xtSW Engineering
CSC648-848-05
Summer 2024

FitNutri Hub
Team 03

Student	Full Name	SFSU Email	Role
# 1	Michelle Nguyen	mnguyen62@sfsu.edu	Team-Lead
#2	Mitchell Caine	mcaine@sfsu.edu	Frontend-Lead
#3	Shreejana Bartaula	sbartaula@mail.sfsu.edu	Docs-editors
#4	Ali Almusawi	aalmusawi@mail.sfsu.edu	GitHub-master
#5	Eduardo Enrique Muñoz Alvarez	emunozalvarez@sfsu.edu	Database-admin
#6	Nilofar Ali	nmohammadali@mail.sfsu.edu	Backend-Lead

MILESTONE 1
Date: 06/11/2024

History Table

Milestone	**Version**	**Date Submitted**
Milestone 1	V1	6/19/24
Milestone 2	V2	7/8/2024

Table of Contents

1. **Executive Summary**

FitNutri is dedicated to providing a comprehensive and personalized wellness platform. Unlike traditional fitness apps, FitNutri integrates customized workout plans and dietary guidance. With this integration, customers will receive complete support on their journey to better health. With the use of FitNutri, we use an advanced algorithm to offer a unique and engaging user experience. This algorithm has fitness routines and diet plans for each user's goals and preferences, maximizing results and motivating customers.

One of the standout features of FitNutri is its Live Streaming and On-Demand Classes. Members can join live workout sessions led by professional trainers. These streams are interactive and motivating! This creates a sense of community, enhancing user engagement and accountability. Additionally, a comprehensive library of on-demand classes allows customers the flexibility to work out at their convenience, fitting fitness into their busy schedules. FitNutri offers a wide range of features, including personalized workout plans, dietary guidance, activity tracking, community engagement, and educational resources.

FitNutri plans to expand its offerings by incorporating advanced technologies such as virtual reality workouts and enhanced AI-driven insights. Future updates will also feature collaborations with renowned fitness and nutrition experts, providing customers with exclusive content and deeper insights. FitNutri's vision is to become the destination for those seeking a balanced and healthy lifestyle, continuously evolving to meet the needs of its growing community.

2. Main Use Cases

1. Diabetes Management

Actors: Phil (Diabetic), Dr. Lane (Phil's Doctor), FitNutri (Company)
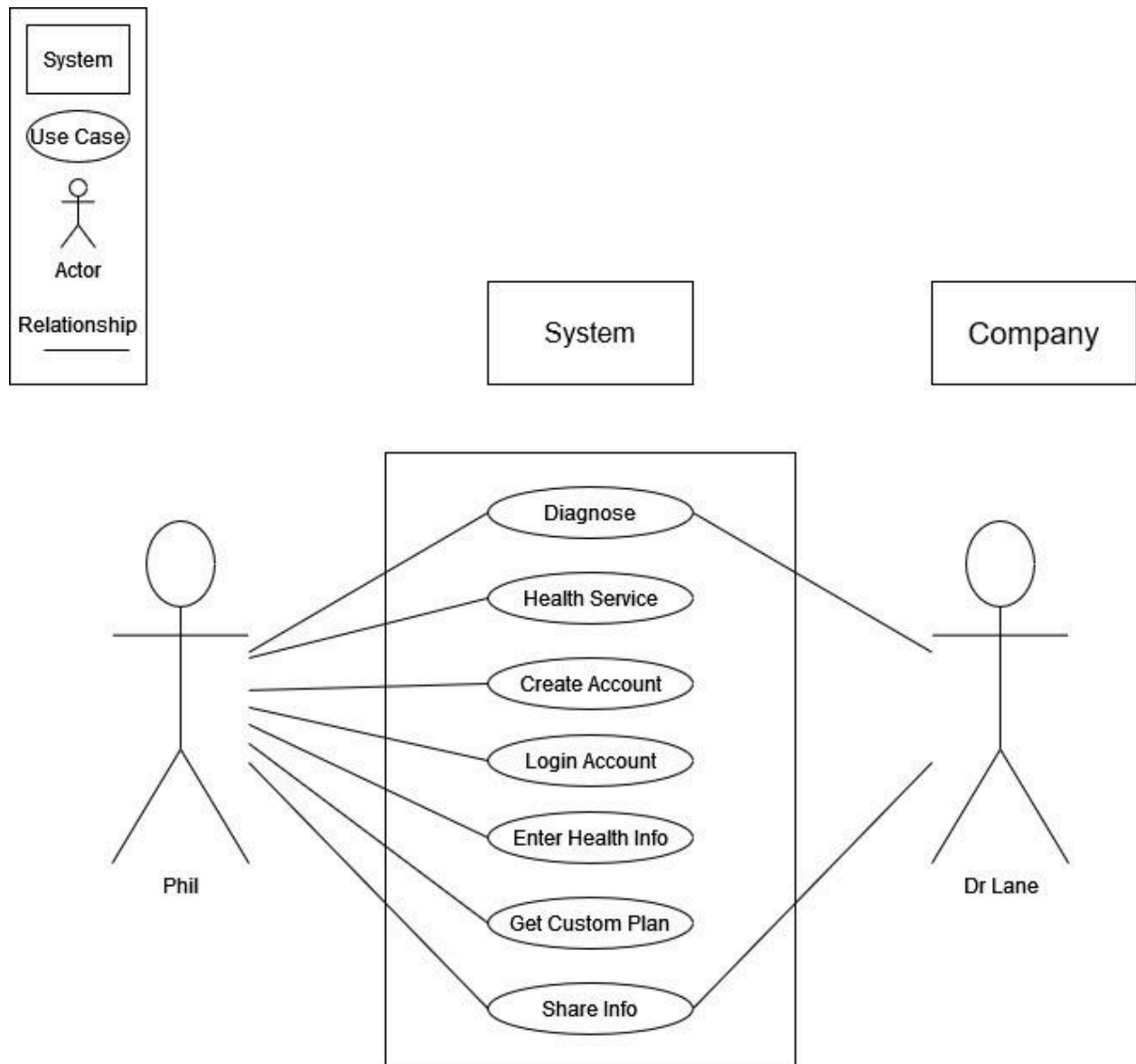
Assumptions:
- Phil has access to a computer and an internet connection
- Phil has an account with FitNutri

Use Case:

   Phil receives a diabetes diagnosis from Dr. Lane who explains the need for a diet with decreased sugar intake and a more balanced nutrition plan. Dr. Lane recommends Phil find a platform to track his carbohydrate intake and manage his diet effectively. Phil starts searching online and discovers that most websites focus more on tracking calories and vitamins rather than carbohydrates. After some searching, he found FitNutri, a platform that allows customers to target specific macros and provides explanations on the importance of tracking these macros for diabetes management. Phil decides to sign up for an account on FitNutri, where he inputs his health information, including his recent a1c reading and dietary restrictions. During the onboarding process, FitNutri explains the importance of tracking specific macros for managing diabetes. Phil selects "Diabetes Management" from the list of available nutrition plans, and FitNutri generates a personalized plan highlighting key macros like carbohydrates, fiber, and healthy fats. Phil can read research-driven data to understand which macros are pertinent to his diet. In addition to the nutrition plan, FitNutri suggests a generalized exercise plan tailored for diabetes patients. Phil customizes the exercise plan to fit his schedule, opts for manageable workouts, and saves his customized routine in his account. Phil also has the option to share his progress with Dr. Smith for additional medical advice. This comprehensive approach helps Phil feel more confident in managing his diabetes, knowing he has a structured plan that integrates both diet and exercise.

