a condition when the immune system reacts abnormally to a potentially harmful or foreign antigen.

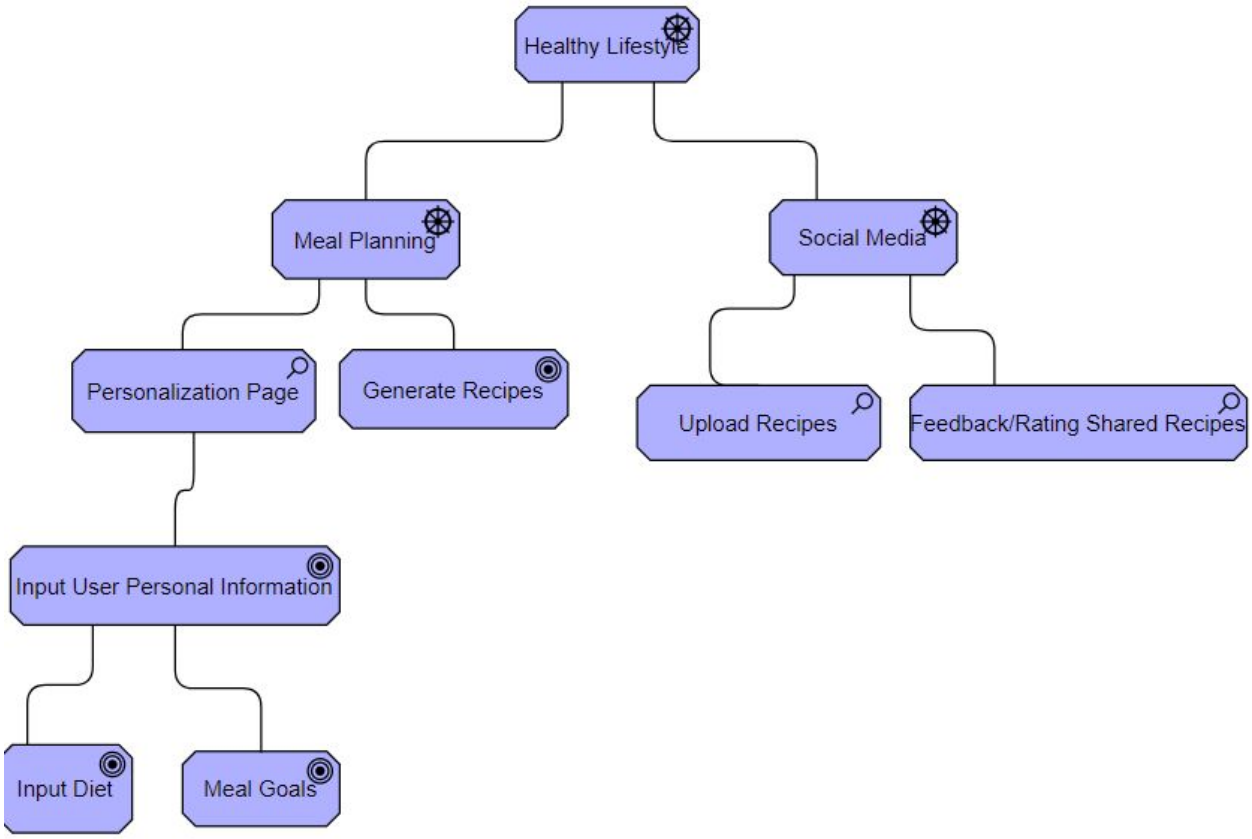
Contribution Matrix

Task	Randy Tumalle	Tyron Tucker	Randy Roque Sanchez	Ayo Obaisi	Charles Trangay	Muhammad Raza	Asim Malik	Memphis Chen	Naomie Popo	Arshad Vohra
Customer Statement	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Glossary of Terms	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
System Requirements	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Functional Requirement Specification	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Effort Estimation	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Domain Model Analysis	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Interaction Diagram	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Class Diagram and Interface Specification	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
System	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

Architecture & System Design										
Algorithm & Data Structure	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
User Interface & Implementation	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Design of Tests	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
History of Work, Current Status, Future Works	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Project Management	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

2. System Requirements

2.1 Business Goals



2.2 Functional Requirements

Identifier	Priority Weight (Low 1 - 5 High)	Requirement Description
REQ-1	4	The system should allow users to be able to create a personalizer profile with weight, height, and other parameters.

REQ-2	5	The system inputs recipes that the user creates and plans a week of food and makes sure you are not deficient in any vitamins/nutrients.
REQ-3	4	The system creates a plan for the week of food options based on the user's personal preferences
REQ-4	2	The system tells the user when you should eat based on a calendar .
REQ-5	2	The system handles a Potential Budget Feature to help you financially plan your meals.
REQ-6	3	The system features a Social Media for Cooks where you will be able to share and rate recipes.
REQ-7	3	The system shall create a grocery list based on a weekly meal plan.
REQ-8	4	The system should give dish recommendations based on the ingredients the user has available.
REQ-9	3	The system will allow users to be able to make recommendations based on recipes that the user creates in the app.
REQ-10	3.	The system will provide users with a given meal on a day if

		they have no clue of what he or she should eat based on diet, allergies, and other parameters.
REQ-11	4	The system will offer a username/password recovery process and encryption.
REQ-12	3	Meal tag and identification to avoid duplicate recipes and identify recipes based on user input.
REQ-13	3	The system will allow the user to save and edit(add/remove) recipes in their profile. And provide a filter recipe system.

2.3 Non-Functional Requirements

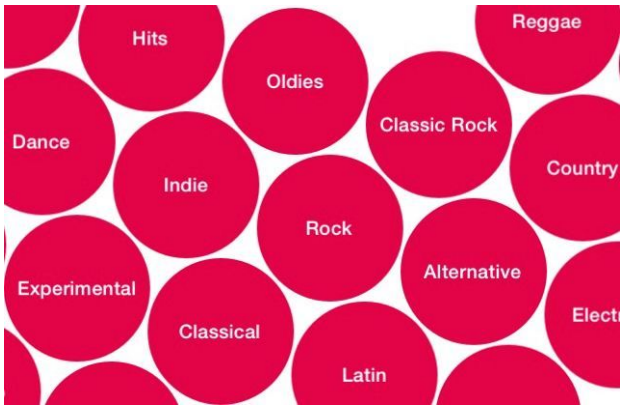
Identifier	Priority Weight (Low 1 - 5 High)	Requirement Description
REQ-11	5	The system should allow the user to edit or update their profile, once a profile is established.
REQ-12	2	The system will allow users to be opted to confirm his or her profile and email once registration and profile are complete
REQ-13	5	The system will notify the user if they are deficient or have excess vitamin/nutrient intake based on what has been consumed throughout each week.
REQ-14	4	The system should give ingredient information for each meal and filter meals based on your preferences(keto,protein, vegan, etc..)
REQ-15	3	The system running time can vary because of the various broad profiles or very in detail profiles.

