

System Design for REVITALIZE

Team 13, REVITALIZE

Bill Nguyen

Syed Bokhari

Hasan Kibria

Youssef Dahab

Logan Brown

Mahmoud Anklis

January 19, 2023

1 Revision History

Date		Version	Notes
January 2023	18th,	Syed Bokhari	Added user interface figma sketches
January 2023	18th,	Syed Bokhari	Added interface descriptions and additional information
January 2023	18th,	Syed Bokhari	Added reflection question answers
January 2023	17th,	Mahmoud Anklis	Added introduction, purpose, and scope
January 2023	18th,	Mahmoud Anklis	Added project overview, reference material, timeline, and reflection

2 Reference Material

This section records information for easy reference.

2.1 Abbreviations and Acronyms

symbol	description
AC	Anticipated Change
DAG	Directed Acyclic Graph
M	Module
MG	Module Guide
OS	Operating System
R	Requirement
SC	Scientific Computing
SRS	Software Requirements Specification
REVITALIZE	Explanation of program name
UC	Unlikely Change

Contents

1	Revision History	i
2	Reference Material	ii
2.1	Abbreviations and Acronyms	ii
3	Introduction	1
4	Purpose	1
5	Scope	1
6	Project Overview	2
6.1	Normal Behaviour	2
6.2	Undesired Event Handling	2
6.3	Component Diagram	3
6.4	Connection Between Requirements and Design	3
7	System Variables	4
7.1	Monitored Variables	4
7.2	Controlled Variables	4
7.3	Constants Variables	4
8	User Interfaces	4
9	Design of Hardware	8
10	Design of Electrical Components	8
11	Design of Communication Protocols	8
12	Timeline	9
A	Interface	10
B	Mechanical Hardware	10
C	Electrical Components	10
D	Communication Protocols	11
E	Reflection	11

List of Tables

List of Figures

1	System context diagram for Revitalize	1
2	System component diagram for Revitalize	3

3 Introduction

The following document details the System Design for the REVITALIZE app. The REVITALIZE app is an all-in-one health and wellness app, comprised of 1 main section and 3 major subsections. The main section is a calendar which organizes and documents the contents of the 3 subsections. The 3 subsections are the diet section, workout section, and sleep section.

The full documentation and implementation can be found at <https://github.com/BillNguyen1999/REVITALIZE/tree/main/docs>.

4 Purpose

The purpose of the design documentation is to illustrate how the software application will meet the requirements. The System Design document will display the design of the interface as well as the connection between the requirements and the design of the application.

5 Scope

The scope of this software application is to provide an all-in-one health app for adults/teenagers of any age. Users of REVITALIZE can track their diet, sleep, and workouts as well as find recipes for meals based on nutritional specifications.