Benefits for Phil:
- Provides the whys instead of the whats
- Tracks diet and exercise in one convenient place
- Customizable plans to accommodate Phil's specific health needs
- Feels more confident he can manage his diabetes after understanding it better

System

Use Case

Actor

Relationship

System

Company

Diagnose

Health Service

Create Account

Login Account

Enter Health Info

Get Custom Plan

Share Info

Phil

Dr Lane

2. Keto Diet Management
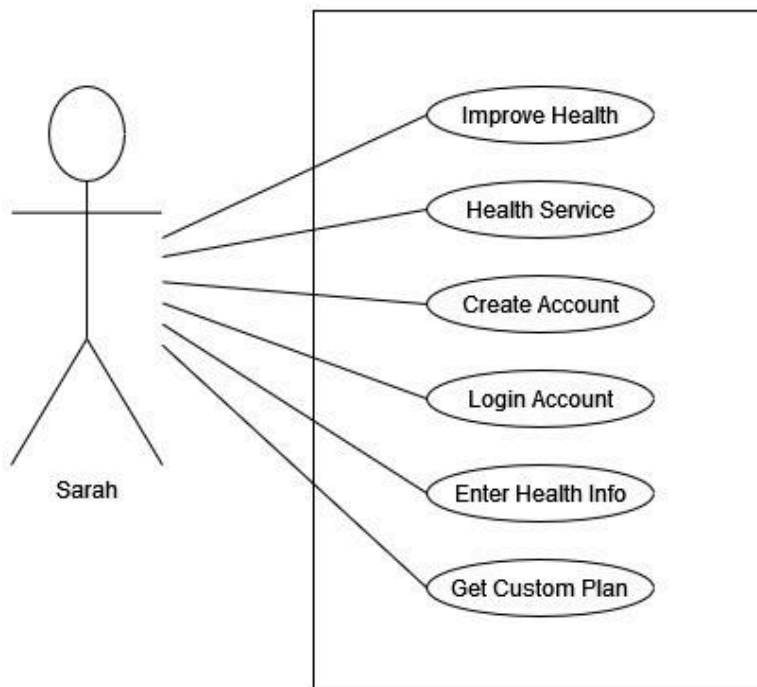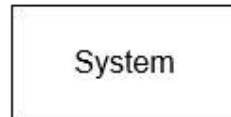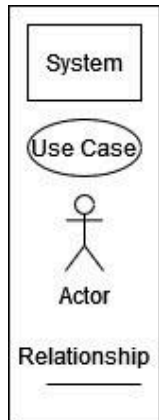**Actors:** Sarah (Keto Dieter), FitNutri (Company)

Assumptions:
- Sarah will use the website daily
- Sarah is a beginner in fitness and nutrition

Use Case:
     Sarah has decided to follow a keto diet to improve her health and manage her weight. She starts searching for online platforms to help with tracking her diet and it can help her stay within macronutrient ranges for ketosis. After reviewing several websites, Sarah finds FitNutri which allows her to put emphasis on which macros she needs to track to follow her ketogenic diet. Sarah signs up for a FitNutri account and inputs her health information. Sarah is given several popular diets to choose from, one of which is the keto diet. FitNutri explains the principles of the keto diet, highlighting the need for high fat, moderate protein, and low carbohydrate intake to sustain ketosis. A recommendation of specific foods is provided for recommendations of meals and snacks to help stay in ketosis. To complement her diet, FitNutri provides a generally recommended amount of exercise to help with weight loss. Sarah finds the exercise routines to be manageable and decides to plan her workouts following what is recommended. FitNutri provides feedback daily for weight loss and macro goals. By following the data-driven plans provided to her, Sarah feels confident she can follow her diet and exercise plan to lose weight and get healthier.

Benefits for Sarah:
- Explains in depth what the keto diet is
- Tracks diet and exercise in one convenient place
- Customizable plan to accommodate Sarah's specific health needs
- Feels more confident she can manage her weight with a customizable plan

Legend:

System

(Use Case)

Actor

Relationship
___

System

Company

Sarah

- Improve Health
- Health Service
- Create Account
- Login Account
- Enter Health Info
- Get Custom Plan

3. Nutrition Information & Accessibility
**Actors:** Jarvis Johnson (Vegan), FitNutri (Company)

Assumptions:
- The user doesn't have easy accessibility
- The user has a phone with data

Use Case:
Jarvis had a long day at work, so he decided to open the FitNutri application from his smartphone. He noticed that his medications weren't on time. Jarvis navigates through the website to find all the necessary information needed for his vegan diet. However, he recognizes that he isn't keeping up with his usual diet, so he proceeds to enter that section. He was able to automatically log in, check his health services, and diet plan, as well as an option to customize his diet options. He figured out that he wasn't getting all the necessary nutrients needed to become a full-time vegan. It's an all-in-one app where fitness and nutrition are at the touch of your fingertips.