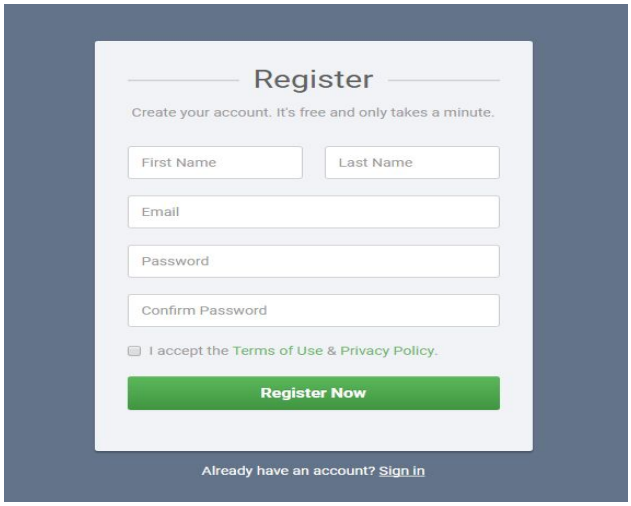
REQ-16	2	The system will send tips/directions to have users navigate the program easily.
REQ-17	3	The system is able to offer an email option whenever a bug has been detected or user issue has occurred.
REQ-18	2	The system will provide a goal checklist that can be developed and followed by the user throughout each week based on user input and preferences.
REQ-19	5	The system will control the user's diet by providing ways of eating healthier, tracking the users' macros and micros, and networking with others.
REQ-20	4	The system will be more of a benefit to users if the user is more engaged and specific with personalizing their profile.
REQ-21	3	The system will mainly be desktop based.
REQ-22	4	The system should be able to detect and encrypt user data.
REQ-23	3	The system will store the encrypted data in a database.

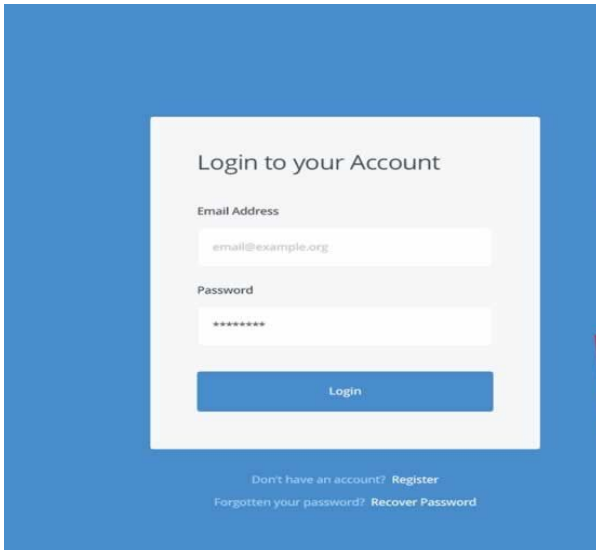
2.4 User Interface Requirements

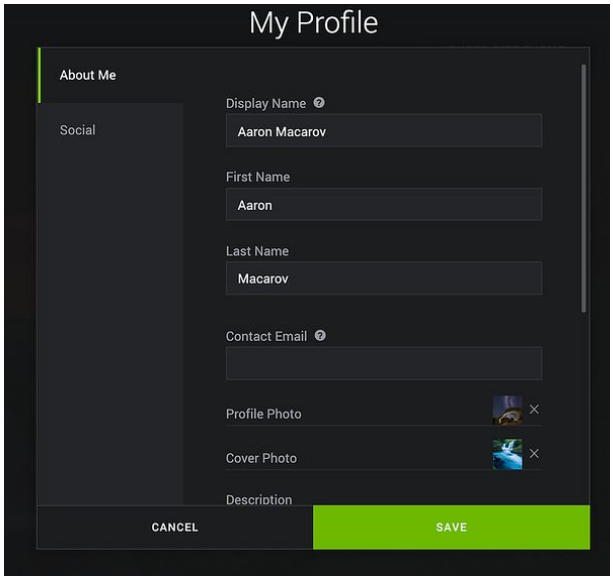
Identifier	Priority Weight (Low 1 - 5 High)	Requirement Description
REQ-22	5	Users should be able to create an account and he or she must list some generic information such as First Name, Last Name, Email, Mobile Number, Date of Birth
REQ-23	5	Users should be able to log in to his or her account, and the user needs to enter the correct email and password
REQ-24	5	Users should be able to enter his or her email to reset through a reset password button.

REQ-25	1	Users should be able to enter both email and password in order for the user to click the “login” button, otherwise the login button will be shaded a gray color to show that the button is not executable.
REQ-26	3	Users should be able to interact with a bubble-like survey for meal/diet preferences
REQ-27	3	Users should be able to login to their account and update or edit their information under the profile tab
REQ-28	5	Users should be able to choose what category of meals he or she would be comfortable with in order to view what sub meals would come next
REQ-29	4	Users should be able to verify his or her account through the system from either the user’s email or phone number.
REQ-30	4	Users should be able to have the ability to change his or hers category of meals by updating and selecting a different category in the profile tab.
REQ-31	3	Users should be able to utilize the “add meal to cookbook” button for users who want to add ingredients to the cookbook database
REQ-32	3	Users should be able to select 3 general sections that he or she can enter upon entering the program.




Register
Create your account. It's free and only takes a minute.
First Name
Last Name
Email
Password
Confirm Password
I accept the Terms of Use & Privacy Policy.
Register Now
Already have an account? Sign in


Login to your Account
Email Address
email@example.org
Password
****
Login
Don't have an account? Register
Forgotten your password? Recover Password


My Profile
About Me
Social
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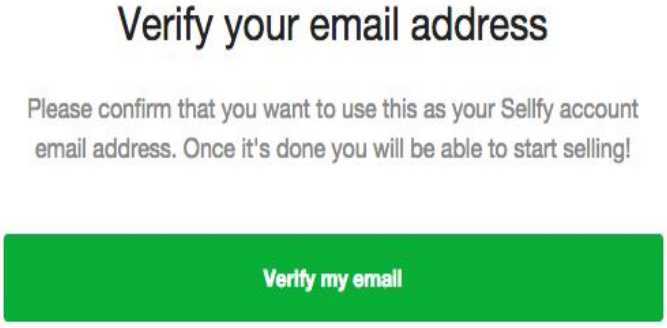
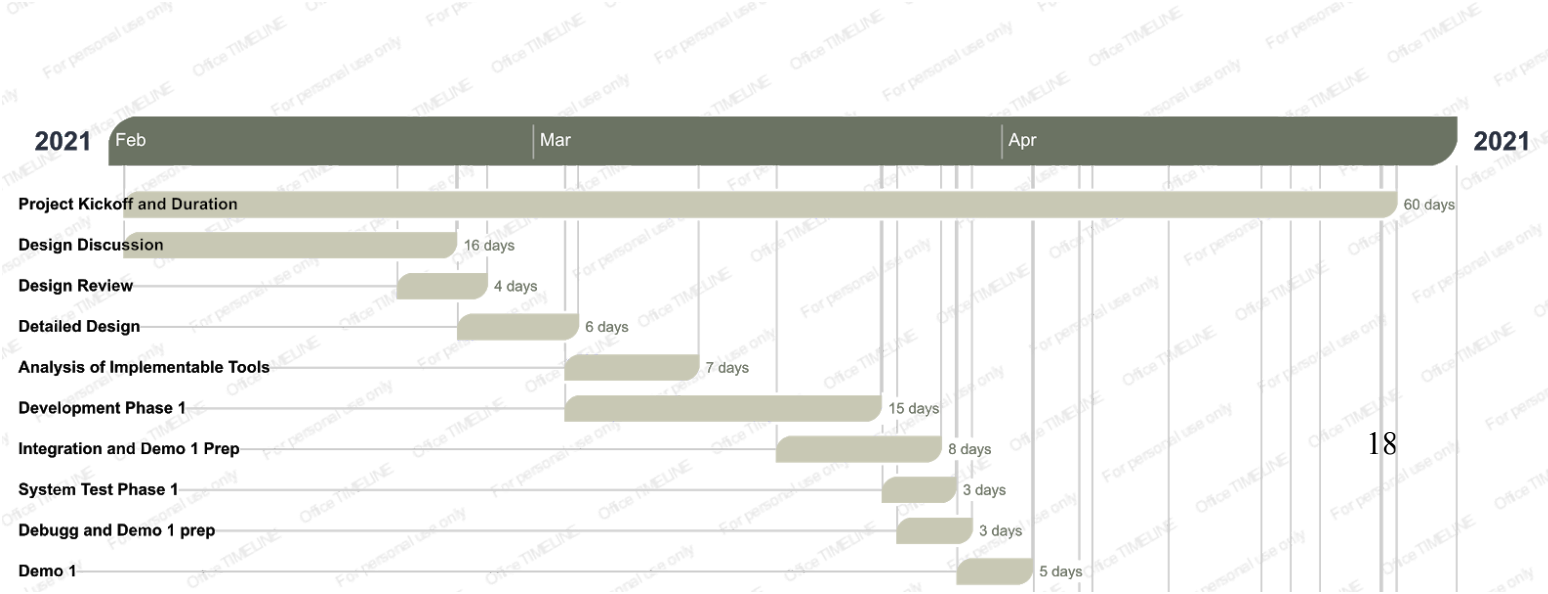
Aaron Macarov
First Name
Aaron
Last Name
Macarov
Contact Email
Profile Photo
Cover Photo
Description
CANCEL
SAVE



