

GNG2101

Design Project User and Product Manual

Movement Reminder



Submitted by:

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1 Introduction

This is the User and Product Manual (UPM) document for the course GNG 2101 from Team Z08. It provides the necessary information for our clients to effectively use our application MovementBuddy. It also offers information about the prototype documentation of our product. The goal of our project is to develop a mobile application to help the client to do the daily exercises. Our initial assumption about our application was trying to provide the list of default exercises, remind to do her daily exercises, and keep the client on the timer page if she did not complete the exercises. After the three client meetings, our application goal changes into providing the list of default exercises, reminding her to do her daily exercises, and completing the data collection of daily exercises based on the requirements from the clients. The elements of this document include an overview about the application, our working processes from the beginning to the end, the instructions of using our application, troubleshooting and technical support about the application, information about the prototyping, and a brief conclusion and recommendations. The use of this application requires the authority to collect the data from the user's phones. To prevent the data, the database is already secured by the Thinkable platform. The users and developers are required to obey any policies from the Thinkable platform. If the user's data was explored caused by users' personal inappropriate operations, the developer would not take any responsibility for this situation.

2 Overview

Our mobile application is aiming to remind the people who have ADHD and hypermobile joints to do the daily exercises. The main reason for developing our application is to help the client to recover from the hypermobile joints and overcome the ADHD. This is important because globally 1 in every 100-200 people have hypermobile joints and 4.1 million Canadians use physiotherapy services per year. There is a lack of tools on the market and these people would benefit from a movement reminder that allows them to collect data. The client requires a mobile application to remind her to do the daily exercises since she has ADHD and hypermobile joints. The most important part of the application is the data collection. The client loves data. The data part will be one of the motivations for her to do the exercises. Compared with the other

applications on the market, our mobile application will work for both platforms which are Android and IOS. It will do the statistics of the data for clients. Clients can see a graph about her tendencies of doing daily exercises.