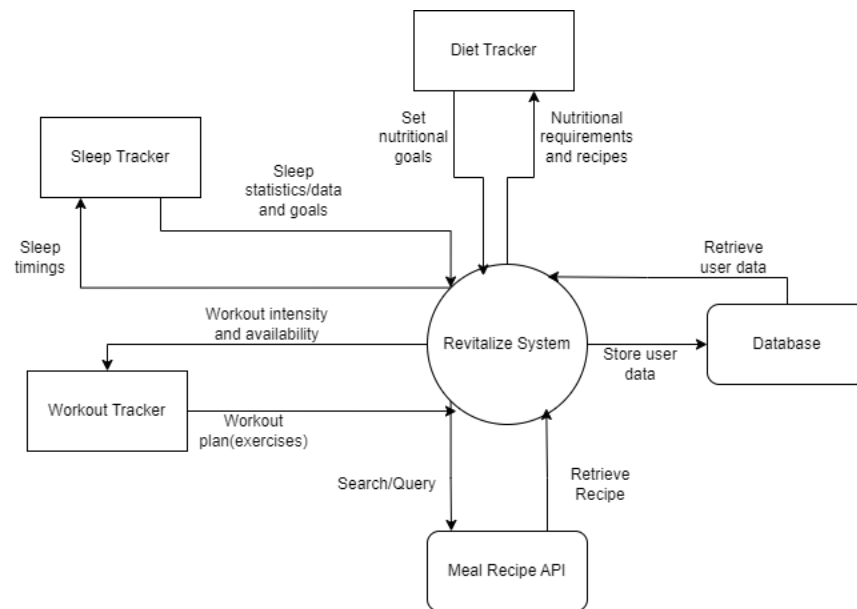


Figure 1: System context diagram for Revitalize

6 Project Overview

6.1 Normal Behaviour

The application is comprised of one main section and three subsections. The main section includes a calendar that can be selected and interacted with. The three subsections will allow users' to track their diet, sleep, as well as their workouts. The diet section includes a recipe finder that provides the user with a search engine for recipes of meals based on nutritional filters. The sleep section tracks the user's sleep and provides important statistics and recommendations. The workout section allows the user to plan workouts by selecting pre-existing workouts and modifying the number of sets and reps. Overall, the REVITALIZE application will help user's achieve a healthy lifestyle.

6.2 Undesired Event Handling

In the event that undesired events take place, the REVITALIZE application will have error handling checks to safeguard the application from failing. In the case of potential errors with user input, the system will put in place enforced type checks. For example, when the user wants to input the number of calories for a recipe search, the input will only be numerical. Additionally, in the case of a system error, the application will catch and handle that error, ensuring that the system does not fail.