Project Management



To develop the report all team members were independently developing their assigned tasks of the report in one shared Google document for each part of the report. Above is the GANTT chart, a step by step description on the design, development, and execution of this project. It should be noted that Feedback Review can only be done based on external factors, and the time frame given is only based on expectation and prediction. We have assignment development phases 1 and 2 a duration of two weeks, to insure efficiency and effectiveness. All software development will have a debugging phase following a system test phase, to insure efficacy and quality in our product.

Task Phase Description

DESIGN DISCUSSION:

- Basic UI design for sign up, sign in,profile personalization, search functionality, password reset
- Implementation of routes for each User Case (page linking)
- Discussion of ideas on privacy and security
- Discussion on implementation of cookbook

DESIGN REVIEW/DETAILED DESIGN:

- UI finalization and implementation (HTML5,CSS, JS)
- Determine page flow for user case
- Features for cookbook implementation
- Meal plan,tags, and search filter implementation

ANALYSIS OF IMPLEMENTABLE TOOLS:

- Determine which DevOp tools to consider in deployment
- Gain thorough understanding of tool that is chosen

DEVELOPMENT AND INTEGRATION:

- Begin development of product

- Ensure functionality of all REQs
- Implementation of all User Cases
- Ensure flow from page to page is correct
- Prioritize high priority REQs
- User Profile personalization upon sign up
- User selects gender,weight, height and goals
- Creates meal plan upon user selection
- User provided with choices upon which meal plan to choose from
- User has the ability to search and filter through available recipes in database
- Add recipes to own cookbook and meal plan
- Customize goals as time progresses, change weight and can track progress

SYSTEM TESTING & DEBUGGING

- Insure all code is efficient, implemented correctly and completely
- Check requirements and analyze if all design phase considerations are met
- Debugging phase if we encounter any issues,bugs and crashes
- All issues will be tracked and all bugs will be fixed to insure end product is of high quality and meets our standards

DEPLOYMENT

- Product will be deployed for beta testing
- System improvements will be considered if necessary

Product Ownership:

- **Meal planning Aspect of App:** This group would be in charge of creating the meal planning functionality. This function will help users create different recipes/meals depending on their diet, allergies, and food preferences.
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3. Use Cases

3.1 Stakeholders

Stakeholders are the individuals or organizations interested in the growth and development of our application. Our stakeholders are our users, organizations, and private employers, such as nutritionists and gymnasiums. Organizations and private employers will contribute to the promotion and sponsoring of our application in order to increase the amount of users. Our users will contribute to the development and efficiency of the application through feedback and usage of the app.

3.2 Actors and Goals

Actor	**Goal**	**Use Cases**
User (Initiating)	Find meal that fits user's preferences	UC4, UC5,
User (Initiating)	Personalize utilization of website through use of an account	UC1, UC2, UC3
User (Initiating)	Meal specification through filter	UC5
User (Initiating)	Share meal recipes and plans.	UC9
User (Initiating)	Rate/Comment any meal recipe or plan.	UC9
User (Initiating)	Keep a track of	UC4, UC11

	nutrition information.(micros and macros included)	
User (Participating)	Random meal recipe	UC5
System (Initiating)	Provide user with meals based on filter selections such as calorie counts, ratings, allergies, etc.	
System (Initiating)	The software will encrypt user information such as email and password.	UC10
System (Initiating)	Meal plan/recipe additions, removals, and edits stored in database	UC4, UC6,UC7,UC8
System (Initiating)	Calculate and display nutrition information	UC11
System (Participating)	Meal type tags and identification	UC8 UC12

Use case changes 2/21/21

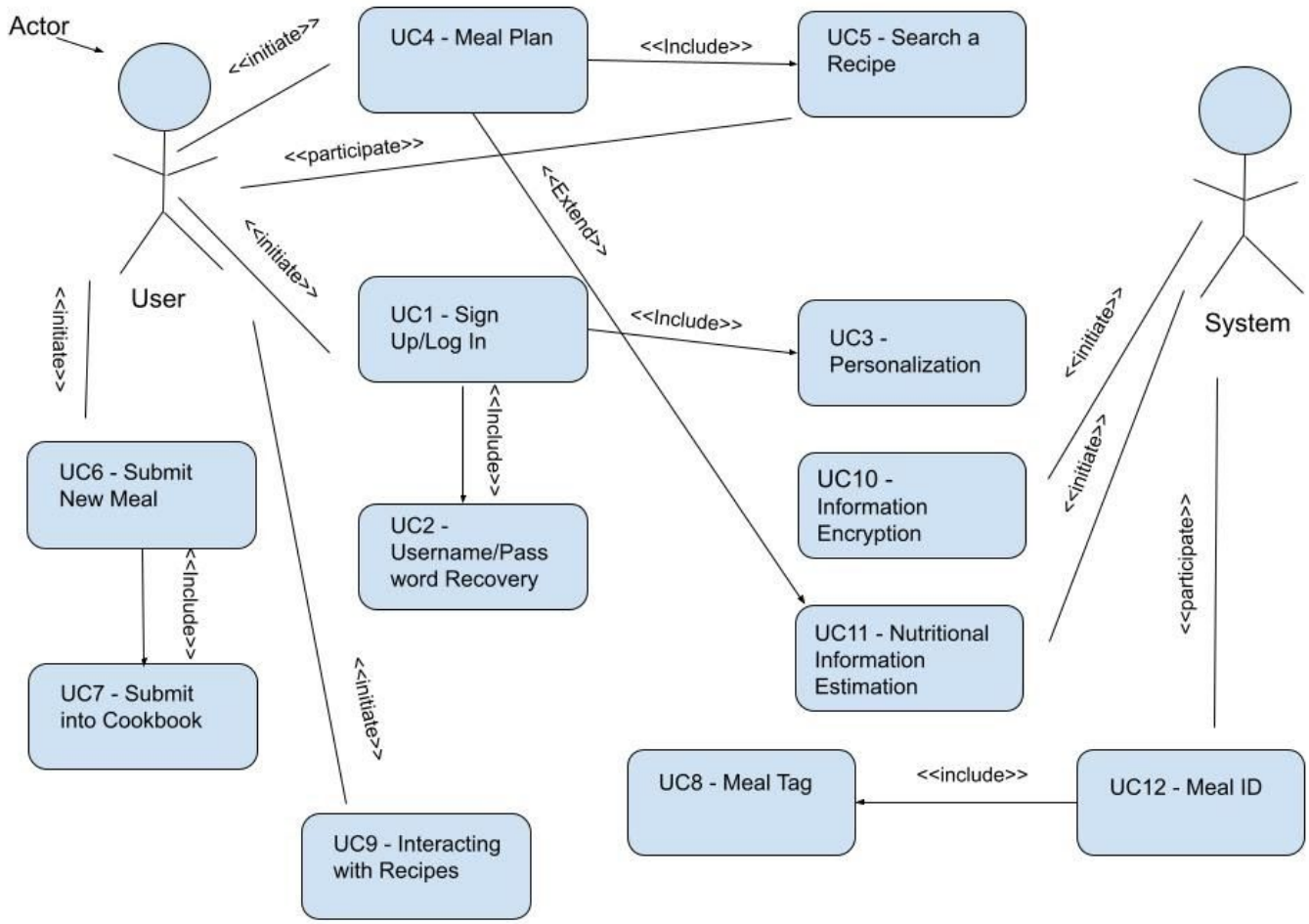
UC1 = UC1 and UC2 - traceability done
UC4 = UC4 & UC5 & UC8 -traceability done
UC6 = UC6 & UC15 -traceability done
UC11 = UC11, UC12, UC13 -traceability done
UC15 = UC15, UC18 -traceability done