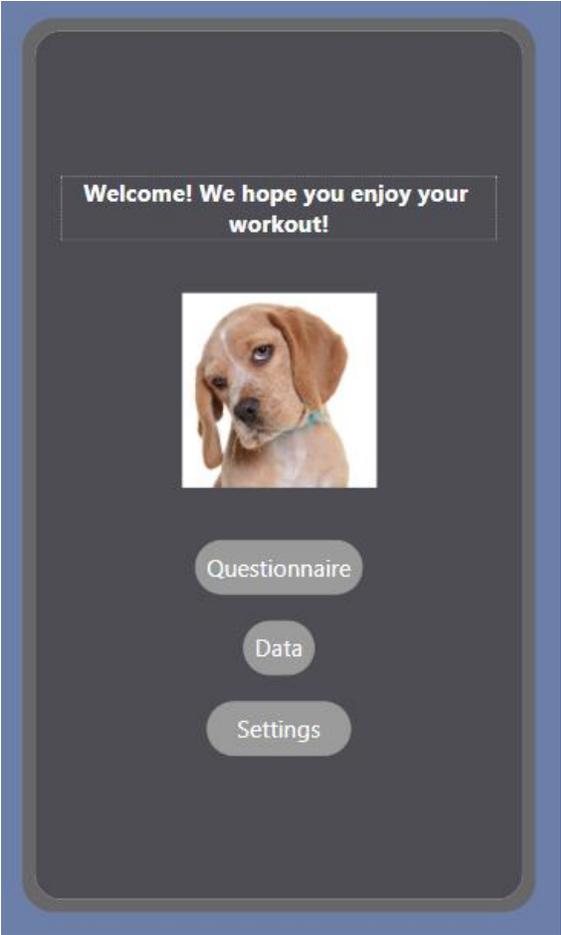


Figure 1 Home page of the application

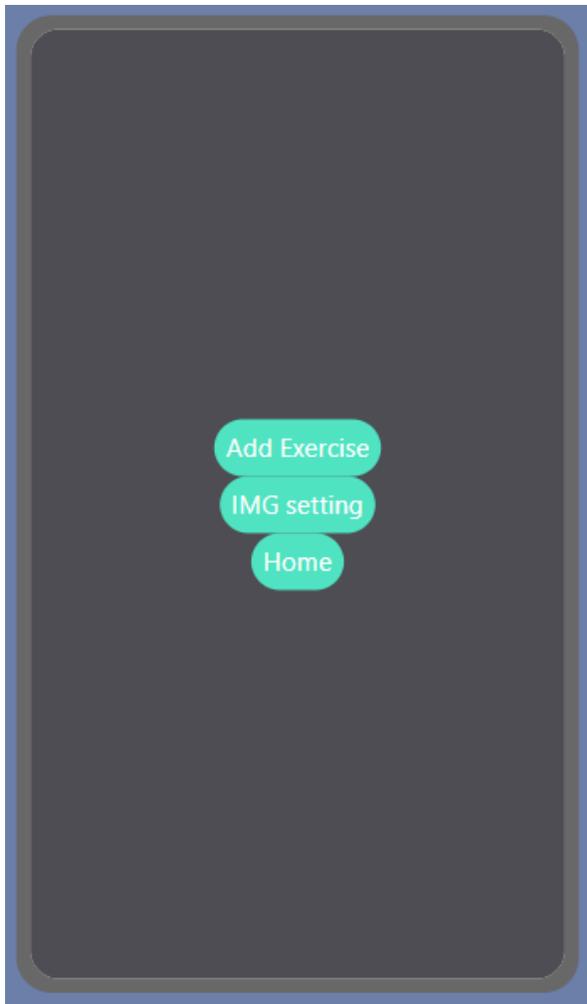


Figure 2 Settings page

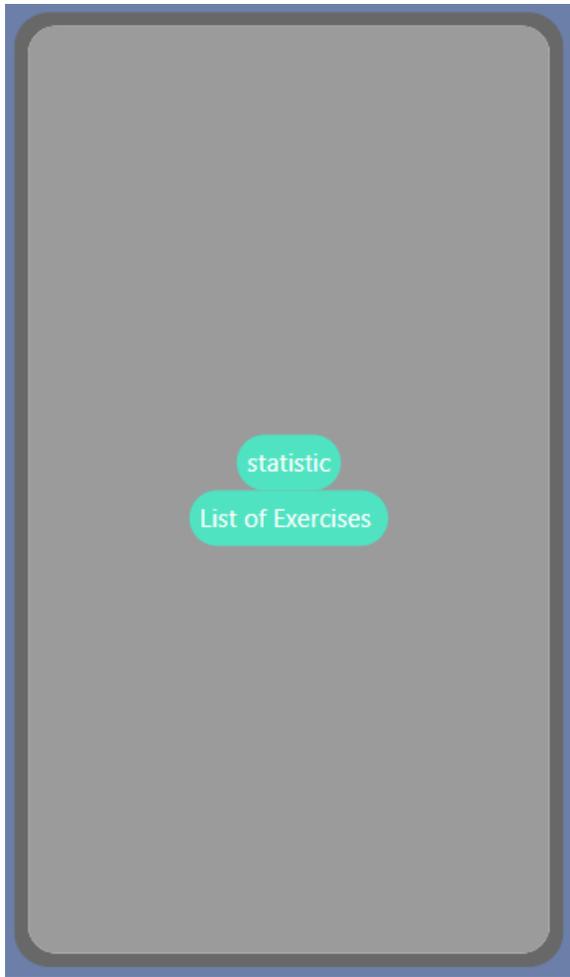


Figure 3 Data page

The image shows a mobile application interface within a blue-bordered frame. It features three rows of text input fields. The first row is labeled 'Exercise 1', the second 'Exercise 2', and the third 'Exercise 3'. Each label is followed by a light gray rectangular input box containing the text 'Type here'. At the bottom of the interface, there are two blue rounded rectangular buttons: 'Home' on the left and 'Submit' on the right.