Benefits:
- Able to access his health information from his smartphone
- Recognizes that his diet wasn't on point
- Notices that he isn't getting all the nutrients for his vegan diet
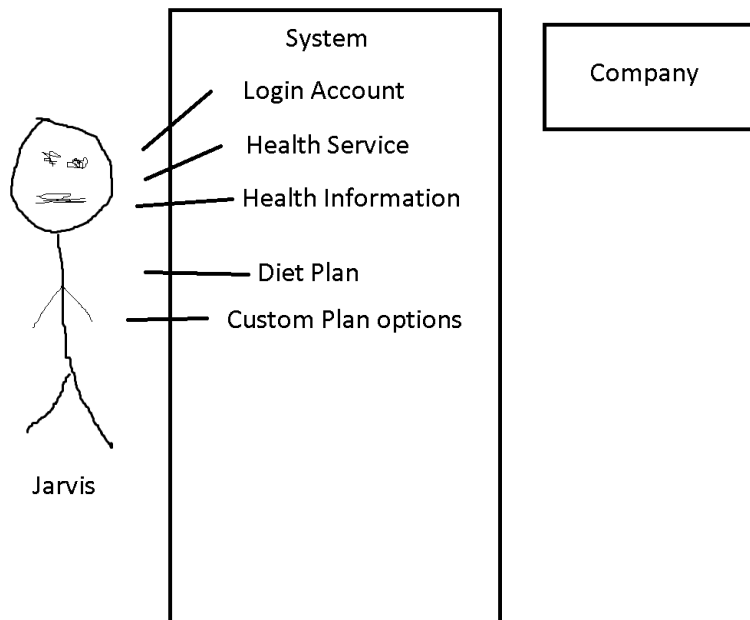
4. Diet Information & Schedule

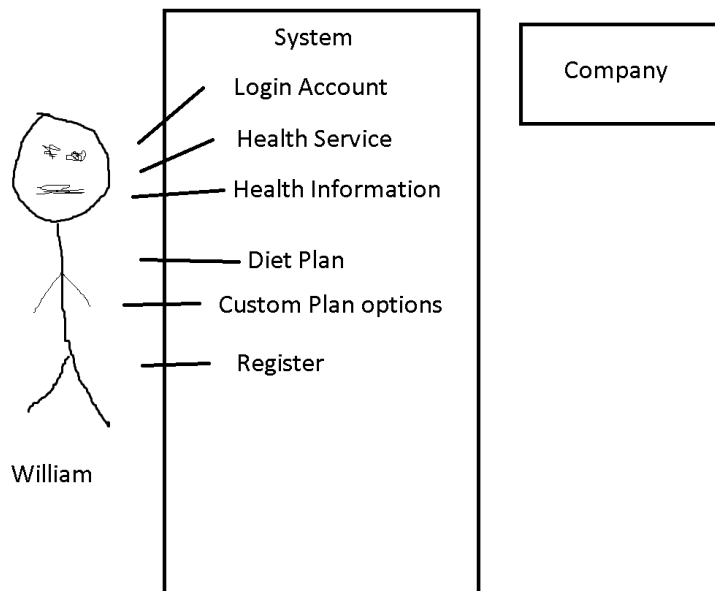**Actors:** William Johnson (New User), FitNutri (Company)

Assumptions:
- William realizes that going to the gym isn't helping
- William doesn't have an account with FitNutri

Use Case:

After working out for a long time, William realizes that his diet isn't on par with his workout routine, so he decides to find a modern app that will identify all the problems of his current diet. He decides to use FitNutri. FitNutri will provide information, such as diet plans, specific details about that diet plan, and a provided schedule. The app will notify the user on whether they want to cut or bulk. The user will have information about daily caloric intake. Benefits:
- A user shall have a provided diet
- A user shall have a scheduled plan for the diet
- A user shall have a scheduled diet for the bulk or cut

System

Login Account

Health Service

Health Information

Diet Plan

Custom Plan options

Register

Company

William

5. Weight Loss Journey
Actors: Sam (Marketing Manager), FitNutri (Company)

Assumptions:
- Sam is unhealthy and gaining weight from sitting all-day
- Sam wants to become healthy by using an app on her phone

Use Case:

Sam is a marketing manager and she has long work hours where she just sits at her computer. She is 35 years old and she noticed that she has gained a lot of weight since she was hired for this position about 6 months ago. She decided she would download FitNutri and create an account because one of her close friends recommended the app to her after they had a positive experience using it. Sam wants to lose 20 pounds in 6 months to improve her cardiovascular health and to feel better about herself. She has tried to start a diet before but she lacks a solid understanding of nutrition and portion control. FitNutri will help her with her struggles because she will be able to log her meals, monitor her calorie intake, and make sure she's getting balanced nutrition. The app also offers workout plans that she can fit into her busy schedule. Sam will be able to exercise effectively without needing to spend hours at the gym.

Benefits for Sam:
- Sam will be able to integrate healthy habits into her daily routine and accomplish her goal of losing 20 pounds in 6 months.
- Sam will feel better about herself physically and mentally.
- Sam will be able to track her health, nutrition, and fitness all in one app on her phone that she can access anytime.
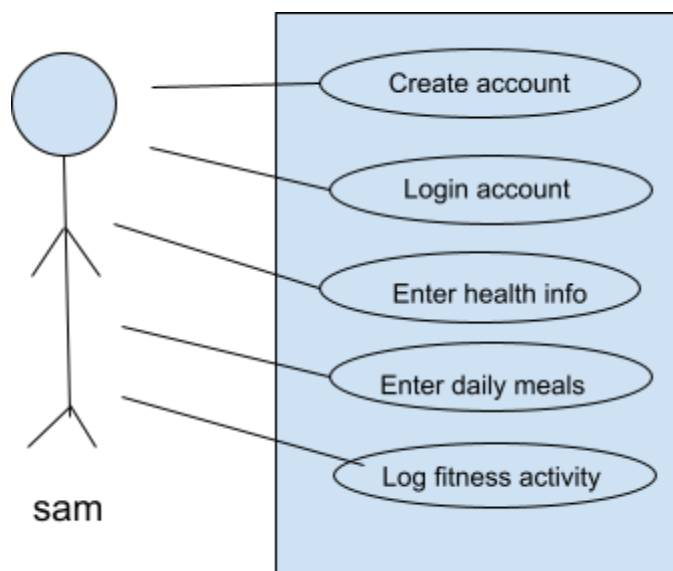
6. Marathon Training with FitNutri

**Actors:** Theo (Software developer), FitNutri (Company)

Assumptions:
- Theo wants to train for his first running marathon
- Theo needs help with his training so he wants to download an app

Use Case:

Theo is a software developer and he is 32 years old. He has decided to join his first marathon ever but he realized that it would be a good idea to train for it ahead of time. He sets a goal to complete the race in under 4 hours. Theo decided to download FitNutri because it is the only app that he found that will help him track his fitness and nutrition during his training period. Theo is not only focused on building endurance and strength, but he also wants to ensure he is eating a balanced diet to support his training. Theo will track his daily food intake to make sure he is consuming the right balance of macronutrients and he will track his daily workouts like his running. By using FitNutri, Theo will stay organized, motivated, and informed on the journey to his marathon goal.