3.3 Use Cases
3.1 Casual Description

Use Cases	Description	REQS
UC-1: Registration	User creates an account for the website/User signs into website using existing account	REQ-1
UC-2: Username/Password Recovery	If the user forgot their username/password they will initiate a username/password recovery process	REQ-11
UC-3: Personalization	User personalizes account with info like height, weight, and goals (weight loss/gain)	REQ-1, REQ-2, REQ-3,
UC-4: Meal Plan	User selects a meal plan that is generated based on their personalization, if the user does not like a meal, the user can remove it from their meal plan. The user can also submit a new meal plan with parameters, ingredients, and recipes to meal plan database through their account	REQ-2, REQ-3, REQ-4,REQ-5,REQ-13
UC-5: Search filter	Users can use filters to find meals using parameters such as calorie limit, food restrictions, and ratings in Cookbook. Also, if the user does not know what to eat the randomizer will pick a meal from the meal ID pool.	REQ-10,REQ-13
UC-6: New Meal submissions	User submits a meal with parameters, ingredients, and	REQ-6

	recipe to the meal database through their account.	
UC-7: Cookbook submissions	User gets asked a series of questions about the contents inside the meal such as, if it contains any animal products. Based on these answers the app assigns a meal tag to the meal.	REQ-6, REQ-12
UC-8: Meal Tag	A unique identifier that the system uses to identify certain types meals in both the Cookbook and Meal Plan	REQ-12
UC-9:Recipe Interaction	Users have the ability to Rate a meal from 1-5 stars , Comment under a shared recipe to give constructive criticism, and Save recipes into their profile.	REQ-6, REQ-13
UC-10: System Security	User's email address and password are encrypted before being stored	REQ-11
UC-11: Nutrition Information	Based on users' ingredients the system will calculate the calorie count of the meal per serving, and the user can keep a track of their micros and macros	REQ-7,REQ-8,
UC-12: Recipe ID	Unique System assigned identification numbers to avoid duplicates in one day	REQ-12

3.2 Use Case Diagram



3.3 Traceability Matrix

REQ	PW 0-5	UC-1	UC-2	UC-3	UC-4	UC-5	UC-6	UC-7	UC-8	UC-9	UC-10	UC-11	UC-12
1	4	X		X									
2	5			X	X								
3	4	X			X								
4	2				X								
5	2												
6	3						X	X		X			
7	3											X	
8	4					X						X	
9	3												
10	3					X							
11	4		X								X		
12	3							X	X				X
13	3				X	X				X			
Max PW		4	4	5	5	4	3	3	3	3	4	4	3
Total PW		8	4	9	14	10	3	6	3	6	4	7	3

3.4 Fully Dressed Description

Use Case :	UC-3 - Personalization
Related Requirements:	REQ-1, REQ-11, REQ-20
Initiating Actor:	Health Enthusiast (User)
Actor's Goal:	To input personal information about height, weight and health goals (losing, gaining or maintaining)
Participating Actors:	System, Database, User
Preconditions:	The user is logged in
Postconditions:	The user is able to edit/update personalized information to stay aligned with goals
Flow of Events for Main Success Scenario:	1.The user creates a profile and logs in 2.On the profile page the user answers the series of questions 3.The system saves the related answers for each question and utilises it for generating meal plans 4.The user is able to see their answers and edit whenever they choose.

Use Case:	UC-4 : Meal Plan
Related Requirements:	REQ-2 , REQ-3, REQ-9 , REQ-10, REQ-19
Initiating Actor:	System, Database, User
Actor's Goal:	Generates a meal plan for the user using information obtained from the personalization page, allergies, dietary and other preferences input by the user. The user can also edit meals in the plan and submit their own meal plan.
Participating Actors:	User
Preconditions:	-The user is logged in -The user has entered their allergies, weight, height, goals, dietary obligations
Postconditions:	-The user needs to be able to edit the generated meal plan by either

	removing a meal or adding a meal
Flow of Events for Main Success Scenario:	1.The user clicks on the generate a meal plan button 2.The system filters and selects various meals from the database utilising the user's preferences as filters 3.The system displays the meal plan suggested 4.The user accepts the meal plan and saves it to be used

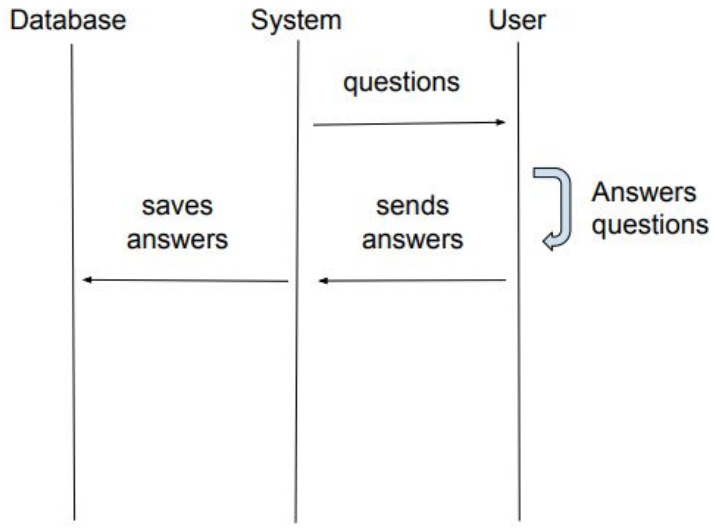
Use Case:	UC-5 : Search a Recipe
Related Requirements:	REQ-6 , REQ-14
Initiating Actor:	User
Actor's Goal:	The user should be able to search and filter through meals either from the system or ones uploaded by other users to find a recipe.
Participating Actors:	System, Database
Preconditions:	-The various meal recipes are accurately tagged to facilitate filtering -Recipes exist in the system
Postconditions:	-The ability to select and view a meal -The user should be able to save the recipe -The user should be able to share the recipe
Flow of Events for Main Success Scenario:	1.The user goes into the search bar and types in a tag 2.The system filters through the recipes in the data pool and lists them as suggestions. 3.The user clicks on a meal to open the recipe 4.The user saves the recipe