Figure 4 Modification and addition of exercises



Figure 5 Pain questionnaire



Figure 6 Pain locations/questionnaire page

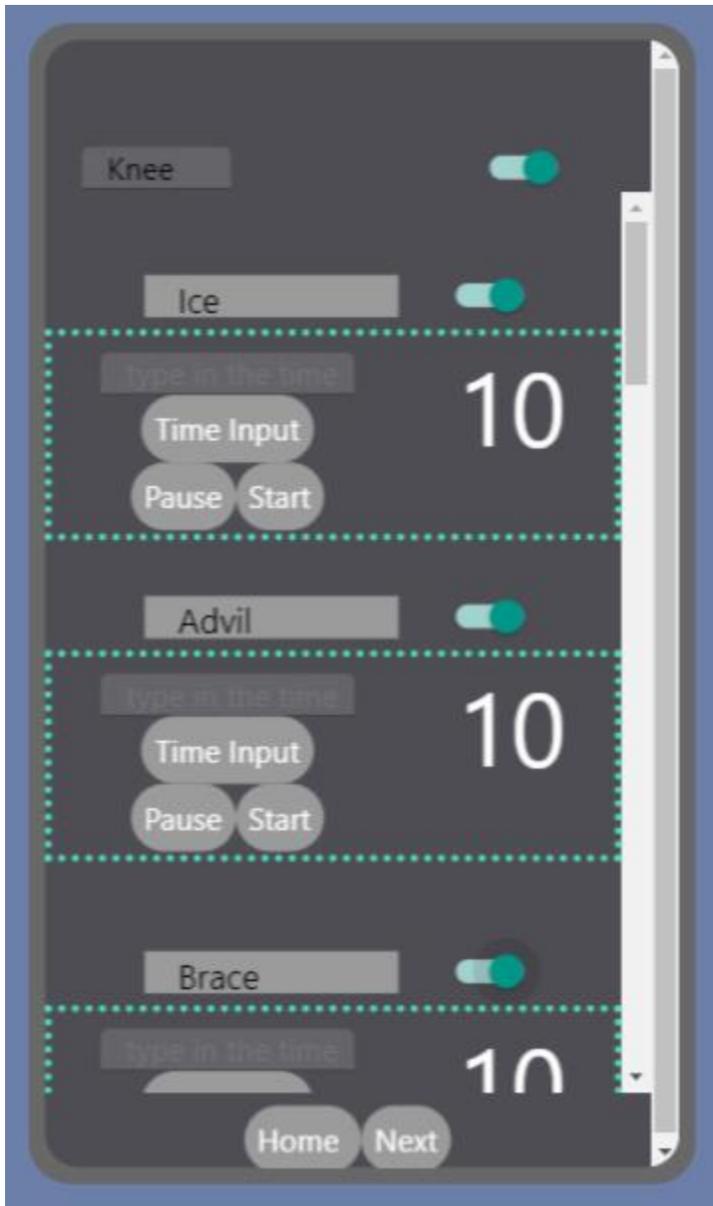


Figure 7 Workout timer feature page

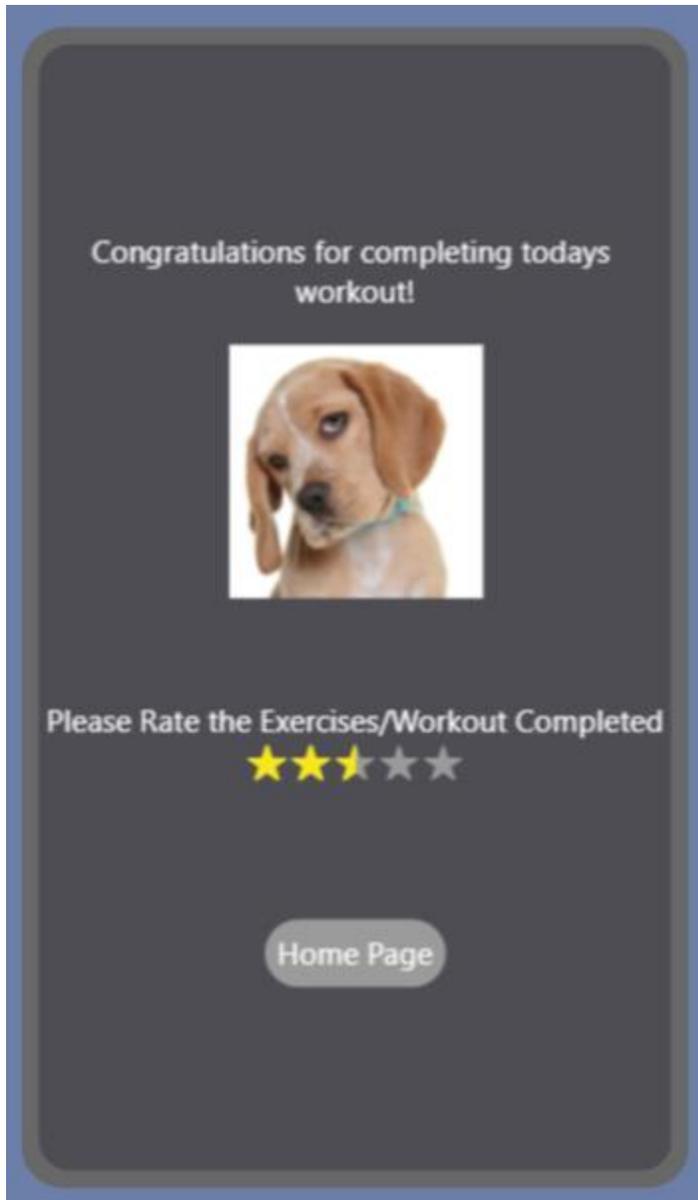


Figure 8 Congratulation's page

Here are the pages of our final prototypes. The key feature for the system is offering daily exercises for the users and making sure they do it daily. The system will collect the data of doing daily exercises and provide the statistics of the data for users. The main page of our mobile application is the home page. The home page provides users three options, which are to navigate to the questionnaire page or setting page or data page. The questionnaire page will offer the daily exercise for users. The setting page will customize the exercise list by interacting with users. The data page will offer data from what users did in the past. The application can operate on both Android and IOS. When the bugs appear, the application may quit automatically. In this situation,

please consider connecting with us or restarting the system. In most cases, restarting the system will solve the issues.

2.1 Cautions & Warnings

Before you use the application, users should make sure that their device is connected to the internet. For the data collection part, if the users want to see the data inside the background console, they need to ask for the administrator's password and account name. Do not explore the password and account name into the public. Please never save the cookies on any devices. It will put your data and our application into dangerous condition. Some hackers may have a chance to use this information for attacking your devices. If the user wants to send the application for their friends to use, they should prior to asking the design team for permission.

If users want to modify the application, they can do whatever they want. However, one original version of the application needs to be saved before they do that. If users choose to abandon using the application, please uninstall from the devices.

3 Getting started

The main page of our mobile application is the home page. The home page provides users three options, which are to navigate to the questionnaire page or setting page or data page. Almost each sub-page is linked to the home pages, so that users can go back to the home page if they want to change something from the beginning. Basically, the questionnaire page will offer the daily exercise for users. The setting page will customize the exercise list by interacting with users. The data page will offer data from what users did in the past. If the users want to go back to the home page, they can click the home button. After the user is done with the exercises, they can go back to the home page. The following section will discuss the system relative stuff.