Benefits for Theo:
- He will be able to track his daily food intake and his macronutrients.
- He will be able to track his daily workouts and his runs.
- Theo will be able to track his diet, nutrition, and fitness all in one app on his phone which he can access anytime.
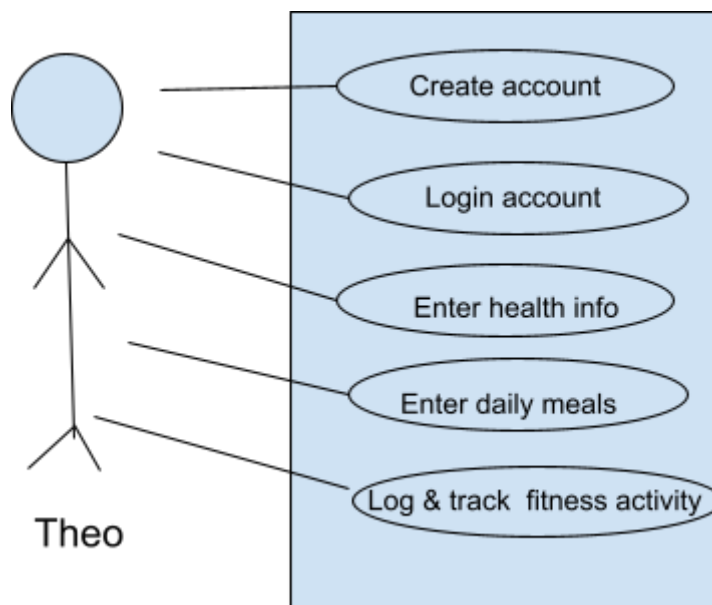
7. Vitamins Intake
**Actors:** Isabelle (Model)**,** FitNutri (Company)

Assumptions:
● Isabella needs to track their vitamins.
● She needs something quick and easy to use with no hassle.

Use Case:
Isabella is a super famous model who wants to use FitNutri to track their vitamin intake with the foods they eat. She wants to make sure she's meeting all her vitamins for the week and to make sure they're not missing any vitamins. After further research and talking to colleagues, they mentioned to her: "FitNutri is the best to watch your vitamin intake! You type the food you're eating or the ingredients and it'll give you all the vitamins you are receiving, and if it's too much!". FitNutri's interface displays a breakdown of essential vitamins along with minerals such as calcium, iron, and potassium. Isabella can easily see if she is meeting her recommended daily intake for each nutrient or if adjustments are needed in her diet. The platform also alerts Isabella if she exceeds recommended limits for certain vitamins, helping her maintain a balanced diet without overconsumption. This feature will help Isabella, as it enables her to make informed decisions about her dietary choices to support her demanding career and maintain optimal health. By using FitNutri, she will have an easy time tracking the exact vitamins and how much she is consuming.

Benefits for Isabella:
● Easy tracking of vitamins from the food she eats.
● Isabella will know if she'll have too much or too little or if she needs to increase her intake.
● Provides real-time feedback on whether she is meeting her nutritional goals.
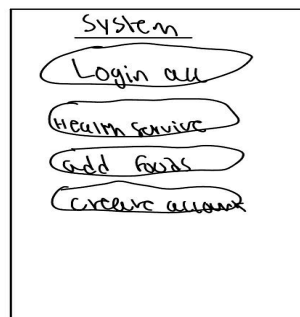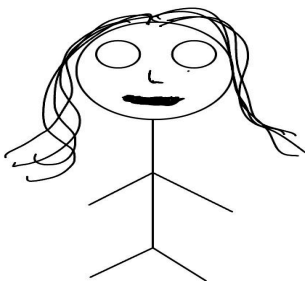
8. Beginner Fitness
Actor: Engfa (Beginner Fitness Girl), FitNutri (Platform)

Assumptions:
- 25-year-old recent college graduate.
- Engfa never worked out in her life.
- Engfa doesn't know where to start or even how to.

Use Case:
Engfa decides to kickstart her fitness journey to improve her overall health and well-being. Being new to fitness, she feels overwhelmed by the amount of information available online and seeks a structured approach to starting her workout routine and improving her diet. Engfa hears about FitNutri through a friend and decides to give it a try.

When signing up for an account, Engfa completes her profile by entering basic information such as her age, weight, and fitness goals. She indicates her interest in beginner-friendly workout routines and dietary advice. FitNutri prompts Emily to take an introductory fitness assessment, which assesses her current fitness level, preferences, and any health considerations.

Based on Engfa's assessment, FitNutri generates a personalized beginner workout plan that includes simple exercises targeting different muscle groups and incorporates basic cardio activities. The app provides instructional videos and tips on correct exercise forms to help Emily learn each workout safely and effectively. Additionally, FitNutri suggests a balanced diet plan tailored to Engfa's goals, focusing on nutritious meals that support her fitness journey.

Engfa uses FitNutri to track her daily workouts and meals. The app sends reminders to keep her motivated and consistent with her routine. As Engfa progresses, FitNutri adjusts her workout intensity and dietary recommendations to ensure continuous improvement.

Benefits for Engfa:
- Receives a structured beginner workout plan tailored to her fitness level and goals.
- Learns basic exercise techniques and correct form through instructional videos.
- Follows a balanced diet plan designed to support her fitness journey.
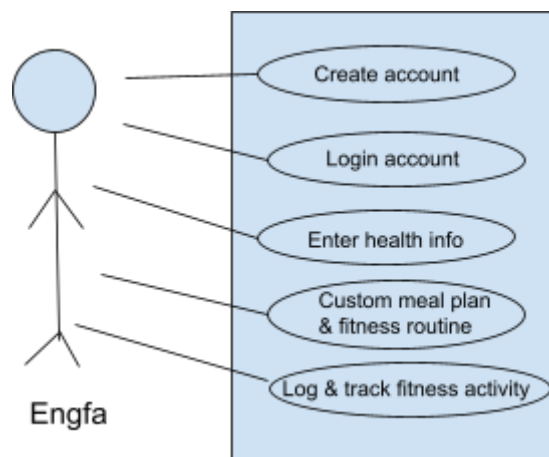
9. Finding a Community for motivation

Actor: Anastasia (looking for similar passions), FitNutri (Platform)

Assumptions:
- A lonely new person in town who is looking for a community to talk to.
- Anastasia wants to look for motivation and tips on a healthy lifestyle.
- Want a new routine in life and looking for a community to talk about their stories.

Use Case:
Anastasia doesn't have any friends that work out. She also recently moved into a new city where she doesn't have any buddies to work out with or learn any healthy lifestyle. She found an app called FitNutri which has community features to enhance her motivation, make a community, and share her fitness journey. She regularly participates in community forums and group challenges offered by the app.