6.3 Component Diagram

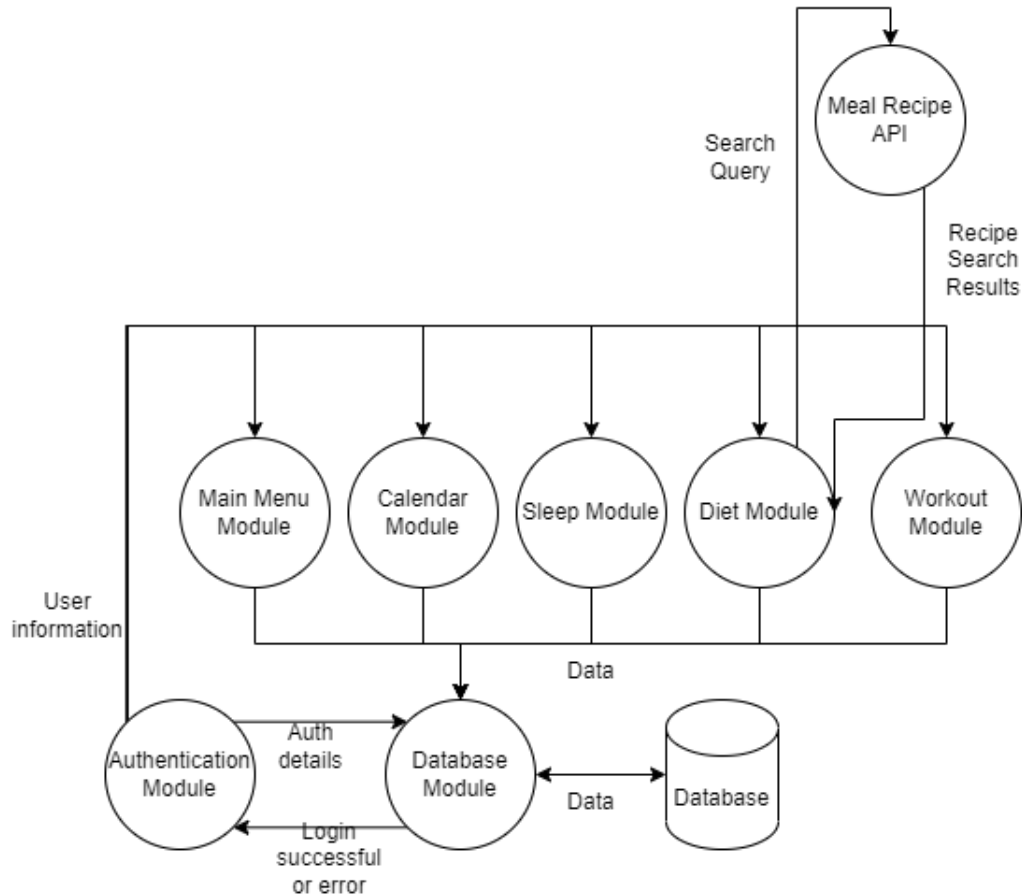


Figure 2: System component diagram for Revitalize

6.4 Connection Between Requirements and Design

The system design of REVITALIZE is founded upon the requirements previously set in the SRS. It is designed to cater for every single requirement attributed to this project. Hence, the design is decomposed into modular pieces of functionality which each help serve the fulfillment of aforementioned requirements. Specifications on how each module relates to (a) requirement(s) can be found in Section 8 of the MG document.

The functional outlook of each module can be understood by its name and, if needed, its access programs detailed in the MIS. After realizing the functionality of each module, the connections outlined in the Traceability Matrix in Section 8 of the MG document should be clear and easily comprehended.

7 System Variables

N/A

7.1 Monitored Variables

N/A

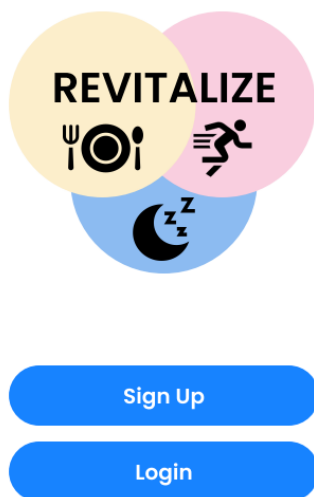
7.2 Controlled Variables

N/A

7.3 Constants Variables

N/A

8 User Interfaces



(a) Start

Welcome!
Let's get you started

Enter your name

Enter your email

Enter password

Confirm password

Sign Up

Already have an account ? [Login](#)

(b) Signup

Welcome Back!
Please input your information

Enter name or email

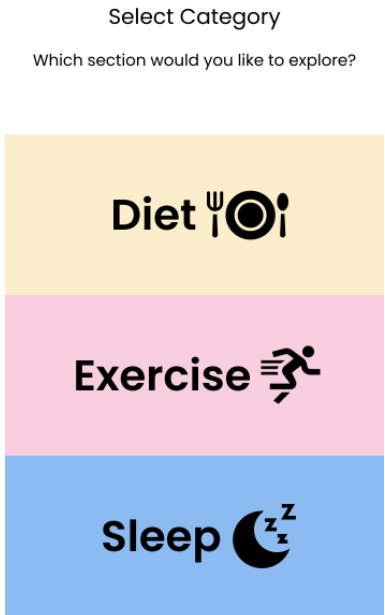
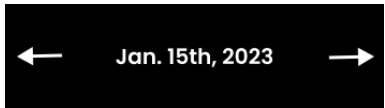
Enter password

[Forgot Password](#)

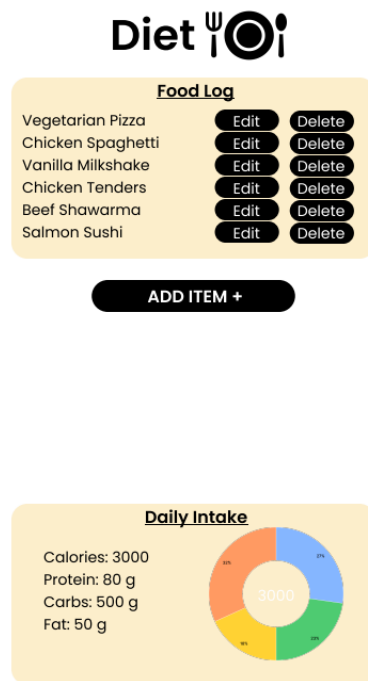
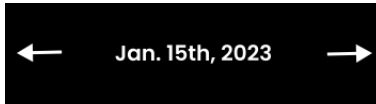
Login

Don't have an account ? [Sign Up](#)