3.1 Set-up Considerations

Before using our application, please make sure that your phone is connected to the internet. The recommendation from us is to connect to WIFI with your phone. It will increase the speed of data transfer between your phone and database. The application will work for both Android and

IOS. Our application will work on the newest version of these two operating systems. Our application will accept any devices with these two operating system versions.

3.2 User Access Considerations

Initially, users will only have access to the use of our mobile application. In general, we will not give them access to modify our application by themselves to avoid the bug issues. However, if users really want to customize the application, they should ask us for permission and do the modification on the copy version of our application.

3.3 Accessing the System

Our mobile application works based on the internet and the data access permission. Since the application collects personal data, users need to give permission for us to collect data from their phones. When doing the installation of the application, the users will be asked for authorizing the permission. While running the application, users should make sure that their devices connect to the internet. Some regions like China may require a VPN connection to get access to the data collection part of our application. To make sure the application works properly and does not violate the personal information, users should make sure that they completely close the application when they are not using it.

To gain access to the system the following information should be used to enter into the Thinkable development environment:

email: gnggroupz8@gmail.com

Password: GroupZ8123321!

Thinkable is accessed through Google accounts or emails. In this case Thinkable was accessed through an email. To change/reset the password one would have to change the password to the email. The user would then have to re-enter the new password into Thinkable to access the software.

3.4 System Organization & Navigation

The system consists of three main parts, which are questionnaire page, data collection part, and setting parts. Users do not need to login into the system by an account. They can directly use the application if they set up the application properly. The home page includes three buttons for users to select the operations. The questionnaire page offers users a list of exercises based on the pain part and level of their body. They can decide to do the exercises that they prefer, and set up the time length as they wish. The data collect part provides users with the statistics of the daily exercises that they do. Users can see the data displayed in the data user interface page. For the setting page, users can add the new exercises by themselves and change the home page picture as they wish. Please notice that the picture size should be the same as the one in the application.

3.5 Exiting the System

Our mobile application requires an internet connection. If the users want to completely quit our system, they need to go to their phones' backstage to kill the process of our app. For instance, if your operating system was IOS, you could simply drag the current user interface from bottom to the top and remove the page by sliding up the current user interface. To make sure no conflict in the future use, users should not quit the app during the data collection part of the app.

4 Using the System

The following subsections provide detailed, step-by-step instructions on how to use the various functions or features of the movement reminder.

4.1 Exercise offering

The key function of our mobile application is to provide the exercises for users and keep tracking if the users did it regularly. From the home page to the questionnaire page, you will first select the plain level and part of your body. Then, the system will navigate you to the exercise list. Users can select the exercise that they prefer to do and set the time length as they wish. After completing the exercise, the users will see the congratulation page. Finally, they can go back to the home page.

4.1.1 Change the picture

From the home page to the setting page, users can enter the IMG setting page. There, users change the picture in the home page.

4.1.2 Adding preferable exercises

From the home page to the setting page, users can enter the adding exercises page. There users can add the exercises into the exercise list that they prefer to do in their daily life.

4.1.3 Data Tracking

From the home page to the data page, users can either see the list of exercises that they did in the past via the “list of exercises” button or see the statics of the exercises that they do via the statics button.

5 Troubleshooting & Support

The best method for troubleshooting our application is restarting it. Almost all the issues can be resolved by restarting the application. If it did not work, users could try to reinstall it on their devices. If both of the methods did not work, users should try to connect with the administrator. If users have the accessibility for the backstage of our application, please do not try the debug stuff by themselves. First, they should ask for the permission, and then the debugging should be done on a copied version of the application. If users need help with debugging, they should connect with us one day before.

5.1 Error Messages or Behaviors

There are no error messages sent by the system. If any bugs appear in the application, it will automatically exit the system. Please do not discuss any bugs in any public platforms. If you caught a bug, you should connect us directly with email or phones. We will debug as soon as possible and send the update version via thinkable platform.

5.2 Special Considerations

There are no special considerations that should be considered for troubleshooting. Paramount consideration of the bug condition is restarted the system first to see if the bugs are still happening.

5.3 Maintenance

The maintenance for our application is the data collection part. As the users use the application, the data will become larger than the initial. We will regularly update the database. If the data was out of date like the data from one year before, we will clear it to move enough room for the upcoming data. To ensure our application works appropriately, we are glad to receive any feedback on the bugs or improvements. Users can connect with us via email or phones.

5.4 Support

The development of our mobile application was mainly contributed by Abdelrahman Nasr and Zhenqian Xie. If there are any issues with the application, please contact them via email.

Their email addresses are anasr082@uottawa.ca and zxie034@uottawa.ca. Please describe the issues that you meet in detail and clearly say what kind of help that you need from us.

