De La Salle University - Manila

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In partial

fulfillment of

the course

in **LBYCPEI (EQ3)**

FlashFitness

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I. Introduction

In the fast-paced and demanding academic environment of DLSU students, the pursuit of excellence and high achievements often takes precedence over personal well-being. The relentless focus on studies and academic success can lead to neglecting physical and mental health, which is crucial for maintaining a healthy and fulfilling life. To address this said issue, our group proposed a project named “FlashFitness”, a java based fitness app made specifically for Lasallian students. This app aims to empower students to take charge of their health and well-being by offering customizable workout plans based on their preferences. This will ensure that they can incorporate being physically active into their busy schedules.

II. Related Works

As part of the University of California's ten-week capstone project in the Interaction Design Specialization, students are working on a design idea that aims to promote a healthier lifestyle by encouraging physical activity. Their approach involves creating a high-fidelity interactive prototype using Figma and Vision, incorporating User Testing with two participants to identify and address any issues. Additionally, the project employs Storyboards, Ideation, and other methods to achieve a comprehensive outcome (Higueras, 2018).

This study delved into the perceptions of diet and fitness apps among users and non-users, utilizing the Theory of Reasoned Action and Uses & Gratifications Theory as a framework. It aimed to identify factors influencing both the initiation and continued use of mHealth apps. While prior research focused on the usage and factors influencing continued use, this study explored the factors that prompt individuals to start using such apps. A belief elicitation study was conducted among undergraduate college students at the University of Minnesota, resulting in 289 responses, of which 215 were classified as users and 74 as non-users. Popular reasons for use included goal setting and behavior tracking, suggesting these features should be emphasized in future app development. Notifications, feedback systems, and the use of rewards for health behaviors also played a significant role, although opinions on rewards varied among participants. Another critical finding was the perception that mHealth apps might lead to obsessive behaviors and disordered eating, raising concerns for app developers who should be mindful of such potential outcomes. Further research is

recommended to explore these aspects and inspire non-motivated individuals to engage in healthy behaviors through non-promotional activity-based apps (Rossi, 2017).

The project also drew inspiration from popular fitness apps available on both the Apple App Store and Google Play Store. Notably, MyFitnessPal: Calorie Counter was one of the sources, offering features to track nutrition, fitness, and weight loss progress. Another influential app was Gym Workout Planner & Tracker, which provided workout plans, exercise tracking, and smart trainer capabilities, among other features.

III. Proposed Application

These are the main parts of the FlashFitness application:

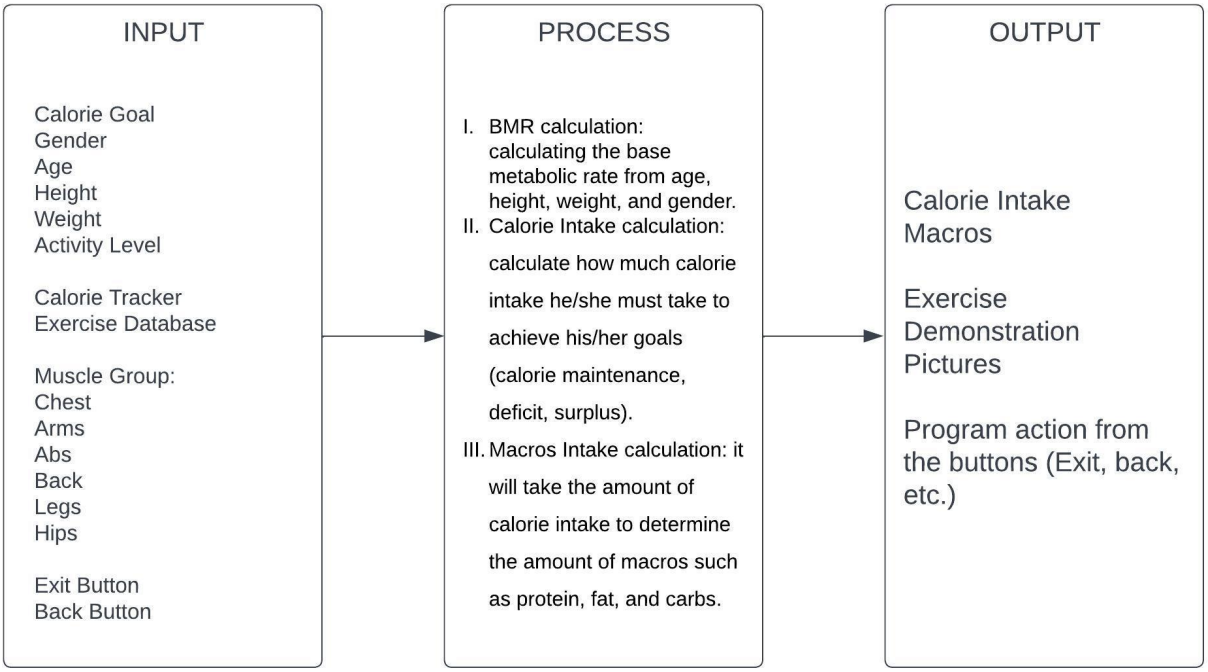
A. Calorie Intake

The Calorie Intake part of the application calculates the total calories should the user intake to achieve his/her goals. It also calculates the macros which are the fats, carbs, and protein. The user needs 6 inputs to calculate the calorie intake and macros. These are the calorie goal which are calorie maintenance, deficit, or surplus. Then the user's gender which is male or female. Then the user will input his/her height, weight, and age. Lastly, The user will choose his/her activity level.