Use Case:	UC-6 : Submit New Meal Entry
Related Requirements:	REQ-8 , REQ-31
Initiating Actor:	User

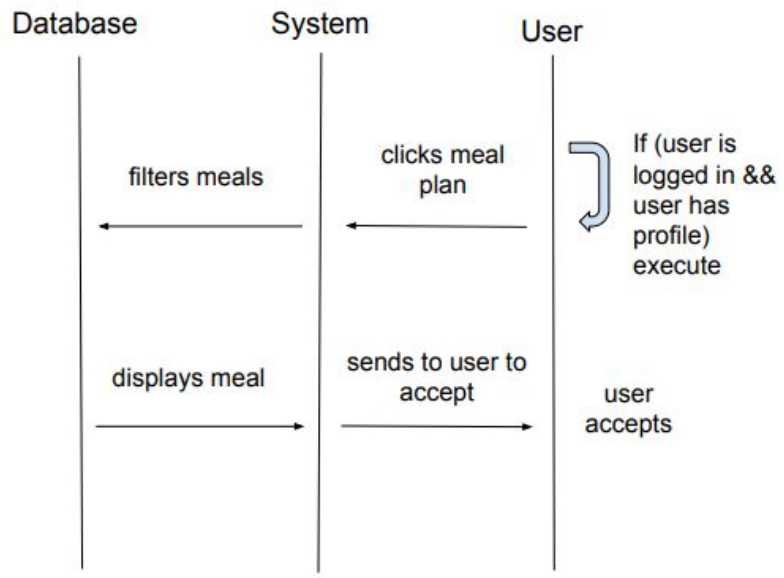
Actor's Goal:	The user should be able to upload a new recipe for a meal into the system.
Participating Actors:	Other Users, System
Preconditions:	-The user has properly quantified the ingredients in the recipe -The database should be able to hold a large amount of recipes
Postconditions:	-The user should be able to keep track of their uploaded recipes and edit them -The recipe should be able to be viewed,saved or shared by other users
Flow of Events for Main Success Scenario:	1.The user clicks on the submit new meal button 2.The user fills out the Ingredients and Recipe part of the template 3.The user previews and accepts that the recipe is accurately tagged 4.The system publishes the recipe and accepts it into its database 5.The recipe is saved to the my uploaded recipes folder for the user 6.The recipe comes up when searched 7.The user / other users can view or save the recipe

