Milestone 5

Version 1.0

Mental Health App

By:

Daniel Bornemann
Joshua Breininger
Phi Duong

1. **Team Information**
   1.1 Names and Emails of Project Members
   ● Daniel Bornemann - dbornemann2018@my.fit.edu
   ● Joshua Breininger - jbreininger2018@my.fit.edu
   ● Phi Duong - pduong2018@my.ft.edu

   1.2 Faculty Advisor
   ● Dr. Bernhard - pbernhar@cs.fit.edu

   1.3. Client
   ● Calvin Schwartz
   ● Maya Lindseth

2. **Project Details**

   2.1 Progress of Milestone 5

Task	Josh	Phi	Daniel	To Do
Create poster and E-Book page for Senior Design Showcase.	70%	15%	15%	Complete
Finish making and implementing graphical assets and continue adding new monthly themes.	50%	0%	50%	In Progress Themes are complete, new art will be constantly added, as much as we can with time allotted.

Create a full scenario generator that checks if certain requirements are met to decide on a random scenario and correctly fetches graphical assets to match the scenario.	20%	40%	40%	In Progress New scenarios and art will be added constantly until the end of the project.
Add some "achievements" based on logged information to allow for more possible scenarios.	10%	0%	15%	25% Need to implement the achievements using the created framework - framework for storing achievements and if they are completed.
Research for any modifications to be made to notifications or logged information.	33%	33%	33%	Continuous checking through the entire project.

Complete calendar that shows a day's logged information to the user.	20%	50%	20%	90% done Need to finish displaying pop up.
Finish deciding over a name for the app that properly expresses the desired usage.	33%	33%	33%	Complete
Finish the graph implementation.	20%	50%	10%	80% done Need to finish adding other logged information and create special overlay graph.

2.2 Discussion of Milestone 5

Task 1: Create poster and E-Book page for Senior Design Showcase.

Our poster and E-Book page contains temporary images for graphs as a hallmark of where we are at this moment, although they will be changed by the showcase date to their final versions. We also don't have our evaluation numbers yet, due to us not yet implementing our data pruning, which is a priority alongside graphs in Milestone 6.

Daily Log App

Joshua Breininger, Phi Duong, Daniel Bornemann
Faculty Advisor(s): Dr. Philip Bernhard, Dept. of Computer Engineering and Sciences, Florida Institute of Technology

Motivation

❖ Many college students have difficulty balancing school life with maintaining health related aspects of their lives such as diet and exercising
❖ College age people have a trend of negative mental health
❖ Mental health is partially influenced by factors such as food choices and exercising
❖ Apps used to measure these factors for noticing trends are often unwieldy and feature bloated
❖ Excess hurdles serve as walls to those who lack the motivation to log their habits

Goal

❖ Create an Android application designed to be streamlined, quick and intuitive to use
❖ Log information about the user, allowing the user to choose what information they want to give
❖ Display and notify trends that could contribute to negative mood and mental health
❖ Provide a simple game to give a sense of progression and motivate the few minutes required to log daily information

Implementation

Approach

❖ **Log Daily Information**
➢ Keep track of if a certain food group was eaten in a day
➢ Log minutes spent exercising
➢ Record user rating of mood for each day
❖ **Logged Graphs**
➢ View daily, weekly, and monthly logs through graphs to monitor trends visually
➢ Graphs for diet, exercise and mood available, including the ability to overlay them
❖ **Notifications and Settings**
➢ The app sends notifications to the user when launched based on user settings on when and whether to be notified or not based on trends
➢ Directly reminds to consider making certain choices, such as eating beneficial food groups
❖ **Game**
➢ The app depicts a fantasy character going through daily life on an adventure alongside the user
➢ Every day the user logs information, the character undergoes some kind of scenario that is told to the player with accompanying art
➢ These scenarios are stored in a log for the user to view over time
➢ As the months change, the app's background changes to depict time passing
➢ As the user performs certain actions or logs certain information in a trend, achievements are unlocked that add new possible scenarios to occur