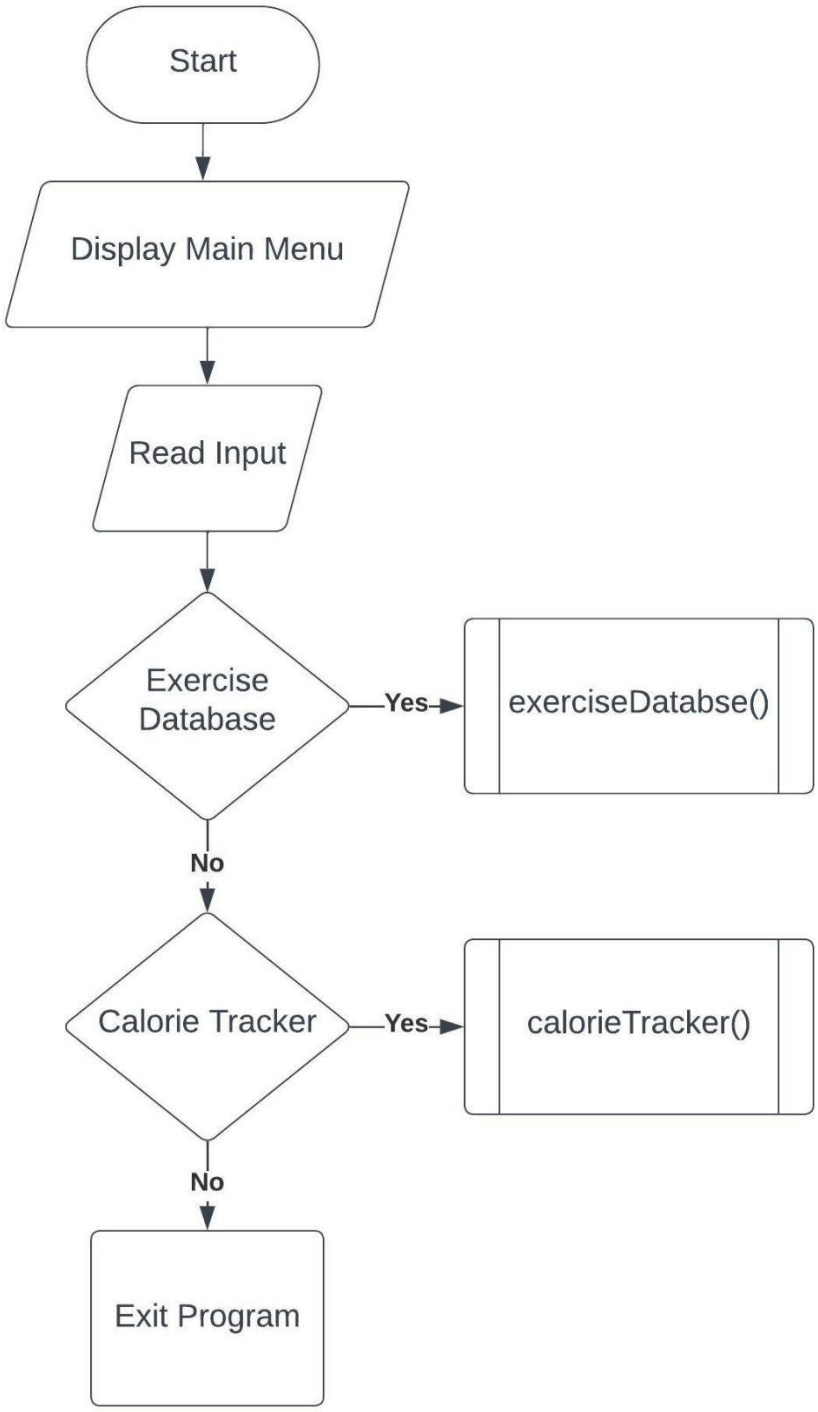
B. Exercise Database

The exercise database is self-explanatory. It holds various exercises and techniques that the user can acquire. The database will offer exercises from various muscle groups such as chest, arms, abs, legs, and many more.