6 Product Documentation

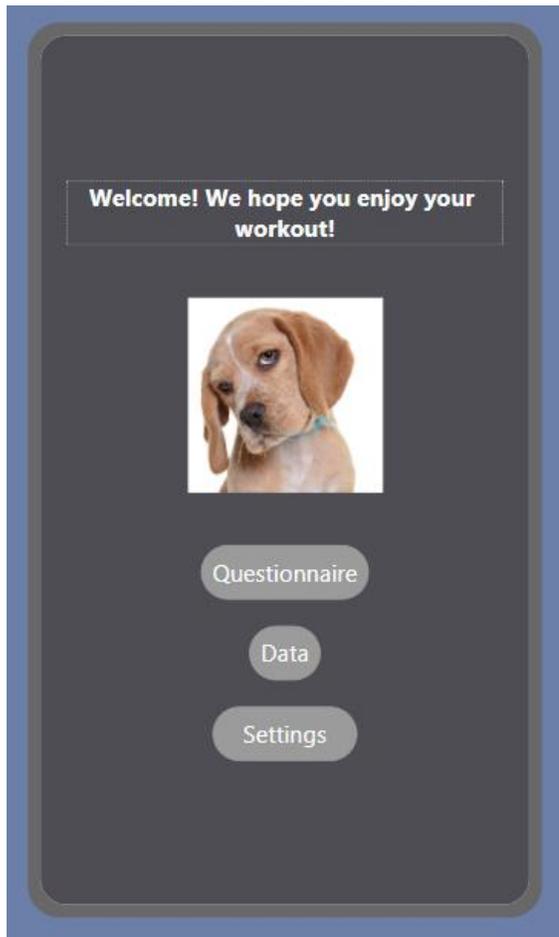


Figure 9 Home page of the application.

The first page of the application is the welcome page. It serves as a point of navigation for the app and a return page once the user has completed a workout. Initially the welcome page was used as a functional test in the first prototype to determine how the features would co-exist and interact with each other to accomplish the given tasks. Upon review it was decided that a home page would be a beneficial part of the application. The user is greeted with a message welcoming them to the

application and wishing them a good workout. Below is an image of a dog that was used for aesthetic purposes. Below the image and text field are three buttons; each button leads to a different page and down a different path of actions. The questionnaire button leads to the questionnaire and all the way to the workout, the data button leads to the data page and the settings button leads to the settings page. There are no other functional features on this page.

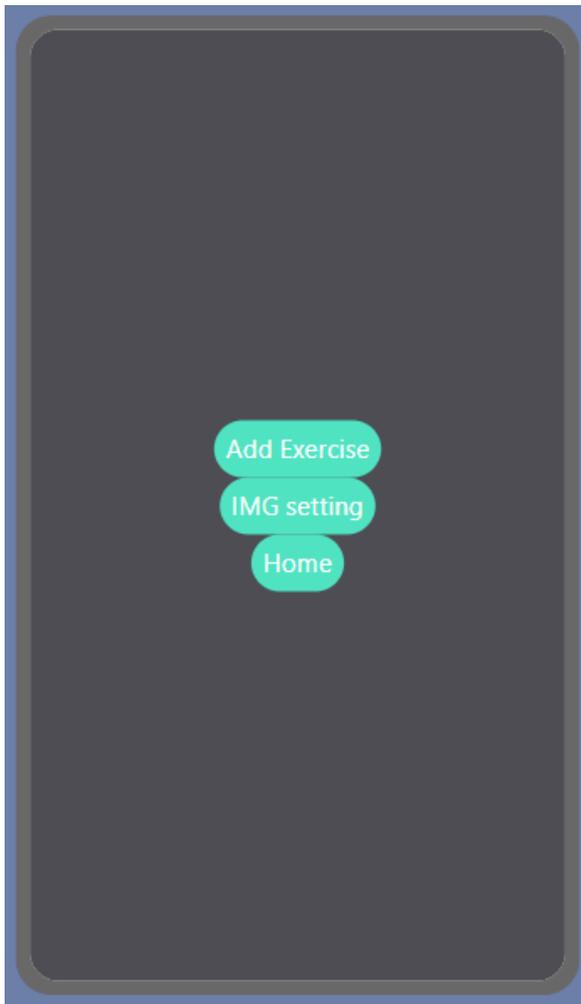


Figure 10 Settings page

The page has the directory to other functions in the application. The user can be directed to the customization page where they can add exercises. To achieve this goal the user must go through the settings page and press the “Add Exercise” button to get to the customization page. The IMG setting refers to the image settings of the app. This feature will be further developed in future steps. The

client wanted the ability to change images ergo a plan was in place to fulfill this desire. Lastly, the user can return back to the home page to perform other functions.