Anastasia starts her day by logging into FitNutri and checking the latest discussions in the community forums. She joins conversations about workout tips, nutrition advice, and personal achievements with other customers. Anastasia shares her progress updates, including milestones she has achieved in her fitness journey, such as completing a marathon training program or reaching a weightlifting goal.

FitNutri's community platform highlights popular topics and upcoming challenges to keep Anastasia engaged. She explores new workout routines recommended by other customers and encourages beginners who are just starting their fitness journeys.

Benefits for Anastasia:
- Stays motivated and inspired by connecting with a supportive community of fitness enthusiasts.
- Receives valuable tips, advice, and encouragement to improve his fitness journey further.
- Explores new workout ideas and challenges to keep his routine diverse and exciting.
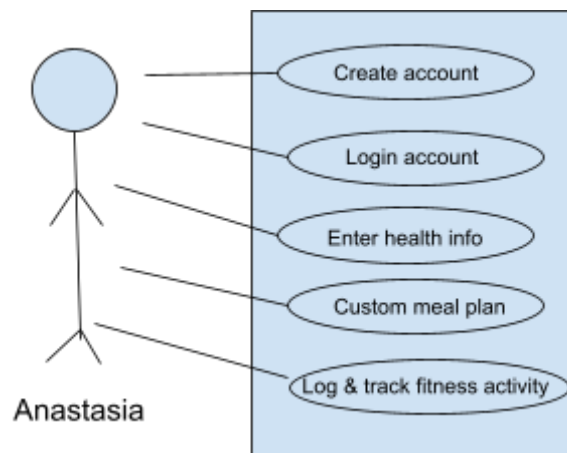
3. List of Main Idea Items & Entities

1. Users: Describes the group of individuals that will utilize the application. Users are categorized in two ways: registered and unregistered.

2. Registered User: A user who created an account and has all of the application's capabilities accessible to them.

3. Unregistered User: A user with restricted access to the application's functionality who hasn't made an account.

4. User's Account: The user's data needed to set up and modify a user account.

Name: The full name of the user creating a user account.

Email: The user's email address to log in to a user account.

Password: The password set by the user for authentication.

Age: The age of the user to provide a personalized meal plan.

Gender: The gender of the user to customize meal plans.

Weight: The user's weight to customize the meal and exercise plans.

Height: The height of the user to calculate BMI.

Healthline: The health conditions of the user that might affect the user's diet and exercise.

Treatment: The user's treatment if there are any restrictions for the user's exercise and diet plan.

5. User Meal Plan: A diet customized to the user's interests and nutritional requirements.

Food Item: The specific food item used in a user's meal plan.

Serving Size: The portion size of the food item in a user's meal plan.

Macro-nutrient: The amount of macro-nutrient used in the user's meal plan.

Micro-nutrient: The amount of micro-nutrient used in the user's meal.

Calories Count The total calorie count from food and beverages in the user's meal plan.

Name of Plan: The type of meal plan, such as a weekly plan or weight loss plan in the user's meal plan.

Schedule Plan: The organization of meals throughout the day (breakfast, lunch, snack, and dinner) in the user's meal plan.

Diets: The dietary restrictions or preferences of users (e.g., vegan, vegetarian, ketogenic, paleo).

Nutritional Goals: The distribution of nutrients in each meal(like high protein and low carb to meet the user's dietary goals.

6. Nutrition Information: The nutrients in the user's diet for monitoring and enhancing the user's health.

Macro-nutrients: The list of proteins, carbohydrates, and fats in the user's diet.

Micro-nutrient: The list of vitamins (A, B, C, D, E, and K) and minerals (Ca, Mg, Zn, Fe) in the user's diet.

Dietary Fiber: The list of high-fiber foods and meals included in the user's diet.

7. Recipe: A comprehensive guidelines and dietary data for user's meal preparation.

Recipe: The name of the recipe set up in the app.

Ingredients: The list of ingredients required to prepare the recipe.

Instructions: The step-by-step guide on how to prepare the recipe.

Nutrition: The total nutrition breakdown per serving of the recipe including micronutrients and macronutrients

Calories: The total calorie count per serving of the recipe.

8. Login Activity: A log of the user's physical activities to track the user's calorie intake and workout regimens.

Day: The specific day when the user logs in for an activity or exercise.

Activity Type: The type of exercise or activity done by the user.

Duration: The length of time that the user spent in the activity.

Calories Burned: The total number of calories burned during the activity or exercise.

4. Initial List of Functional Requirements

1. User account management
1.1. A user should have a unique User ID.
1.2. A user shall be able to log in using their username and password.
1.3. If a user forgets their password, they shall be able to change it given they confirm their identity.
1.4. A user shall have a profile that includes personal information such as age, gender,
height, weight, fitness goals, dietary preferences, and restrictions.
1.5. A user shall be able to create their account.
1.6. A user shall be able to update their account.
1.7. A user shall be able to delete their account.
1.8. A user shall be able to upload and manage profile pictures.
1.9. A user shall receive personalized recommendations based on their profile information and goals.
1.10. A user shall have the ability to set privacy settings for their profile and data sharing preferences.
1.11. A user shall be able to join community forums.
1.12. A user shall be able to participate in group challenges.
1.13. A user shall be able to interact with other customers.

2 . Action
2.1. A user shall be able to like other posts.
2.2. A user shall be able to comment on other posts.
2.3. A user shall be able to share other posts.
2.4. A user shall be able to create a post.
2.5. A user shall be able to edit their post.
2.6. A user shall be able to delete posts related to their fitness progress, achievements, and challenges.
2.7. Comments shall display the date and time they were posted.
2.8. customers shall be notified of likes and comments on their posts.
2.9. A doctor should have the capability to request patient medical examinations.
2.10. A doctor shall be able to send messages to patients.
2.11. A doctor should possess the capacity to refer patients to different specialists.

3. Tracking Nutritional Intake
3.1. A user shall be able to log their meals and snacks throughout the day.
3.2. The app shall provide feedback on nutritional intake (calories, macronutrients carbohydrates, proteins, fats, vitamins, and minerals).
3.3. Customers shall receive alerts or reminders if their nutritional intake deviates from their goals or recommended limits.

3.4. A user shall have access to a database of food items with nutritional information, including serving sizes and ingredients.

4. Workout Planning

4.1. A user shall be able to create personalized workout plans based on their fitness goals.

4.2. The app shall suggest pre-designed workout routines categorized by fitness level (beginner, intermediate, advanced) and specific goals (weight loss, muscle gain, endurance).

4.3. Customers shall be able to schedule workouts.

4.4. Customers shall be able to set reminders in the app.

4.5. Customers shall be able to track completed exercises.

4.6. A user shall have the option to follow live-streaming workout sessions led by fitness instructors.

4.7. A user will be able to save an activity with its associated data.

5. Community Engagement

5.1. Customers shall be able to participate in community forums and share fitness tips, progress updates, and motivational content.