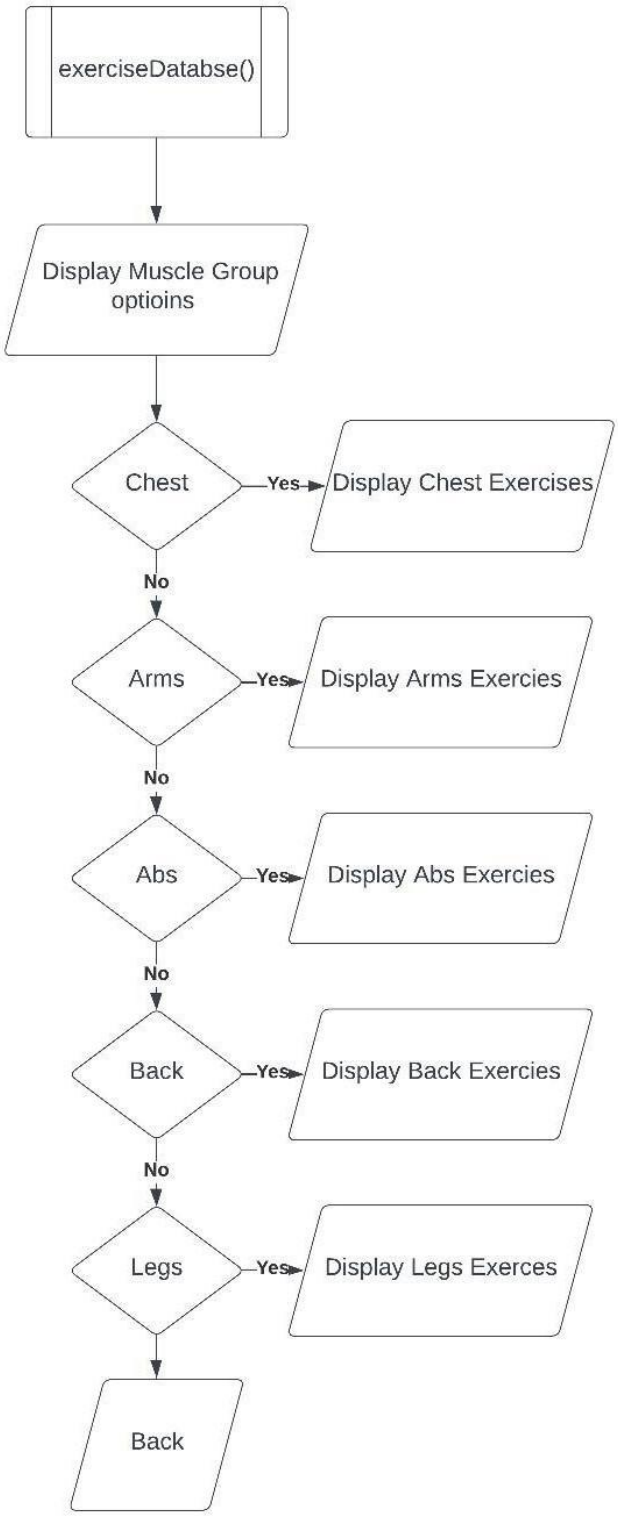
IPO Diagram


INPUT
Calorie Goal
Gender
Age
Height
Weight
Activity Level
Calorie Tracker
Exercise Database
Muscle Group:
Chest
Arms
Abs
Back
Legs
Hips
Exit Button
Back Button
PROCESS
I. BMR calculation: calculating the base metabolic rate from age, height, weight, and gender.
II. Calorie Intake calculation: calculate how much calorie intake he/she must take to achieve his/her goals (calorie maintenance, deficit, surplus).
III. Macros Intake calculation: it will take the amount of calorie intake to determine the amount of macros such as protein, fat, and carbs.
OUTPUT
Calorie Intake
Macros
Exercise
Demonstration
Pictures
Program action from the buttons (Exit, back, etc.)