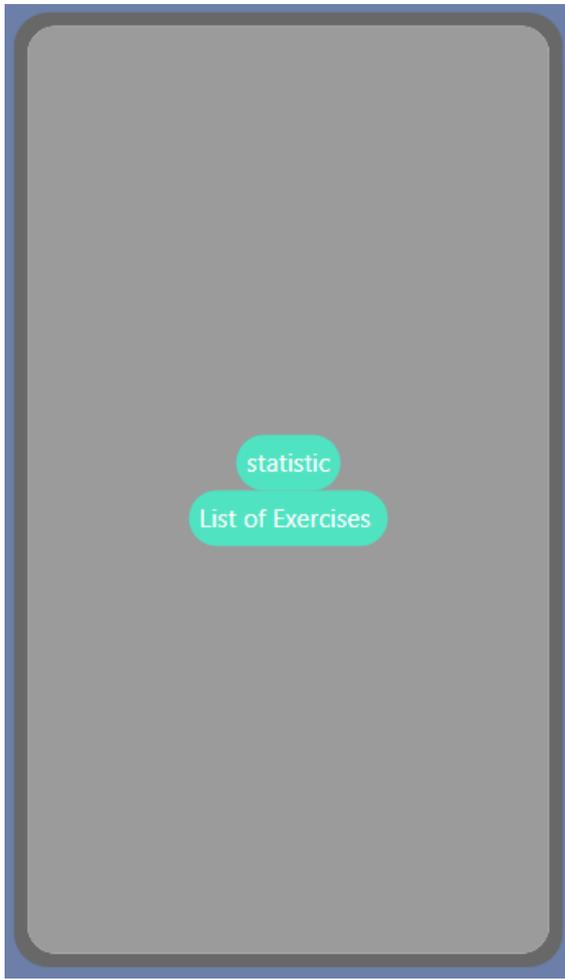


Figure 11 Data page

The data page allows the user to navigate to the data tracking display as well as the list of exercises. The list of exercises leads the user to an exercise list where they can customize and add exercises. Furthermore, the user can see the data displayed by going to the “Statistic” page. The statistics page extrapolates the data that was gathered throughout the application processes. Data such as the date, time, pain location, pain level, exercise performed as well as the duration of the workout are all gathered. Furthermore, this data is all displayed.

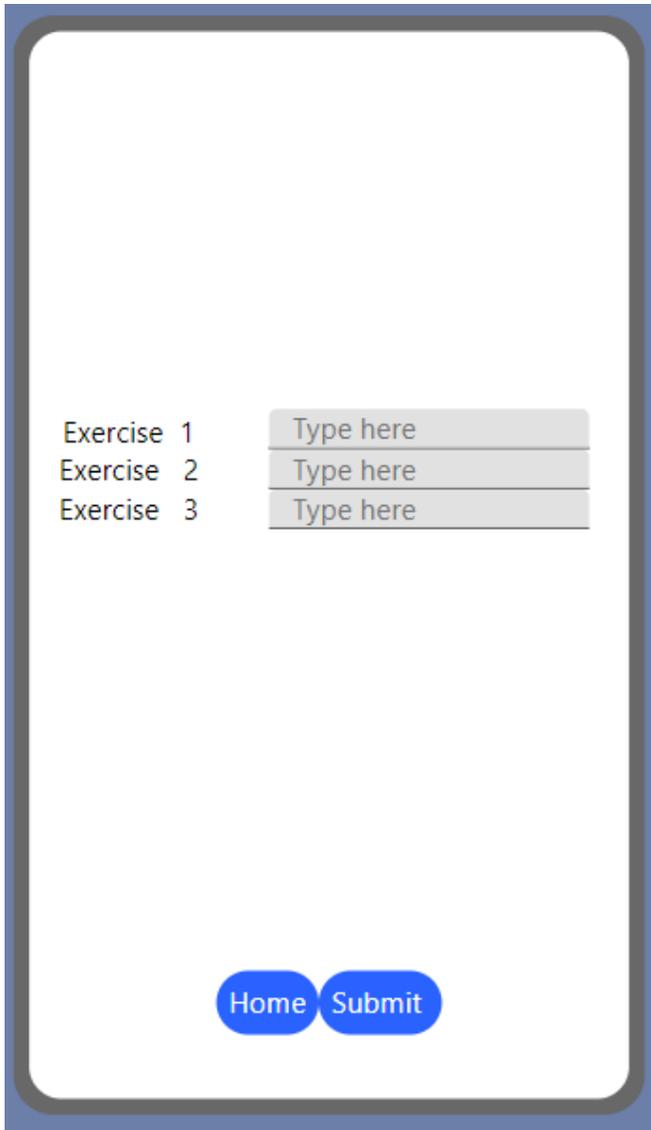


Figure 12 Modification and addition of exercises

The modification page allows the user to customize the exercise list. By writing into the text box a new exercise will appear on the workout list. Currently the user can only customize or add three exercises. There is not an unlimited number of customization options. This is a feature that will be implemented in future steps. After the user has filled the text field with the name of the exercise, they wish to add they must click the submit button so that the name changes appropriately in the exercise/activity list. The user can also redirect themselves to the home page after adding an exercise to perform other functions provided by the application.



Figure 13 Pain questionnaire

The pain questionnaire page appears once the user has clicked on the questionnaire button on the home page. Part of the motivational aspect of the app is that it is assumed that once the user goes to the questionnaire page, they want to complete a workout. Therefore, from this page the user must complete a workout to return to the home page. The questionnaire includes a time and date stamp that will be used in the data collection portion of the app to determine when the user works out the most and what time is most beneficial for them. The slider rule is also recorded in

the data aspect of the data tracking. From this page the user can go on to select the joints/muscles that hurt that they would like to stretch, in the “select pain locations” page.