5.2. The app shall feature group challenges and competitions.

5.3. The app shall feature events to encourage user engagement and motivation.

5.4. Customers shall be able to create groups based on common fitness interests and goals or location.

5.5. Customers shall be able to join groups based on common fitness interests and goals or location.

5.6. The app shall provide moderation tools to manage community interactions and ensure a positive and supportive environment.

5.6. The app shall provide a feedback option so that the developers would be able to update the program.

6. Monitoring Fitness and Health

6.1. The app must work with other fitness tracker apps and devices.

6.2. The customers' physical activity must be tracked by the app.

6.3. The customers' physical activity must be linked to their dietary intake.

6.4. Taking into account the customers' activity levels, the app ought to offer insights and suggestions.

6.5. Customers should be able to establish and monitor fitness goals with the app.

6.6. The software ought to alert customers to their accomplishments and activity benchmarks.

6.7. customers should be able to check their overall health and nutritional status on a dashboard provided by the app.

6.8. The app needs to provide pointers and guidance on keeping an active lifestyle and a balanced diet.

6.9. Physical activity manual entry should be supported by the app.

6.10. customers ought to be able to record their physical dimensions and weight on the app.

7. Planning Meals and Offering Suggestions

7.1. Based on the user's tastes and dietary constraints, the app needs to offer customized meal recommendations.

7.2. The application shall produce meal plans.

7.3. Customers should be able to personalize their meal plans using the app.

7.4. All meal nutritional information must be provided by the app.

7.5. Cooking directions and recipe recommendations must be included in the app.

7.6. Using meal logs, the app needs to keep track of customers' nutritional intake.

7.7. Grocery lists based on the meal plans ought to be provided by the app.

7.8. The app needs to allow customers to track their meals and read barcodes on packaged goods.

8. Cookbooks

8.1. Customers shall be able to peruse and look up recipes based on meal types.

8.2. Customers shall be able to peruse and look up recipes based on their dietary requirements.

8.3. The app shall allow customers to bookmark their favorite recipes for quick access.

8.4. Detailed cooking directions and prep timeframes ought to be included in recipes.

8.5. All recipes need to list the nutritional values per serving.

8.6. Customers shall be given an option to submit their recipes for the app to include.

8.7. Customers will be given an option to submit their recipes for the app to include.

9. Analytics

9.1 The app shall provide information about the user's health.

9.2. The user will be able to self report basic health data each day.

9.3. The app will show the user's trends in reported health categories over time.

10. Notifications

10.1 The app shall provide messages in intervals to check up on the user.

10.2 The app will notify the user to remind them to track their daily health goals

11. Content management

11.1. A user shall insert images.

11.2. A user shall delete images.

11.3. A user shall be able to view statistics about their health & workout.

5. List of Non-Functional Requirements

1. **User Information**
    1.1. The application shall have data encrypted and saved to the database.
    1.2 Data in the application must be encrypted and stored in the database.
    1.2 The login process of the Application System requires Two-factor authentication.
    1.3 The app must guarantee the privacy of user data by following laws like GDPR and CCPA.
    1.4 The app will allow customers to see, change, and remove their personal information while following privacy laws.
    1.5 The app will allow customers to keep their information private

2. **Application Database**
    2.1. The application System should perform regular data backups.
    2.2. The application shall log customers' activity.
    2.3. The database should support high availability and automatic failover to ensure continuous operation.
    2.4. The application shall provide data recovery procedures in case of data loss or corruption.
    2.5. The database shall be optimized for both read and write operations to ensure quick access and storage of user data.
    2.6. The database shall be designed to handle a growing volume of data as the user base increases.

3. **Performance**
    3.1. Application response time should load the App within 3 seconds
    3.2. Application Systems should maintain detailed logs of application usage, errors, and security events to support troubleshooting and improve system reliability.
    3.3. The system should have a 99.9% uptime, excluding scheduled maintenance.
    3.4. The system should implement caching strategies to reduce load on the database and improve response times.
    3.5. The application should support concurrent usage by a large number of customers without significant performance degradation.
    3.6. The application shall be stress-tested to ensure it can handle peak loads and high traffic periods.
    3.7. The application shall be designed to handle an expected load of up to 1 million users concurrently.

4. **Notifications**

4.1. The application should implement robust error handling and user-friendly error messages to ensure the user experience is minimally impacted during failures.

4.2. The application shall send timely notifications to customers for important events, such as reminders for workouts, meal plans, or health tips.

4.3. The notification system should be configurable to allow customers to choose their preferred notification methods (e.g., push notifications, emails, SMS).

4.4. The application shall support localization of notifications to cater to customers in different regions and languages.

5. **User Interface**

5.1. The application shall ensure responsiveness and an intuitive user interface that works seamlessly across various devices and screen sizes.

5.2. The application should be designed to scale horizontally to accommodate increasing user loads without significant changes to the underlying architecture.

5.3. The application shall have an FAQ for customers to answer their own questions.

5.4. The application shall include a helpdesk or support ticketing system to handle user inquiries and issues effectively.

5.5. The application shall be built using a modular architecture to facilitate easier updates and maintenance.

5.6. The application shall adhere to accessibility standards to ensure it is usable by people with disabilities.

5.7. The user interface shall be visually appealing and customizable to enhance user engagement and satisfaction.

6. **6. Security**

6.1. The application shall conduct regular security audits and vulnerability assessments to identify and mitigate potential security risks.

6.4. The application shall enforce strong password policies, including complexity requirements and regular password updates.

7. **Compatibility**

7.1. The application shall be compatible with the latest versions of major operating systems, including iOS and Android.

7.2. The application shall be tested across a variety of devices and browsers to ensure compatibility and optimal performance.

7.3 The application shall support the latest versions of major web browsers, including Chrome, Firefox, Safari, and Edge.

7.4 The application shall support major desktop operating systems, including Windows, macOS, and Linux, ensuring functionality across different environments.

7.5 The application shall be designed to leverage OS-specific features and optimizations, such as widgets on iOS and Android, to enhance the user experience.

7.6 The application shall provide seamless updates through app stores (Apple App Store, Google Play Store) and support for over-the-air updates to ensure users always have the latest version.

8. Maintainability

8.1. The application shall be developed using clean code principles and best practices to facilitate easy maintenance.

8.2. The application shall include comprehensive documentation for developers, including API documentation, user guides, and troubleshooting guides.

8.3. The application shall use version control for source code management to track changes and facilitate collaboration among developers.