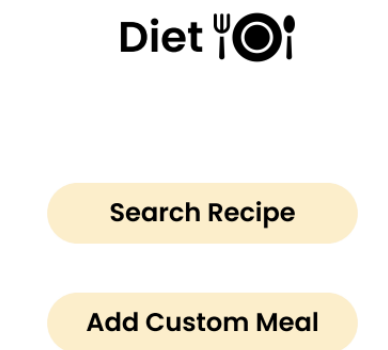
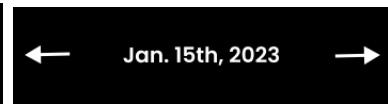
(c) Login



(d) Main



(e) Diet Main



(f) Diet Search/Add Custom Meal

←

Jan. 15th, 2023

→

Name of meal

Calories

Protein

Carbohydrates

Fat

ADD ITEM +

←

Jan. 15th, 2023

→

Keywords ▼

Allergies ▼

Diets ▼

Calories ▼

Nutrients ▼

SEARCH

←

Jan. 15th, 2023

→

Search: Pasta

Pasta alla Gricia

Pasta Frittata

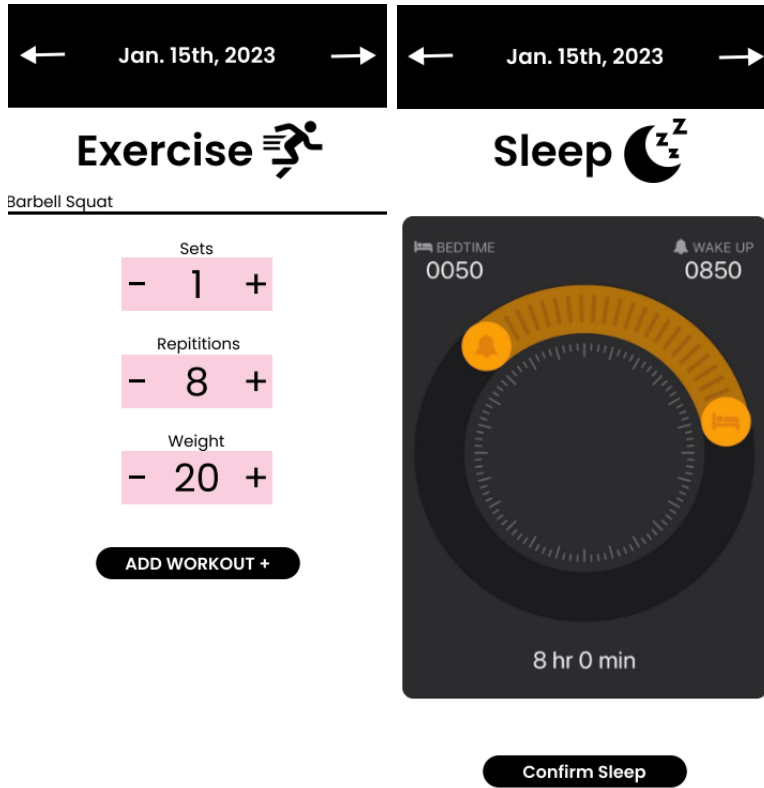
Kimchi Pasta

Pasta Alla Genovese

(g) Diet Add Custom Meal

(h) Diet Recipe Search

(i) Diet Recipe List



(m) Exercuse Details

(n) Sleep

9 Design of Hardware

N/A

10 Design of Electrical Components

N/A

11 Design of Communication Protocols

N/A

12 Timeline

Figure	Timeline Rev 0	Timeline Final Rev	Who's Responsible
a	February 6, 2023	March 20, 2023	Logan and Youssef
b	February 6, 2023	March 20, 2023	Logan and Mahmoud
c	February 6, 2023	March 20, 2023	Logan and Mahmoud
d	February 6, 2023	March 20, 2023	Bill and Faiq
e	February 6, 2023	March 20, 2023	Faiq and Hasan
f	February 6, 2023	March 20, 2023	Faiq and Hasan
g	February 6, 2023	March 20, 2023	Faiq and Mahmoud
h	February 6, 2023	March 20, 2023	Youssef, Mahmoud, and Hasan
i	February 6, 2023	March 20, 2023	Youssef, Mahmoud, and Hasan
j	February 6, 2023	March 20, 2023	Youssef, Mahmoud, and Hasan
k	February 6, 2023	March 20, 2023	Bill and Logan
l	February 6, 2023	March 20, 2023	Bill and Logan
m	February 6, 2023	March 20, 2023	Bill and Logan
n	February 6, 2023	March 20, 2023	Bill and Youssef