Figure 14 Pain locations/questionnaire page.

The pain locations/questionnaire page asks the user to select which body parts hurt. This list is composed of all the locations provided by the client. When the user selects a location, the entry will be added into the data tracking component of the application. The selection of a location allows the app to then provide the user with exercises or activities related to the location. The

suggestions provided were from the list of exercises the client gave; the exercises had classifications ergo the suggestions or classifications could be made in the application as well. To continue to the workout option of the app the user can press the “Next” button.

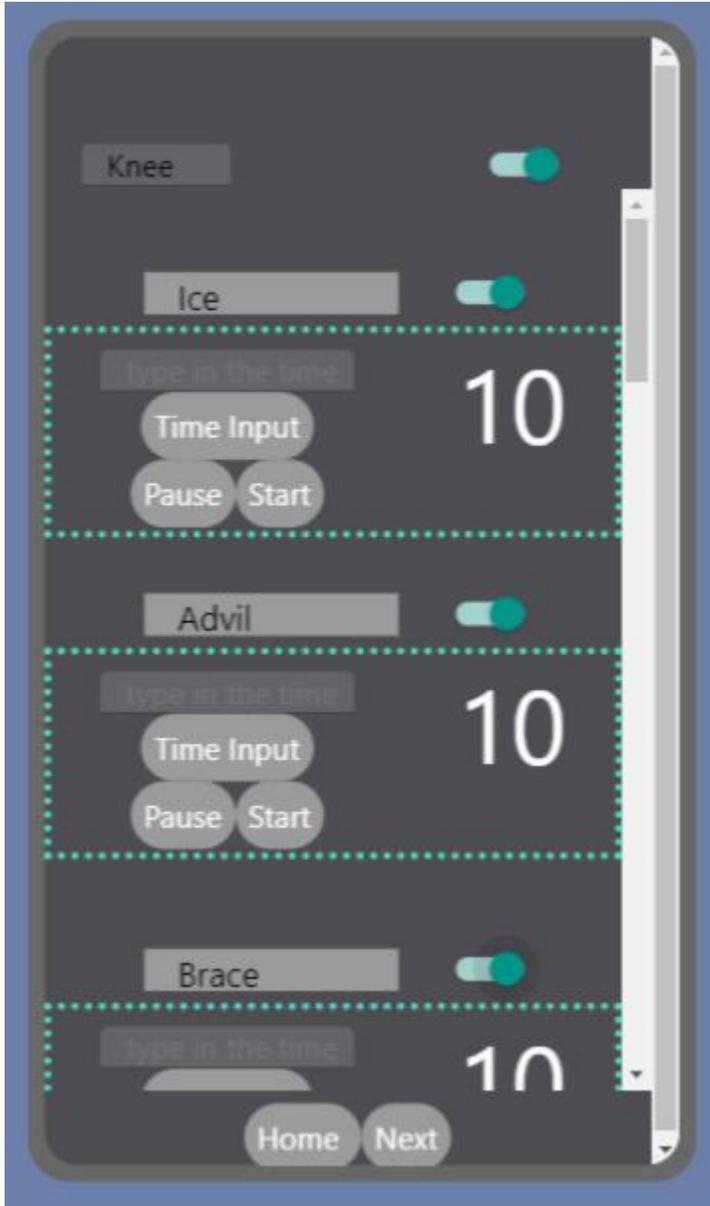


Figure 15 Workout timer feature page

The workout timer feature page allows the user to perform their workout. Based on the exercises that were previously selected the user is then able to see the suggested exercises associated with each location selected. This list was provided by the client ergo no medical advice

was given. The user can thus scroll down the page to see the locations selected and underneath each body part the user can scroll to see the list of exercises. Each exercise has a timer function with a start and pause button. The timer automatically starts at 10 seconds however if the user wishes to change the duration of the workout/timer the user can use the input feature. There is a text box where the user can type in the desired duration of their workout. The time will still be in seconds. The user will have to press the “Time Input” button for the change to be logged. Additionally, this data is stored in the data tracking feature of the app. The time, date as well as the location and exercises/activities chosen will be stored. When an exercise and the timer start the duration will be logged. Ergo if the user starts the timer for 10 seconds it will be logged even if they decide to edit the duration later. The new duration will be considered a new workout and consequently a new entry will be added.