9. Localization

9.1. The application shall support multiple languages and regional settings, allowing customers to select their preferred language and units of measurement.

9.2. The application shall provide localized content, including region-specific health tips, dietary recommendations, and exercise guidelines.

9.3. The application shall adjust time zones automatically based on the user's location to ensure the accuracy of logs and reminders.

10. Regulatory Compliance

10.1. The application shall comply with all relevant local, national, and international laws and regulations concerning health, fitness, and nutrition data.

10.2. The application shall provide clear and accessible terms and conditions, including a privacy policy, which customers must accept before using the app.

11. Storage

11.1 The application shall provide scalable storage solutions to accommodate increasing amounts of user data.

11.2 The application shall use data compression techniques to optimize storage usage and improve performance.

11.3 The application shall ensure data integrity and prevent data loss through robust storage management practices.

12. Fault tolerance

12.1 The application shall include mechanisms to detect, report, and recover from software and hardware failures with minimal impact on the user experience.

12.2 The application architecture shall support redundancy to ensure service continuity in case of component failures.

12.3 The application shall include automated failover processes to switch to backup systems in case of primary system failure.

6. Competitive Analysis

Feature/Company	Fitness Blender https://www.fitnessblender.com/	Muscle & Fitness https://www.muscleandfitness.com/	FitOn https://fitonapp.com/	Nike Training Club https://www.nike.com/ntc-app/training
Strengths	-Ease of use -Very welcoming -Customizable workout searches	-No sign-in is required -Science-backed articles -Breaks down workouts into manageable chunks	-Wide variety of workout types -Easy to create a workout schedule -Can connect to fitness accessories like Apple Watch or Fitbit	-Ability to share workouts with phone contacts or on social media -Easy to swap between exercises using different equipment -Able to save workouts for later use
Weaknesses	-Focuses on quantity over quality -Monetization seems to include odd things but excludes obvious ones -Meals seem to be included as an afterthought	-Routines sometimes include workouts with no examples -Have to use browser bookmarks to save routines -Home page lacks in design	-Difficult to see exercises without the pro version -Too many ads for the paid version -No workouts on the website	-Website is through the Nike store -Social media is tied to Nike products -Does not provide much customization in workouts
Pricing	$79.99 per year	Free	$130 per year	Free
Social Media	-YouTube -Facebook -Instagram	-Facebook -X	-Instagram -Tiktok	-Facebook -X -Tiktok
Onboarding Experience	Fast sign up	No account and quick access	Lengthy signup process	Short sign-up and directed to workouts

Evaluation Table (-&&+)

Feature	Fitness Blender https://www.fitnessblender.com/	Muscle & Fitness https://www.muscleandfitness.com/	FitOn https://fitonapp.com/	Nike Training Club https://www.nike.com/ntc-app/training	FitNutri
Workouts	++	+	++	+	++
Personal Tracking	+	-	+	-	++
Community	+	-	+	+	++
Nutrition	+	+	+	+	+
VR	-	-	-	-	+

Common Features:
- Workouts
- Nutrition
- Wellness
- Articles
- Workout searching
- Community features
- Scheduled routines
- Sharable routines
- Accessory shop
- Personal tracking

Competitive Analysis & Summary

       With the Fitnutri application, customers can identify what problems they are facing. With all the features included in our full-stack project, it's clear that everyone would benefit from this website. Fitnutri is about fitness and health giving a broad overview of someone's diet and mental health. With Fitnutri customers can manage workouts and nutrition. It can have helpful features, such as an accessory shop, personal tracking, wellness, and more. A unique feature this application would have is a personalized diet plan for any customer who wants to choose their plan and the optional workout plans.

Fitness Blender
https://www.fitnessblender.com/

Pricing:
Free with ads/$8.99 per month/$79.99 per year

Strengths:
- Welcoming website
- Easy to navigate
- Sense of community (message boards, comments on exercises, checkmarks for those who liked the workout, badges for those who completed works or admins for the site)
- Many different exercises with filters to find based on difficulty, materials needed, body part focus, and time it takes to finish
- Can add custom workouts and routines (paid only)
- It has programs spanning several days to target different parts of the body and a calendar that allows you to schedule a program in advance
- Articles relating to stress management, improvement in exercising, changing bad habits, and other life tips for generally being more healthy (plenty of free ones)
- About pages have qualifications of who you clicked on along with the various workouts or articles written by the person
- Free 1-week trial
- Trainers look like average people

Weaknesses:
- Joining goes to account settings instead of activities
- Focuses on paid exercises with more difficulty finding free ones
- Meal plans (not single recipes) are all require payment
- Recipes do not have calories or other macros
- Repetitive video subjects, especially many meditation videos which are in similar length and look similar to each other

- Blog posts focus around sales mostly, feeling greedy rather than community-driven
- The store lacks merchandise for members who want to purchase accommodating workout equipment, water bottles, etc.
- No mobile app

Social Media Usage:
- YouTube (6.6M) - At least one video per month, sometimes several
- Pinterest (46.9K) - Very active with links directly to pinned workouts and ads for various sales
- Facebook (434.7K) - At least one post per day with what seems like short clips specifically for Facebook
- Instagram (294.2K) - Follows the same content as Facebook with at least one post per day
- X (36.6K) - Posts videos similar to Facebook
- Tiktok (375) - No posts

Onboarding Experience:
Short sign-up into a dashboard to create a workout routine with not much hand-holding

Muscle and Fitness:
https://www.muscleandfitness.com/

Pricing:
Free with ads

Strengths:
- Associates specific routines and meals with celebrities and include articles of diets they follow or interview them for the website
- Has workouts that target specific body parts and have different difficulty ratings
- Routines have links to specific exercises that show how to do the particular exercise it recommends
- Has a print button above the routine
- Can sometimes use one exercise to find routines which use it to adjust sets when wanting to change up what exercises are being done
- Does not require an account (easy to get to the meat of the program)
- Has many articles spanning from improvements to exercises, yoga times, mindfulness, and data-driven medical advice
- Has nutrition articles that link to peer-reviewed science articles and are broken down into general topics like weight loss or muscle gain
- Has a section for older people and women

Weaknesses:
- The home page does not make use of space well
- Can not search based on equipment usage and does not show times of exercise regiment
- Some routines have exercises which do not have examples of how to do them
- The print button does not format the routine into a nice-looking document
- Does not require an account (no way to track which exercises and routines you like)
- Clickbait article titles
- Can seem like a gossip rag at times
- Seems to be targeting too many audiences at one time (has skincare articles and how to play pickleball)
- Has a random YouTube-like link that has random shows and another link to a live show with no explanation of what it is

Social Media Usage:
- Facebook (6.6M) - Multiple posts per day with links to articles and videos
- X (1.1M) - Infrequent posts but a variety of content like interviews, workouts, and articles
- YouTube (74.3K) - Upwards of 10 videos per month, but mostly podcast-type videos
- Pinterest (14.8K) - Many pins related to targeted exercises, routines, meals, and interviews
- Tiktok (480) - Only 5 posts

Onboarding Experience:
No login is needed but also no guidance that leads the user to explore the sit

FitOn:
https://fitonapp.com/

Pricing:
Articles and guides are free. Courses have variable costs. $100 for 6 months and $130 for yearly access for pro.