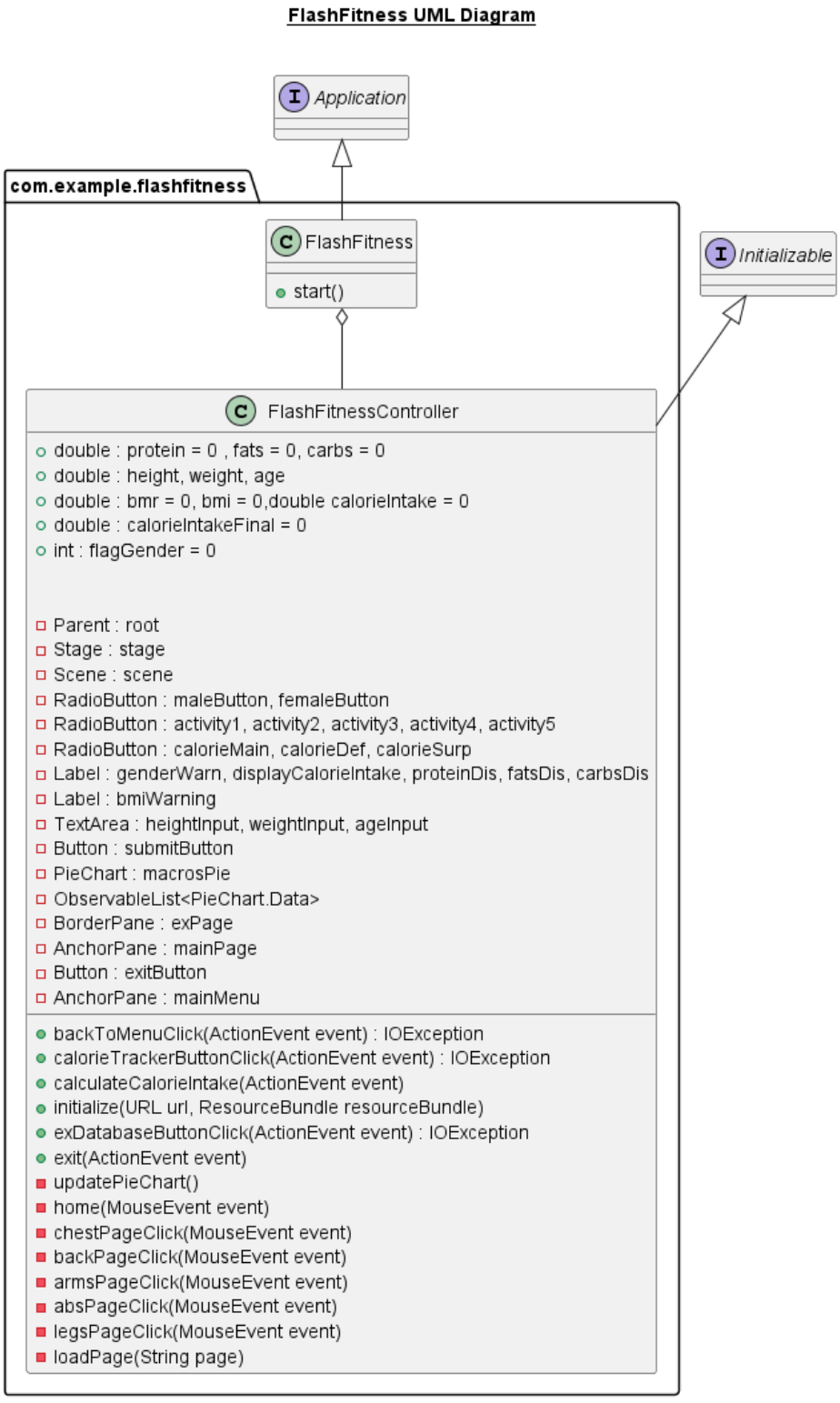
Flowchart


Start
Display Main Menu
Read Input
Exercise Database
Yes
exerciseDatabse()
No
Calorie Tracker
Yes
calorieTracker()
No
Exit Program


calorieTracker()
Calorie Goal: Maintain, Deficit, Surplus
Maintain
Yes
No
Deficit
Yes
-500 calories in calorie intake
No
Surplus
Yes
+300 calories in calorie intake
Gender: Male or Female
Male
Yes
BMR = 10*Weight + 6.25*Height + 5*Age + 5
No
Female
Yes
BMR = 10*Weight + 6.25*Height + 5*Age -161
Input Height
Input Weight
Input Age
A
A
Activity Level
Little or No exercise
Yes
CalInt = BMR*1.2
No
Exercise 1-3 day a week
Yes
CalInt = BMR*1.376
No
Exercise 3-5 day a week
Yes
CalInt = BMR*1.55
No
Exercise 6-7 day a week
Yes
CalInt = BMR*1.725
No
Extra Active Exercise a week
Yes
CalInt = BMR*1.9
Display Calorie Intake
Protein = calorie intake x .3 /4
Fats = calorie intake x .3 / 9
Carbs = calorie intake x .4 /4
Display Macros: Protein, Fats, Carbs
Back


exerciseDatabse()
Display Muscle Group optioins
Chest
Yes
Display Chest Exercises
No
Arms
Yes
Display Arms Exercies
No
Abs
Yes
Display Abs Exercies
No
Back
Yes
Display Back Exercies
No
Legs
Yes
Display Legs Exerces
Back

UML Diagram



The FlashFitness program consists of two main Java files: FlashFitness.java and FlashFitnessController.java. FlashFitness.java serves as the program's main file, extending the JavaFX application class. On the other hand,

FlashFitnessController.java plays a pivotal role and is considered the more substantial file of the two. The controller is connected to the FXML files that are used and controlled. These FXML files are the ones that the user interacts with.

FlashFitnessController.java implements the Initializable interface, which allows it to use the initialize() method to handle the initialization of controls that cannot be managed directly through FXML. This file contains the majority of the code, methods, functions, calculations, and variable declarations essential for the program's functionality.

Moreover, FlashFitnessController.java establishes connections with various FXML files created using JavaFX Scene Builder. Through this connection, it takes charge of managing the program's behavior and interactions with the associated FXML files, effectively controlling the entire program's flow.

IV. OOP Aspects

- Polymorphism: The program will make use of methods in order to process the data inputs. These methods would pass information from one another. It will also calculate the needed data.

- Encapsulation: The program will use methods of encapsulation such as get and set. It would also declare classes and attributes such as Labels, Buttons, Stages, Scenes,s and many more. It would get data from TextBox, RadioButton, Button, and more. It would also set information to process information and calculate the needed data.

- Polymorphism: this is where we use different methods to do various tasks. Methods such as calorieIntake() and more would be passed around in order to process the needed information.