3.4 System Sequence Diagrams

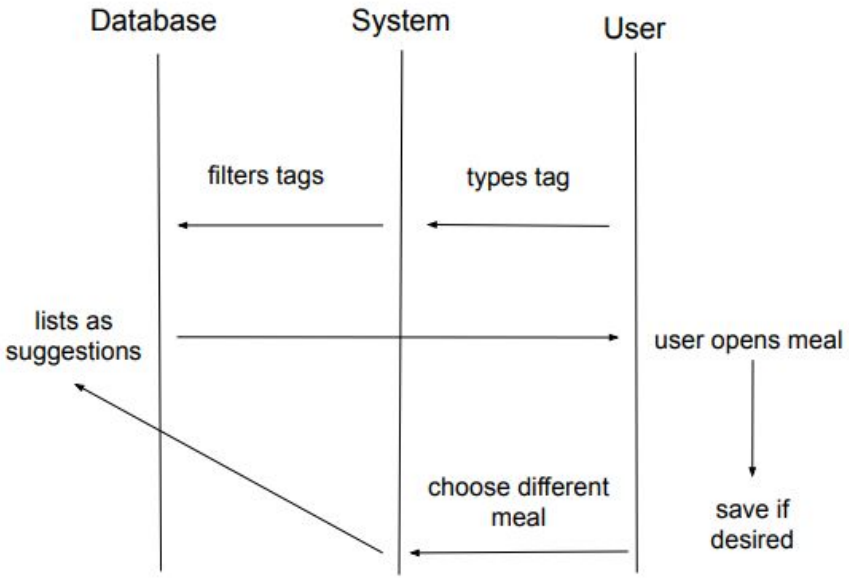
Sequence Diagram of UC-4



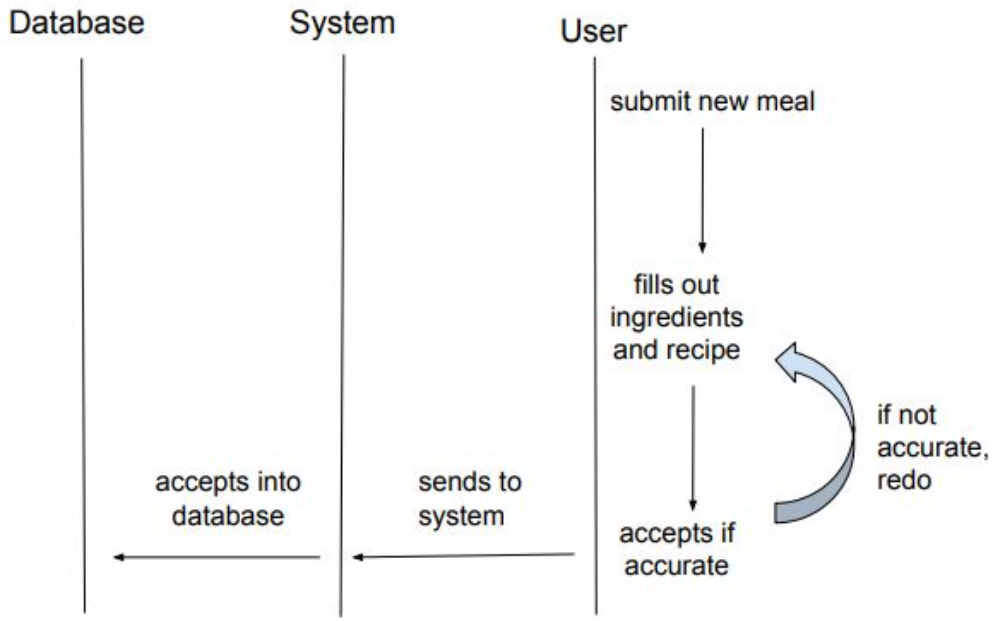
Sequence Diagram of UC-5



Sequence Diagram of UC-7



Sequence Diagram of UC-8

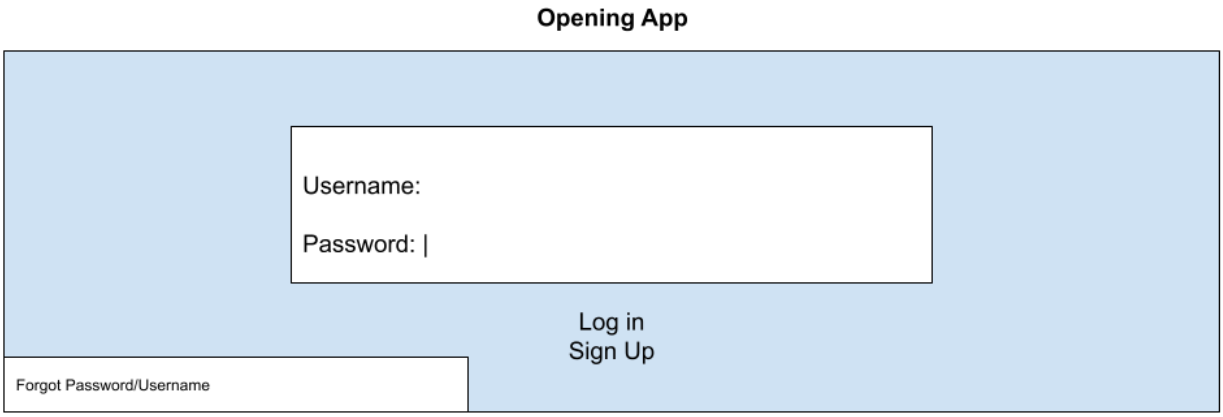


4. User Interface Specification

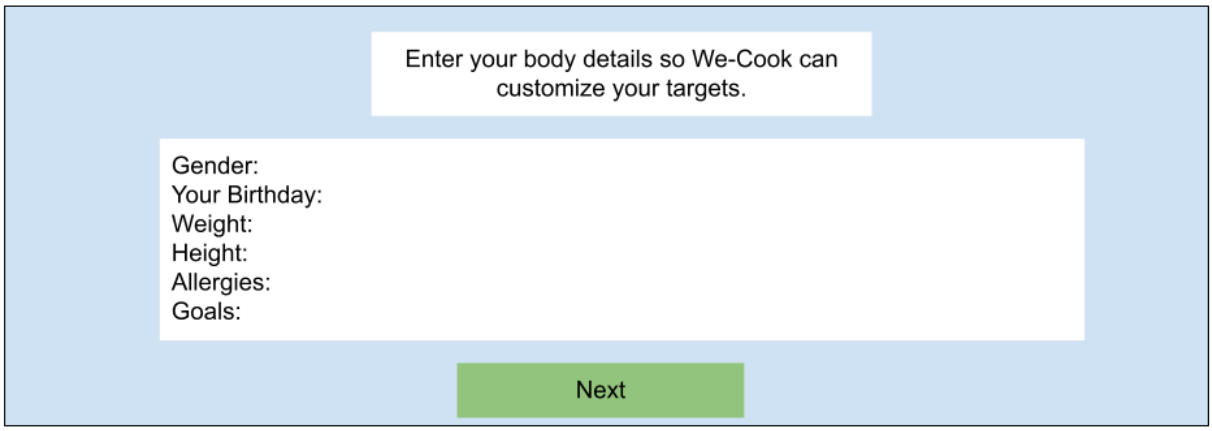
4.1 Preliminary Design

UC3: Personalization Page:

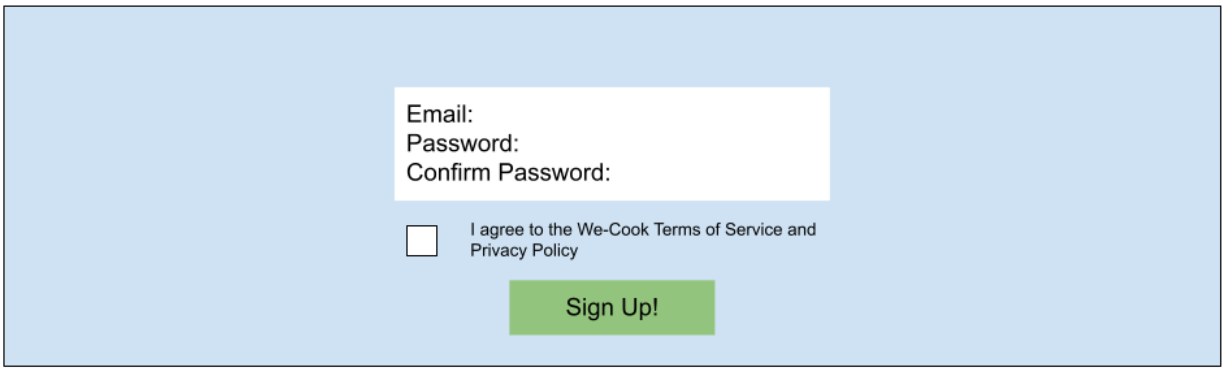
When the user has not created an account, the user will select the signs up button and it will bring them to the personalization page where they will answer some questions. They will click next once they are done with answering the questions, and then they will finish creating their account.



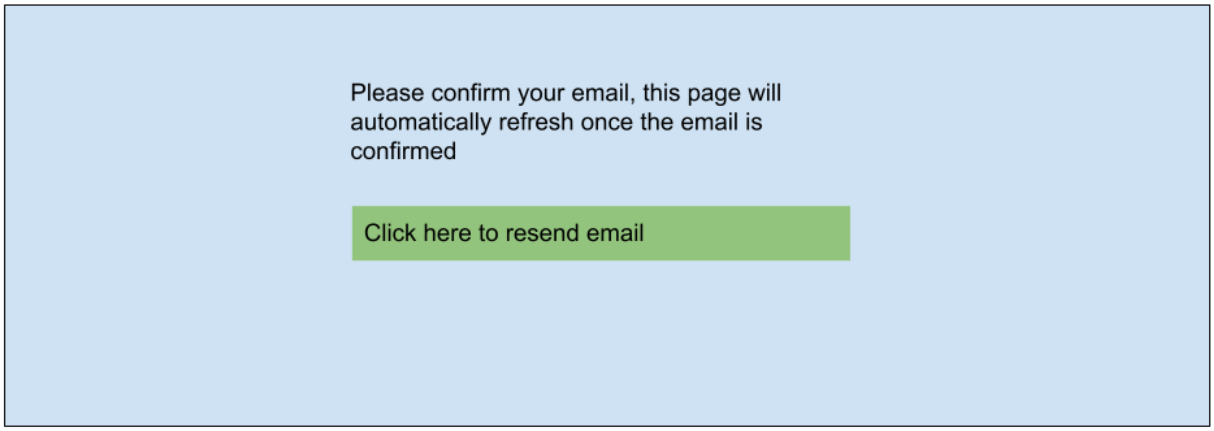
If user did not create a profile the personalization page will open up