Strengths:
- Categories for various exercises, meals, and wellness articles are easy to find
- Articles are well written and have scientific back behind why exercising and other fitness routines are important
- Suggest specific routines and articles based on your goals given during sign-up
- Has a reminder to open the app each day to begin working out
- Has groups people can join and comment on for a sense of community

- Provides a calendar that tracks which workouts have been done that day
- Has a weight tracker
- Can connect to various fitness accessories like Fitbit
- Has many different types of workouts like kickboxing, dancing, yoga, and strength to provide a wide variety for those who join
- Has a shop to provide accessories customers can buy

Weaknesses:
- Has articles split arbitrarily between articles and guides with no insight as to why they are in separate categories
- Meal plans are mostly paid with difficult-to-find free versions
- Four prompts to sign up for the subscription during sign-up
- Workouts are only in the phone app and have to pay for the subscription to cast to the tv
- 10-second ad every time you try to use a premium section with no way to exit unless you close the app
- Very small FAQ section

Social Media Usage:
- Instagram (841.1K) - Almost daily posts and more tailored like a user rather than a corporate entity. Has short videos and nice-looking pictures.
- Facebook (55.7K) - Similar to Instagram. Has short videos, some inspirational quotes, and links to the app.
- YouTube (48.2K) - 3+ year old videos of workouts only
- Pinterest (16.3K) - Lots of pins related both to their own content and other sections linking to other sites with recommendations for meals and workouts
- Tiktok (161.9K) - Daily posts which feature advice, product reviews, and memes

Onboarding Experience:
A lengthy questionnaire followed by a 15-second unskippable ad about their pro subscription, followed by a jump into workouts

Nike Training Club:
https://www.nike.com/ntc-app/training

Pricing:
Free

Strengths:
- Fast sign up with a short questionnaire to get an idea of your experience

- Goes straight to workouts after signing in
- Have exercises classified by difficulty and times
- Different approaches to exercises with videos for more in-depth workouts or a whiteboard approach that shows an outline of the workout and includes videos on how to do each step
- Able to search based on equipment used with the ability to swap among the choices
- Easy to find saves for workouts that the user likes
- Have reminders tied to workouts if you want to set up a schedule
- Short articles that provide tips for general fitness, nutrition, and wellness
- Provides recipes with times for preparation and provides some of the more tracked macros
- Bios of trainers have a more personalized approach with fun facts about the trainer and links to the programs and workouts they did
- Tracks which workouts have been done with the ability to add workouts of some outside activities
- Has programs with span several weeks and outline what will be done each week
- Can share the programs with contacts

Weaknesses:
- The website only provides articles, everything else is in the app
- The website is tied to the Nike store
- Recipes are not categorized by things like snacks or meals
- Outside workouts are limited to a small number of activities
- Home in the app is just new workouts rather than workouts tailored to the user
- Social media accounts are about the brand rather than the fitness

Social Media Usage:
- Facebook(39.3M) - Posts somewhat infrequently with posts about launches of products or athletes using Nike
- Pinterest (1.1M) - Pins are mostly about product lines and very infrequent <100 pins
- X (10.1M) - Similar to Facebook with infrequent tweets and the tweets being about launches of products or athletes who are sponsored by Nike
- YouTube (1.9M) - Sparse posting with months in between some posts. Mostly inspirational videos or ads
- Tiktok (6.2M) - Almost daily videos with the same use cases as Facebook

Onboarding Experience:
Somewhat pleasant in the short sign-up and a jump straight into the workouts page

7. Checklist

NO.	Tasks	Status	Comments
1	The team found a time slot to meet outside of the class	**DONE**	Tuesdays and Thursdays @7:30 pm And whenever the team lead needs at 7:30 pm-10 pm
2	GitHub master chosen	**DONE**	Ali A
3	Team decided and agreed together on using the listed SW tools and deployment server	**DONE**	Shoutout Eduardo for helping us understand!
4	Team ready and able to use the chosen back and frontend frameworks and those who need to learn are working on learning and practicing	**DONE**	
5	Team lead ensured that all team members read the final M1 and agree//understand it before submission	**DONE**	An Excel sheet is created and at every meeting, the team leads ask what was done and show their finished product.
6	Github is organized as discussed in class (e.g.masterbranch, development branch, folder for milestone documents etc.)	**DONE**	Went over everything in the meeting and asked the Professor for clarification.

8. High-level system architecture and technologies used

Server Host: Amazon Web Service (AWS) Express
Operating System: Ubuntu 22.04
Database: MySQL 8.0.35
Web Server: Apache
Server-Side Language: Python and Java

Additional Tech:
Web Framework: React and Node
Backend Framework: Java and Springboot
Frontend Framework: JavaScript
IDE: Visual Studio Code, MySQL Workbench

9. List of Team Contributions

NO.	Member	Contribution	Rating
1	Michelle Nguyen	- Organized meetings and made an Excel sheet to keep track of tasks. - Formatted the Google doc along with feedback to the team. - Helped out on two Main Use Cases. - Grammar checked. - Added more functional requirements. - Helped write the Executive Summary. - Submitted the team's contract. - Developed the About page. - Created a template for the About page for the team.	
2	Mitchell Caine	- Executive Summary main idea. - Added two main use cases - Included the drawings for the main causes - Completed the competitive analysis summary and table. - Helped SSH set up. - Helped add more to the page code.	10
3	Shreejana Bartaula	- Added the list of Main idea Items & Entities - Added more to functional requirements. - Formatted the Functional and Non-Functional Requirements.	3
4	Ali Almusawi	- Added two Main Use Cases - Included the drawing for the main causes. - Added a bit to functional requirements.	10
5	Eduardo Enrique Muñoz Alvarez	- Added one main use case. - Included the drawing for the main causes. - Help write out the credentials on GitHub. - Created the AWS and security group. - Set up the SSH. - Strong communication with others. - Deployed the team's website URL. - Created the database. Database URL,	10

		Username, Password.	
6	Nilofar Ali	- Added twomain use case. - Included the drawings for the main causes - Added more to non-functional requirements.	**10**