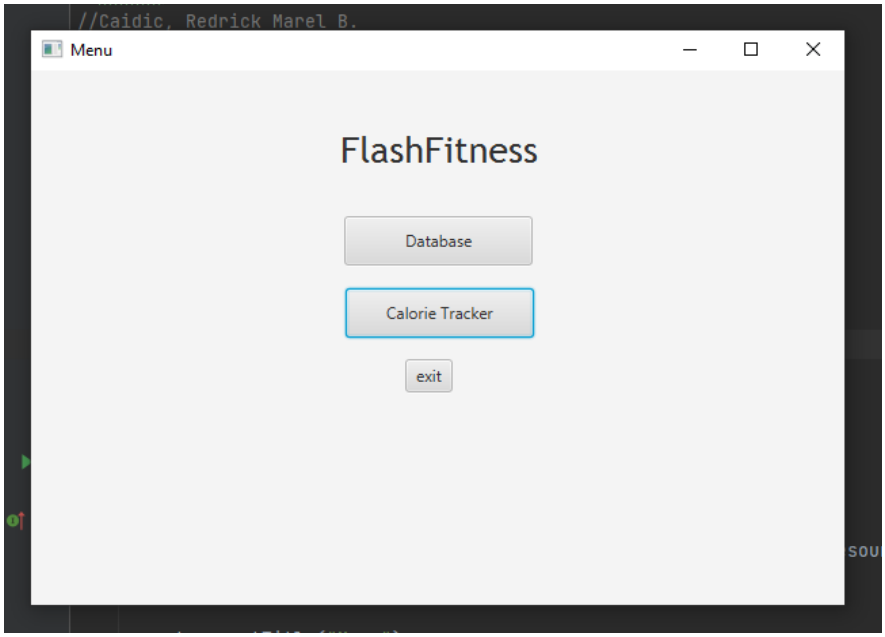
- Inheritance: Inheritance such as a subclass(parent) and superclass(child) will be used in order to have a more organized process of information. One of these superclasses would be FlashFitness and FlashFitnessController.

- Abstraction: Abstract classes are an essential part of the project. Abstract classes would be used for the JavaFX GUI as it is auto-generated by the IntelliJ application. We just need to change the class name to FlassFitness, FlashFitnessController, and more.

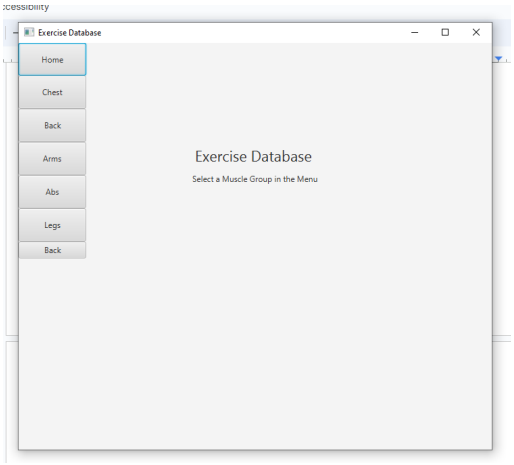
- Graphical User Interface: The Flash Project group would use JavaFX in order to create the FlashFitness application GUI. It would use various materials from JavaFX such as Labels, Textbox, RadioButton, AnchorPane, Scenes, Stage, and many more.

V. WALKTHROUGH/DATA/RESULTS

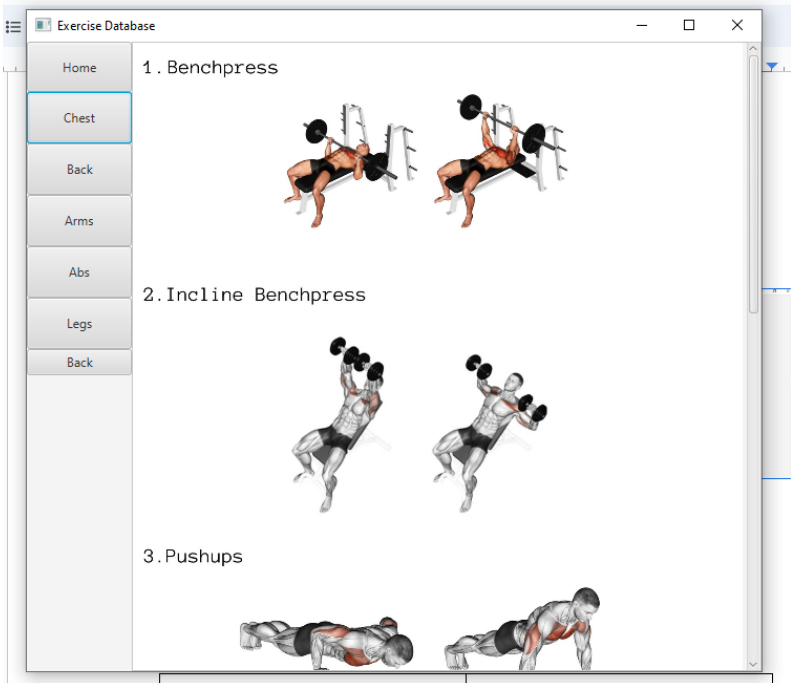
1. **Main Menu** - choose Exercise Database or Calorie Tracker option