Making account

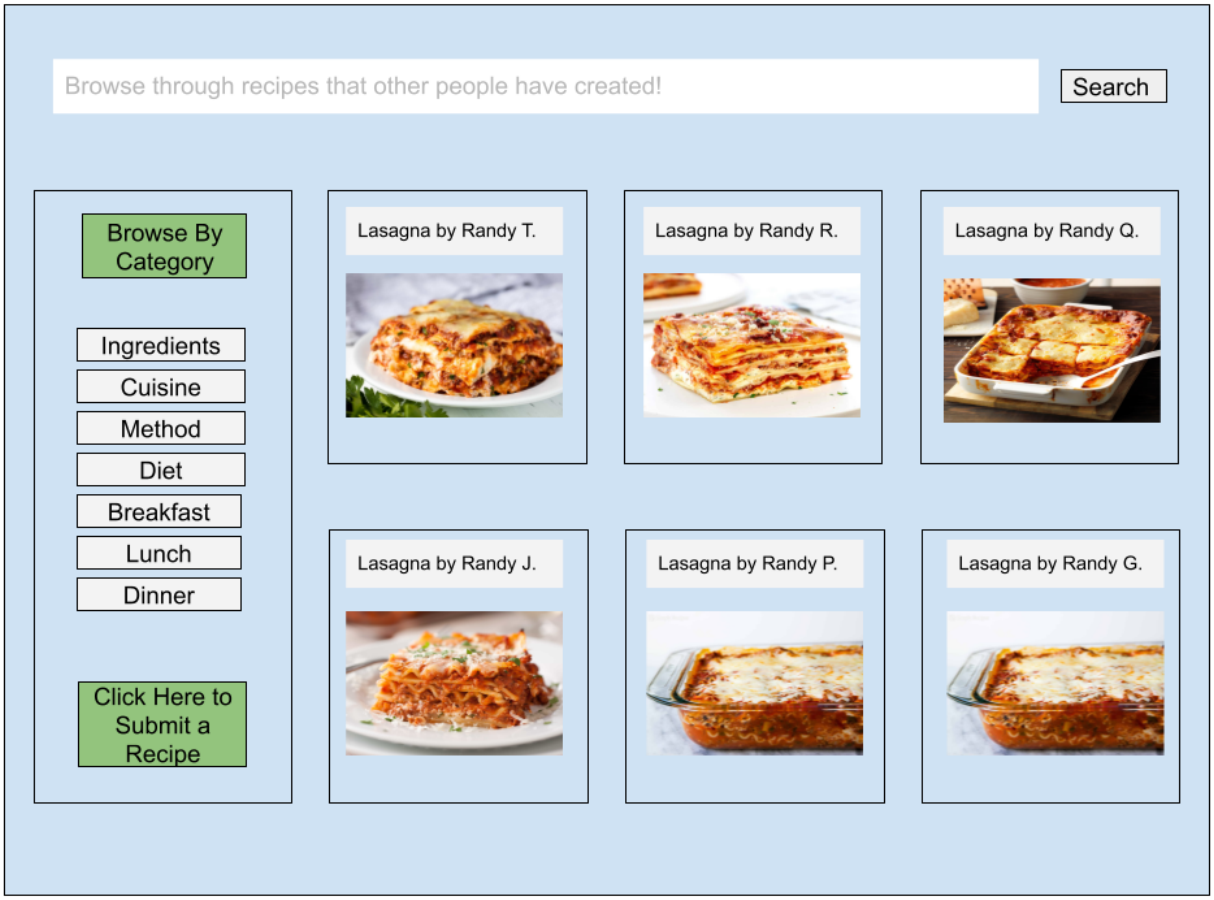


For security purposes, the user will need to confirm their email



UC5: Find a New Recipe:

User can search for any other recipe, The user can look for other recipes by browsing by category, each of those boxes should present a drop down menu. For example if they click ingredients it will present them with a list of commonly used ingredients, if the ingredients the user desires are not there they can type the ingredient they want.



4.2 User Effort Estimation

Use Case	Action	Description	Clicks
UC1	Sign up	Click Sign up, click first name, click last name, click password, click retype password, click enter	6

UC1	Log in	Click log in, click username, click password, click log in	3
UC2	Username/PW recovery	Click the recovery button, input email, hit submit	3
UC3	Personalization	Click height, click weight, click, goals	3
UC4	Generated Meal Plan	N/A	0
UC4	Remove Meal	Click the remove meal button from a meal plan	1
UC5	Search Filter	Click the filter button by the search button, click parameters, click enter	3
UC6	Add new meal	Click add new meal, click meal title, click appropriate meal tags, click submit	4
UC4	Submit New meal plan	Click add meal plan, click the meal plan to be uploaded, click submit	3
UC6	Submit into cookbook(MC)	Answer 5 MC questions to get the correct initial meal tags	5
UC8	Meal Tag	Click specified meal tag	1
UC9	Rate meals	Click a * rating	1
UC9	Commenting	Click Comment, click text box, click enter	3
UC9	Save recipes	Click save recipes	1
UC5	Randomizer	Click the random meal button	1
UC11	Macro Tracker	Click the Tracker button	1

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Healthy Foods:

1) "The Top 15 Healthful Foods: Pulses, Vegetables, Proteins, and More." *Medical News Today*, MediLexicon International, www.medicalnewstoday.com/articles/245259#Nuts,-pulses,-and-grains.
2) Gunnars, Kris. "50 Foods That Are Super Healthy." *Healthline*, Healthline Media, 13 June 2019, www.healthline.com/nutrition/50-super-healthy-foods.

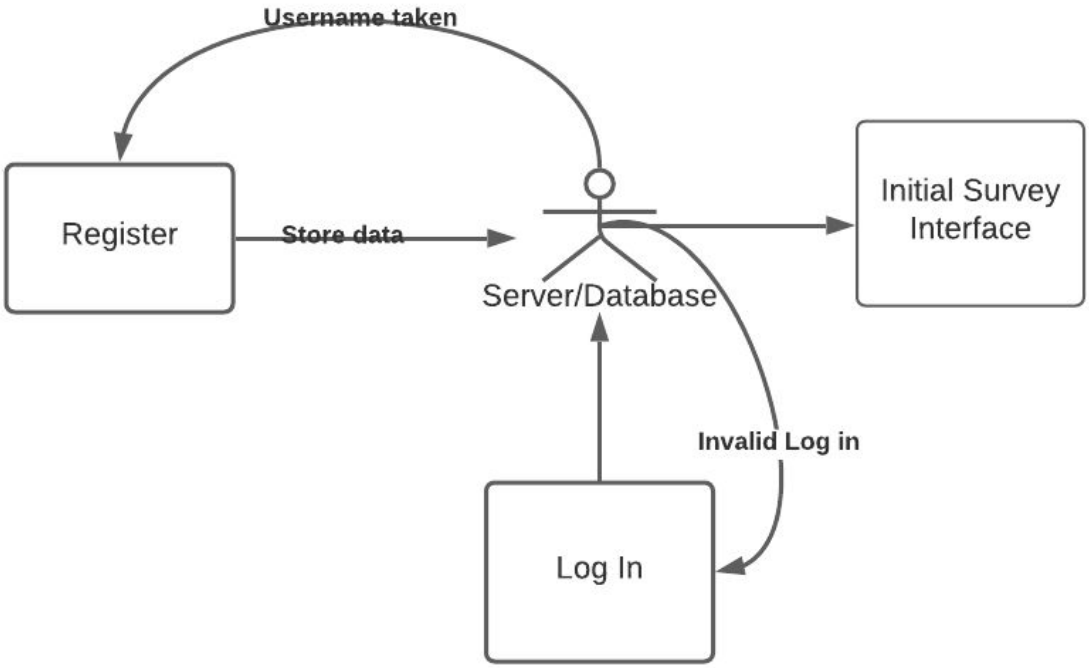
Health Facts:

3) "Heart Disease Facts." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 8 Sept. 2020, www.cdc.gov/heartdisease/facts.htm.
4) Zelman, Kathleen M. "The Protein Power Diet: Low-Carb, High-Protein Diet Plan." *WebMD*, WebMD, 27 Mar. 2020, www.webmd.com/diet/a-z/protein-power-what-it-is#:~:text=The%20Power%20Protein%20diet%20is,(%22good%22)%20cholesterol.
5) Amanda Capritto, ACE-CPT. "Should You Be Tracking Your Macros?" *Verywell Fit*, 25 June 2019, www.verywellfit.com/tracking-macros-4587012.