A Interface

figure (a): This is the start screen when launching the application. It offers the user the ability to either sign up or login.

figure (b): This is the signup screen. The user must input valid information and register with confirmation from the database.

figure (c): This is the login screen. The user must input valid credentials to successfully enter the main screen.

figure (d): This is the main screen. The user can select from the three application categories and enter their specific page after click. The user can select the calender value and change the date accordingly to see the information for the given day.

figure (e): This is the diet main screen. The food log is available to view and each entry can be edited or deleted. On the bottom of the screen, the total statistics of the day can be seen. The add item button is clicked to go to figure (f).

figure (f): This is the screen to traverse to the search or add custom meal pages.

figure (g): This is the custom meal screen. The user can input custom information to add to the food log.

figure (h): This is the recipe search screen. The user can select the API query options from the drop down to construct a unique recipe list.

figure (i): This is the recipe list screen. The recipes are listed based on the previous page query.

figure (j): This is the recipe information screen. Specific information relating to ingredients for each recipe is listed.

figure (k): This is the exercise main screen. It displays a list of exercises for the day that can be edited or deleted. A workout can be added by clicking the button.

figure (l): This is the exercise list screen. The screen displays a list of exercises available through the API. Once selected, the user is taken to figure m where they can add the custom information for their exercise.

figure (m): This is the exercise details screen. The user can customize their sets, reps and weight for accurate tracking.

figure (n): This is the sleep screen. The user can alter the clock value if the API sleep tracking was not correct and they can confirm the entry to add to their sleep log.

B Mechanical Hardware

N/A

C Electrical Components

N/A

D Communication Protocols

N/A

E Reflection

The information in this section will be used to evaluate the team members on the graduate attribute of Problem Analysis and Design. Please answer the following questions:

1. What are the limitations of your solution? Put another way, given unlimited resources, what could you do to make the project better? (LO_ProbSolutions)

Syed: Our main features are reliant on the database provided by external APIs. The recipe list and the exercise list can only give the user's the information that is accessible through the API. This limits the design of the app due to the limited query information.

Bill: Project does not have functionalities such as analytics of data and predictive models that can potentially benefit the user experience.

Hasan: Since time is a key resource, unlimited resources would imply unlimited time. I think with unlimited (or rather plenty of) time, we could improve every aspect- from the documentation to the UI to the business logic.

Youssef: Another limitation is that since a lot of REVITALIZE's features rely on making API calls, an internet connection is required for the app to work.

Mahmoud: We can make the project better by linking the application with hardware that measures a user's heart rate and oxygen levels during their sleep. This can be extremely beneficial for a person with sleep apnea, for example, as vital sleep information can be tracked and stored.

2. Give a brief overview of other design solutions you considered. What are the benefits and tradeoffs of those other designs compared with the chosen design? From all the potential options, why did you select documented design? (LO_Explores)

Syed: We considered a self serving exercise list, where the user would be able to add their own custom exercises. This seemed like a great option for user customizability, however the tradeoff is that the user must spend a tedious amount of time inputting the information. Instead, we have a preset list of the most common exercises that the user can quickly select and add their sets, repetitions and weight.

Bill: We considered using analytics to find statistics and trends of which features are used the most/the least etc. which could help us improve user experience. Also considered using predictive models such as giving recipe/exercise suggestions to user based on user data. These were great options, but are options that are nice to have and were considered stretch goals.

Hasan: To be honest I do not completely remember all the other design solutions we covered. However, I do remember that this design solution stood out because it solved

a real problem; ie. an all-in-one health application that is user friendly and easily learned.

Mahmoud: We had other design solutions for the way to match meals, exercise, and sleep with each day. We decided to go with a main calendar design because of its simplicity and ease of access.