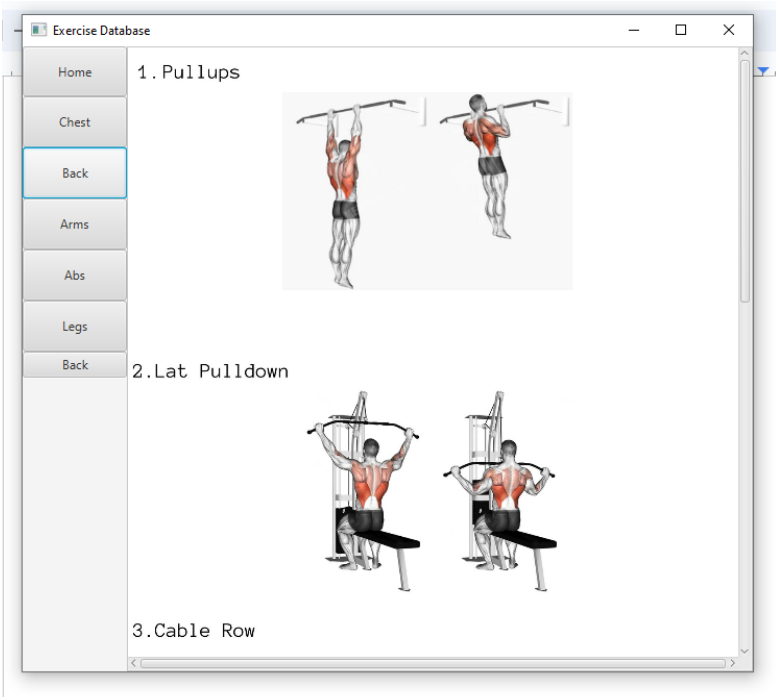
2. **Exercise Database** - Choose which muscle group you want to exercise (Chest, Back, Arms, Abs, or Legs)
    A. Home



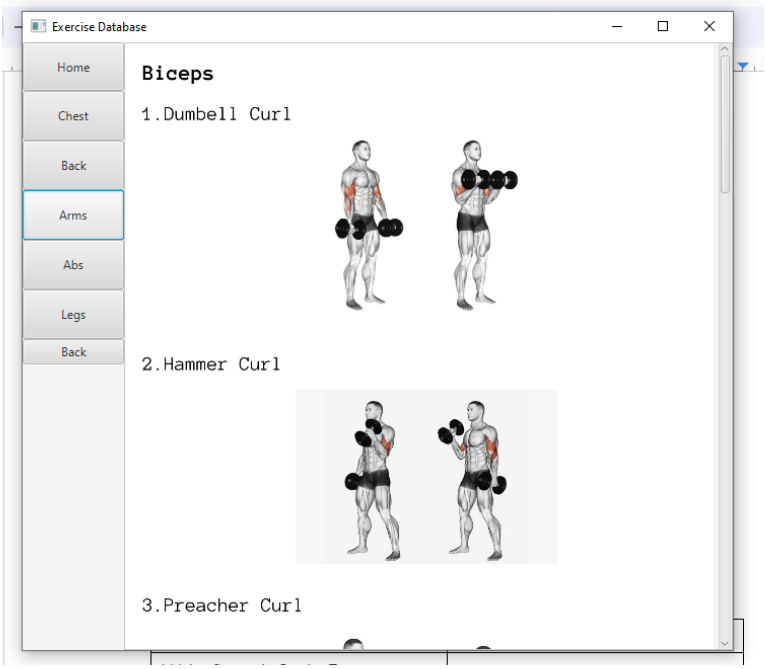
B. Chest



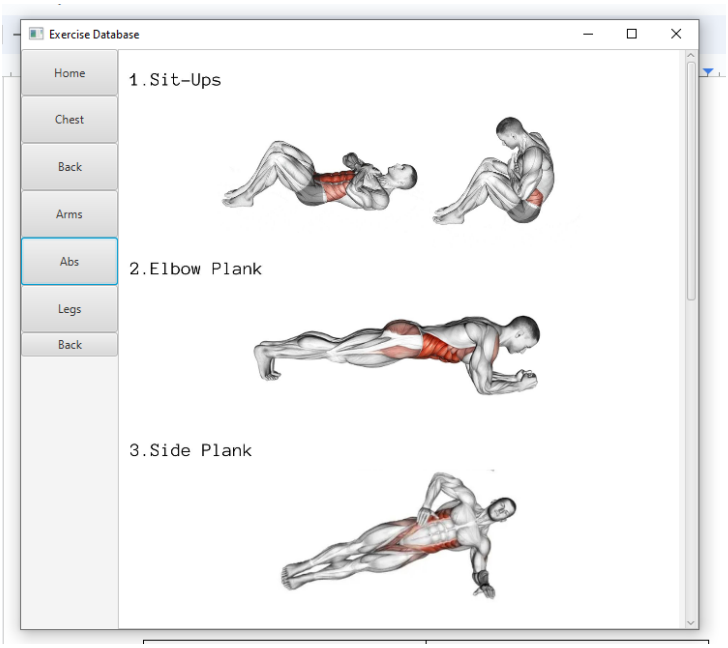
C. Back


Exercise Database
Home
Chest
Back
Arms
Abs
Legs
Back
1.Pullups
2.Lat Pulldown
3.Cable Row