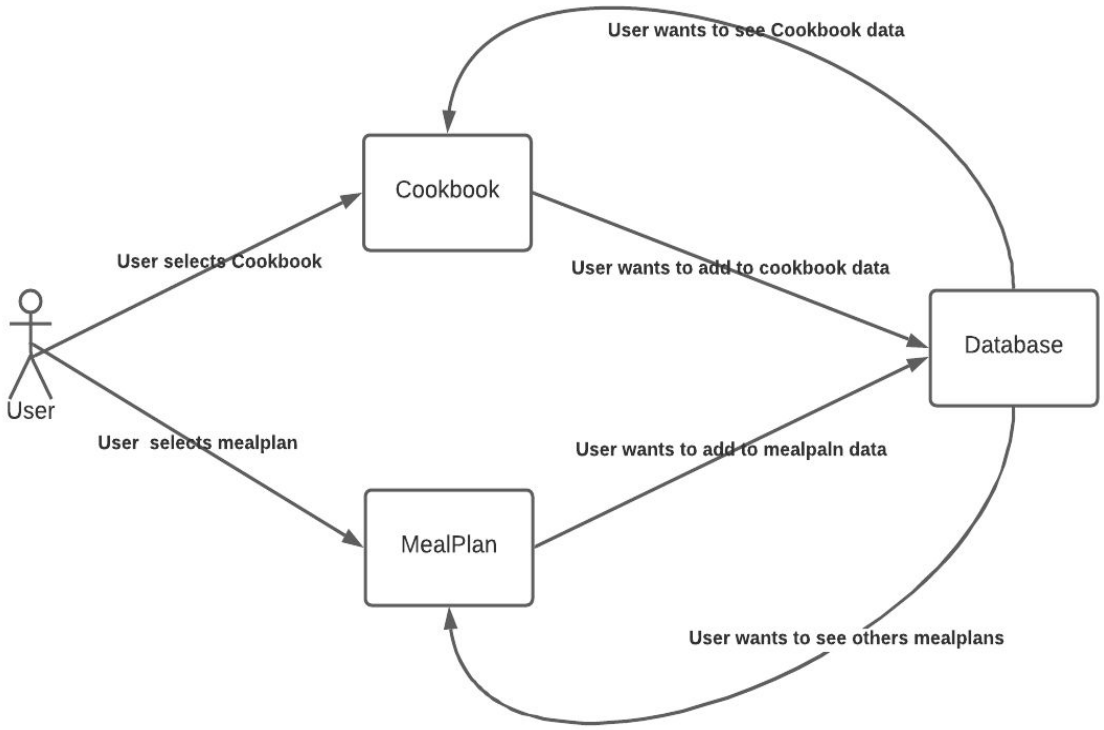
5. System Architecture

5.1 Identifying Subsystems

This subsystem will specify our login and register protocol.



This subsystem shows general idea of the path the user takes after entering the home screen as well as how the users actions interacts with the database



5.2 Architectures Styles

A layered architecture style will be used for the design. The resource access layer in our design will often communicate with some database. It will need to do this to get stored customer information or the various food information. Another architecture style that will be used is an event-driven architecture style. The event producer will detect an event like a mouse click to filter information and then it will be sent back to the event consumer. The event will be processed in between the detection and retrieval stage. This process will occur in multiple parts of the project.

5.3 Mapping Subsystems to Hardware

Our project does not need hardware. Since we are making a website we would need to find a host for our website and hardware that we will need is more server side. AWS will allow us to host our website. The website will have low to medium traffic. It is unlikely that we would need

multiple servers, we would at most need 2 servers. AWS would give us a virtual machine, SSD-based storage, data transfer, Domain Name System (DNS) management, and a static IP.

5.4 Connectors and Network Protocols

Since We-Cook is a website, it will be implemented using the HTTP (hypertext transfer protocol) network protocol. In our system, the user has to create a personal account and log onto it to access the software user interface that We-Cook provides. It is a website with a web design so we use HTTP so users can navigate the website on any computer as long as they have their login credentials.

5.5 Global Control Flow

Execution orderliness

The application can be procedure driven as well as event driven. The application can be procedure driven because users can create an account, input their personal information, have personal recommendations given to them, create a weekly meal plan, follow that plan for the week, and finally post their ratings for each meal on the social media if wanted. The application can also be event driven because users don't necessarily need to follow the procedures mentioned in order to take advantage of what we offer. Users can create their accounts, look at recipes, rate some of them, post their own recipes, create meal plans, everything without having to follow an order.

Time dependency

The application is of the event-response type. Every aspect of the application does not have a concern for real time. Users should be able to use all the tools available at all times and not have

to depend or follow a deadline. The only possible time dependency will be the user's weekly meal planner which depends on the users themselves.

5.6 Hardware Requirements

The user will need a screen display to view the application. A desktop computer or laptop will also be needed with peripherals like a mouse and keyboard. The exact requirements will be described below:

Minimum specifications: 1280 x 720 screen resolution. 5 gigabytes of hard disk space. Bandwidth of 2 megabytes. Intel Core i3 processor(year 2012 or newer). 2 Gigabytes of ram.

Recommended specifications: 1920 x 1080 screen resolution. 8 gigabytes of hard disk space. Bandwidth of 3 megabytes. Intel Core i3 processor(year 2016 or newer). 4 Gigabytes of ram.

The minimum specification will make the application run. For a slightly more smoother experience the recommended specification is listed. The specification only pertains to the We Cook application.

6. Project Size Estimation

To calculate the Use Case Points for the project the following formula is used:

UCP=(UUCW + UAW) * TCF

The abbreviations above are:

UCP: Use Case Point

UUCW:Unadjusted Use Case Weight

UAW: Unadjusted Actor Weight

TCF: Technical Complexity Factor

Unadjusted Actor Weight

Actors	Description	Complexity	Weight
User	Health enthusiasts interact with the application by submitting and viewing information.	Complex	3
Web Application	The web application to host the code for functions.	Complex	3
Database	The database stores all the saved data for a user as well as holds the recipes.	Average	2

Unadjusted Actor Weight (UAW)=3+3+2=8

Unadjusted Use Case Weight

Use Cases	Complexity	Weight
UC1: Sign Up & Login	Average	10
UC2: Username/Password Recovery	Average	10
UC3: Personalization	Average	10
UC4: Meal Plan	Complex	15
UC5: Search a Recipe	Complex	15
UC6: Submit a New Meal	Average	10
UC7: Submit into Cookbook	Average	10
UC8: Meal Tag	Simple	5
UC9: Interacting with Recipes	Average	10
UC10: Information Encryption	Complex	15

UC11: Nutritional Information Estimation	Complex	15
UC12: Meal ID	Simple	5

Unadjusted Use Case Weight (UUCW)= 2(5) + 6(10) + 4(15) = 130

Technical Complexity Factor

Technical Factor	Description	Weight	Perceived Complexity	Calculated Factor
T1	Distributed System; Web-based System	2	3	6
T2	Good response and webpage loading times expected	1	1	1
T3	End-user efficiency is moderate	1	2	2
T4	Moderate to complex internal processing	1	4	4
T5	Ease of install is almost non existent, simply requires a web browser	0.5	0	0
T6	Very easy to use	0.5	1	0.5
T7	Reusable code would be nice but no prior projects in class exist	1	5	5
T8	No portability concerns	2	0	0
T9	Ease of change necessary for website updates and maintenance	1	3	3
T10	Security concern for user login and personal info	1	4	4
T11	Concurrent use required	1	4	4
T12	No direct access for third parties	1	0	0

T13	Minimal User Training	1	1	1
Total				30.5

Technical Complexity Factor (TCF)= 0.6+(0.01*30.5) = 0.905

Use Case Points= (130+8)*0.905 = 124.89

Project Duration = UCP*PF

=124.89 * 28

= 3496.92hours

The PF value of 28 is used as there were no previous projects to base the productivity factor on.

With a team of 10 persons this gives us 349.692 hours per person.

7. Plan of Work

8. References

https://herbertograca.com/2017/07/28/architectural-styles-vs-architectural-patterns-vs-design-patterns/

https://www.redhat.com/en/topics/integration/what-is-event-driven-architecture

https://gobrolly.com/amount-data-and-bandwidth-required-web-browsing/#:~:text=How%20much%20data%20does%20web,download%20in%20seconds%20or%20less.