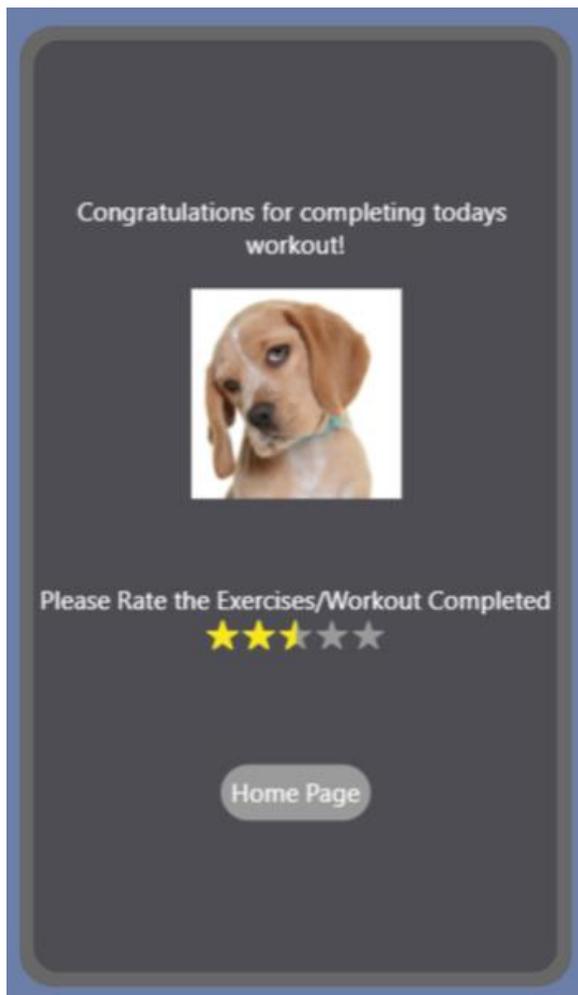


Figure 16 Congratulation's page

The congratulations page is the final page in the workout sequence. It appears once the user has completed the workout. A message appears as well as an image congratulating the user for completing the workout. At the bottom of the page there is a star rating feature for the exercise that was just completed by the user. The rating is currently set to the halfway point at 2.5 stars of 5. The star rating is recorded in the data tracking aspect of the app. The user can then return to the home page if they wish to perform another workout, view the data or perform any other functions provided by the application.

6.1 <Subsystem 1 of prototype>

6.1.1 BOM (Bill of Materials)

Table 1 Bill of Materials

Item number	Part Name	Description	Quantity	Unit Cost	Extended Cost
1	Thunkable	The software that will be used to design the application.	1	0	0
2	Phone	The device that will be used to test the application .	1	0	0
3	Laptop	The device used to design and test the application.	1	0	0
					0

7 Conclusions and Recommendations for Future Work

The project saw MovementBuddy create a movement reminder that set out to solve the issue of an exercise reminder with data collection for a client with ADHD and hypermobile joints. Numerous lessons were learnt throughout the prototyping course and through the client feedback. First and foremost, the solution needs to focus on data collection. Through the prototyping process and client meetings, it became obvious that the success was directly linked to the database. The client needs the app in order to extrapolate data and find trends to help her adjust her exercise regime. Consequently, the more data that is collected the better. Information such as the date and

time are also valuable pieces of information along with the more general information which includes the location of the pain, pain level and duration of the workout. The data was not displayed directly in the app in the graphs that the client would have liked. The team would like to implement a calendar view of the data along with graphs in the future. This would allow the user to find trends more directly instead of seeing the raw data in spreadsheets. The project focused on the individual or consumer level rather than a corporate solution. Ultimately, this led us to make specific design decisions. The product was created with our specific client in mind. Next the aesthetics should be simple. At the start when an initial prototype was created, there was a crazy color scheme however this was found to be distracting for the client who has ADHD. The bright colors and extreme scheme were too visually distracting. Consequently, a darker color scheme was added to better reflect the “Dark Mode” that the client likes to use with her phone. The aesthetics can still be improved which would be something that would be included in future steps. Furthermore, there should be a customization option to allow the user to add exercises. The client gave a list of exercises that were added directly into the app however should she change her mind she wanted the ability to edit the list. Currently in the final iteration of the application, there is the possibility to add/edit three exercises. This system was implemented because the team wanted to allow her to customize to some extent. The way that the system was created made it difficult to add an infinite number of exercises. This is a feature that we would like to add in the future. We also learned that images and videos take a lot of space. Initially in the first prototype there were images with the exercises however as the database of exercises grew, hosting these images and videos in the app ballooned the app storage size disproportionately. It was not worth keeping unless the user would be okay with consuming more of their phone storage space. Additionally, with the layout of our system it was difficult to keep the images organized in the workout portion of the app. This is because the app changed from having a list of exercises and one timer page to a page with timers associated for each exercise that would appear when the exercise was selected. The one timer page had an anti-cheating measure since the user had to stay on the page until the timer was completed, however this layout could not adapt to the linking of the exercises. The team struggled with linking pages together or variables from different pages thus alternative solutions were put into place instead. In the future the team would like to learn how to create better global variables and reinstate the anti-cheating measure. The anti-cheating measure relates to the need of the client to be motivated ergo we learned that this is something that should be included to keep

the user engaged when they have started the workout. Finally, the team would like to add additional features in the future such as a journal feature to keep track of thoughts associated with the user’s workout or health. The team learned a great deal about app development and how to cater the app to the client’s needs. Further improvements are needed to create the best user experience and to solve all aspects of the design problem.

APPENDICES

8 APPENDIX I: Design Files

Table 2 Referenced Documents

Document Name	Document Location and/or URL	Issuance Date
GNG Project.zip	MovementBuddy Z8 MakerRepo (makerepo.com)	03/07/21