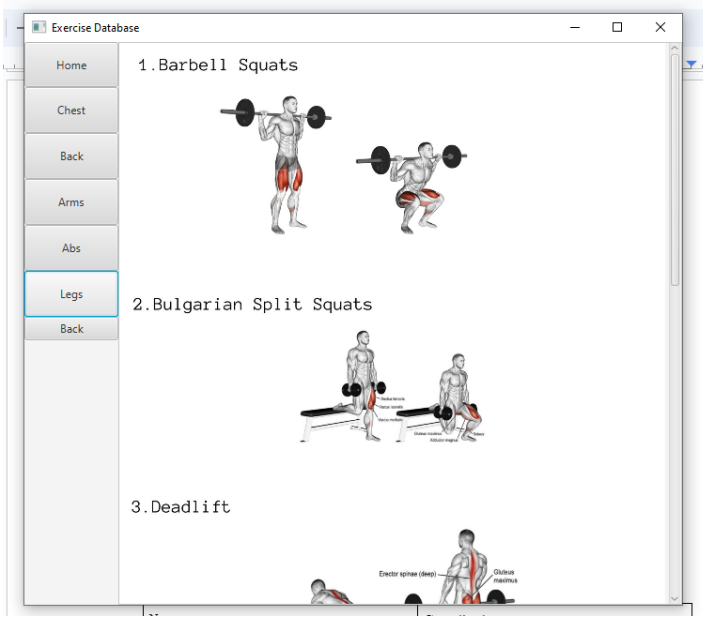
D. Arms


Exercise Database
Home
Chest
Back
Arms
Abs
Legs
Back
Biceps
1.Dumbell Curl
2.Hammer Curl
3.Preacher Curl

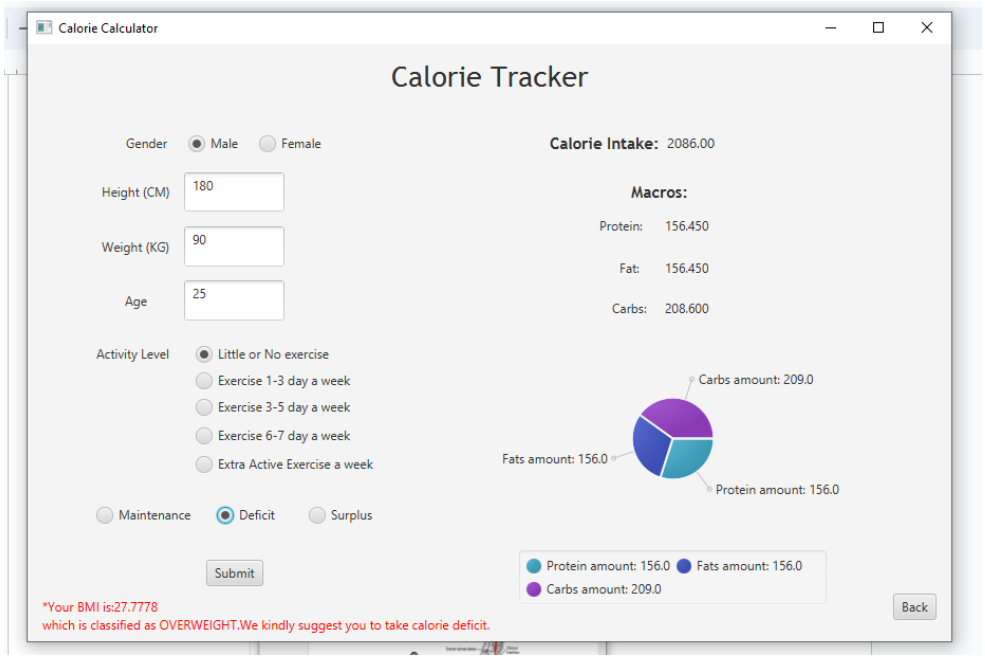
E. Abs

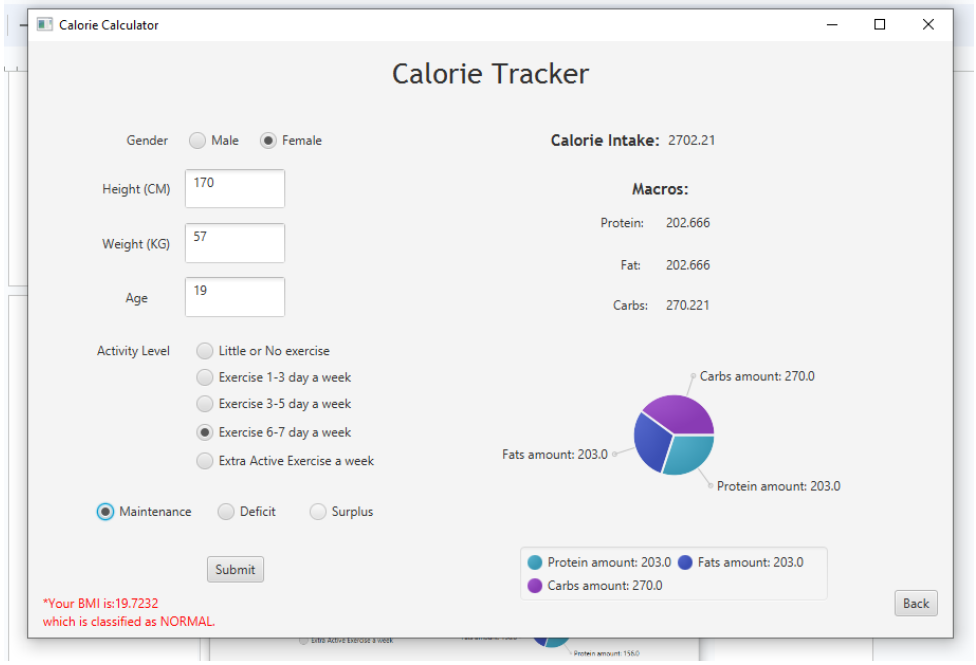


F. Legs

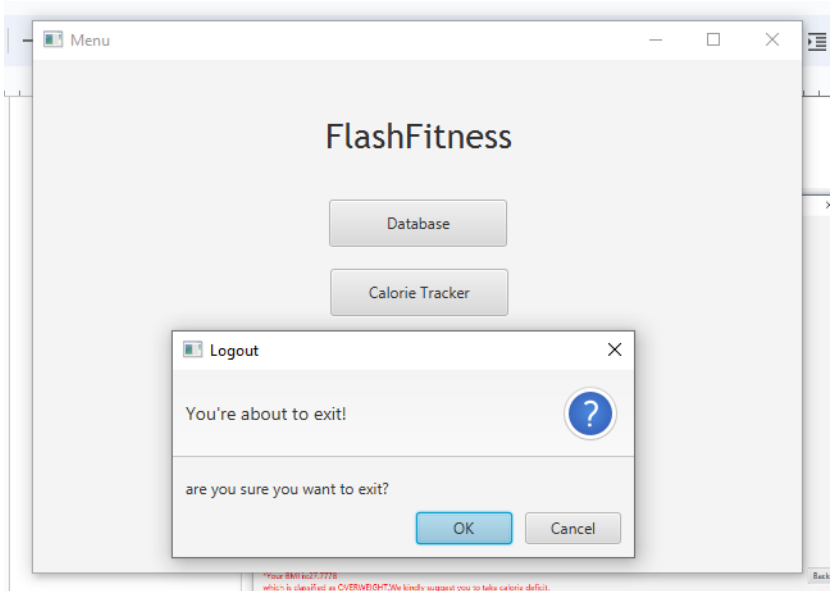


3. **Calorie Tracker** - Input Gender, Height(CM), Weight(KG), Age, Activity Level, and Calorie Goal in order to calculate the calorie intake and its macros.


Calorie Calculator
Calorie Tracker
Gender Male Female
Height (CM) 180
Weight (KG) 90
Age 25
Activity Level
Little or No exercise
Exercise 1-3 day a week
Exercise 3-5 day a week
Exercise 6-7 day a week
Extra Active Exercise a week
Maintenance Deficit Surplus
Submit
*Your BMI is:27.7778
which is classified as OVERWEIGHT.We kindly suggest you to take calorie deficit.
Calorie Intake: 2086.00
Macros:
Protein: 156.450
Fat: 156.450
Carbs: 208.600
Carbs amount: 209.0
Fats amount: 156.0
Protein amount: 156.0
Protein amount: 156.0 Fats amount: 156.0
Carbs amount: 209.0
Back


Calorie Calculator
Calorie Tracker
Gender Male Female
Height (CM) 170
Weight (KG) 57
Age 19
Activity Level
Little or No exercise
Exercise 1-3 day a week
Exercise 3-5 day a week
Exercise 6-7 day a week
Extra Active Exercise a week
Maintenance Deficit Surplus
Submit
*Your BMI is:19.7232
which is classified as NORMAL.
Calorie Intake: 2702.21
Macros:
Protein: 202.666
Fat: 202.666
Carbs: 270.221
Carbs amount: 270.0
Fats amount: 203.0
Protein amount: 203.0
Protein amount: 203.0 Fats amount: 203.0
Carbs amount: 270.0
Back

4. Exit



VI. CONCLUSION AND FUTURE WORK

The group has achieved a commendable level of success in developing a fitness application for Lasallians. While we initially considered including an extra feature, time constraints compelled us to prioritize and, ultimately, exclude it. Additionally, the project presented various challenges at each phase, especially during the planning stage, where we had to meticulously determine the features, design, and code implementation.

Despite facing time constraints and other commitments from different courses, we persevered in starting and progressing through the project. Thanks to our determination and effort, we successfully completed the development and delivered a project that meets the required standards and expectations.

Moving forward, should our group or any other undertake a similar project, we recommend enhancing the application by incorporating more features and fostering creativity. It is crucial to diligently plan the project, from its inception to its execution. Embracing the coding aspect fearlessly is essential, with a reminder to grasp the foundational concepts and basics, which serve as a strong framework for developing such applications.

The group's eagerness to develop and produce the "FlashFitness" application is fueled by the impact it can have on the lives of Lasallian students. By providing a comprehensive solution to enhance their lifestyles, bodies, and overall health, the app has the potential to create a positive and transformative experience for its users. Moreover, this will serve as a

pivotal test of the group members' acquired knowledge and skills from this course, offering them a real-world opportunity to apply everything they have learned in a practical and meaningful way. With a deep understanding of the challenges faced by students in maintaining a balance between academic pursuit and self-care, our proposed application will serve as a beacon of hope. We are dedicated to making this application accessible to DLSU students to provide and ensure effectiveness and relevance to the said issue.

VII. CONTRIBUTIONS (Individual contributions)

Name	Contributions
Aldaba, Samantha Louise D	1. Contributed to the general idea and layout of the application 2. Worked on the overall documentation and final pape 3. Made the poster
Caidic, Redrick Marel B.	1. Contributed to the paper works 2. Provided ideas 3. Researcher
Cid, Brent Benette F.	1. Contributed to the code-making part of the project 2. Wrote various parts of the proposal and final paper 3. Leader of the team.

VIII. REFERENCES

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