Evaluation

❖ User Surveys
❖ Average time of logging daily information = [TBD]
❖ Average time of logging daily information and viewing all graphs = [TBD]
❖ Space occupied by empty app = [TBD]
❖ Space occupied with 6 months of logs = [TBD]
❖ Logged information is pruned after 1 years time (SUBJECT TO CHANGE IN NEXT MILESTONE BEFORE SHOWCASE)

Home Screen   Sample Scenario

Sample Graphs using Mood
[WILL BE CHANGED IN M6]

FUTURE WORK

❖ Expand game to have direct gameplay
❖ Provide more scenarios and art
❖ Create optional ability to provide more in depth information to the app to record

ACKNOWLEDGEMENTS

❖ Dr. Chan for continued support through the project
❖ Dr. Bernhard for advising and aid as we worked
❖ Thanks to those who participated as clients and users in the development
❖ MPAndroidChart for providing free open source graphing libraries

Project Name   Daily Log App
Team Lead: Daniel Bornemann
Team Member(s):   Joshua Breininger, Phi Duong
Faculty Advisor(s): Dr. Philip Bernhard, Dept. of Computer Engineering and Sciences, Florida
                    Institute of Technology

Project Description

In the difficulties of college life it can be a large prospect to make good choices which can influence in part your mood and mental health. Apps that seek to help someone log choices like these, are commonly feature bloated and tedious to use, leaving unmotivated or struggling individuals outside of the target audience. The Daily Log app is an app designed to give the benefits of such a logger, monitoring simple general information that is still important to keep track of when taking care of yourself. The goal of this app is to give these self monitoring benefits efficiently while providing motivation for long term usage and logging through a simple game that develops overtime.

Approach

The application for this project creates a long term log of user supplied information about their choices, as well as ways to interpret that information. The app logs each day basic diet, exercise and mood information to which the user is free to skip at any point. When this information is logged for the first time in a day, the app displays a random "scenario" that a character that undergoes a daily life alongside the user has gone through for that day along with associated art. Achievements are available based on user inputs which add more available scenarios to occur. The background of the app changes over time to further expand on the sense of time passing. The user can view their logged information through various graphs to visually see any potential trends in mood and diet or exercise, or view specific days in a calendar. Notifications are available and can be customized by the user to remind the user to make good health choices.

Evaluation

To evaluate the app, checks were made to ensure the stability of the app and database. For efficiency, the speed of going through the app as a user would was examined. To ensure the app does not bloat in data, we prune very old data, and we then filled an extended period of time's worth of data as a test to ensure there was as little impact on the phone as possible.

Challenges and Future Work

The primary challenge of this app was that none of the team members were familiar with working with Android apps, and had limited experience in Java and XML. In the future, the app could be expanded to contain a game with more gameplay, such as following a basic turn based RPG format while keeping the scenario option for users who would not want to partake in a more rigorous game. More scenarios, art and achievements could be added to have more events that the user can view.
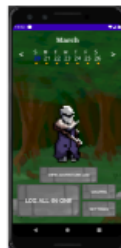
Task 2: Finish making and implementing graphical assets and continue adding new monthly themes.

We ended up implementing 6 different backgrounds to the app, 1 background for every 2 months. To do this, we check what month it currently is and switch the background of the main screen to the background assigned to the month. The month images are stored in the raw folder along with the character art. We also added a new background for the buttons which is a stone gray texture. We found that to have images that change based on factors, they all need to be present but transparent in the xml, to where we make the ones required for the scenario or month visible programmatically.

Task 3: Create a full scenario generator that checks if certain requirements are met to decide on a random scenario and correctly fetches graphical assets to match the scenario.

We created a SQL table for the scenarios, storing the image ID it is associated with, along with the scenario text to be displayed with it. We created a retrieval function in Java to grab the needed information from that table, usually the path and text. Before we could implement the new SQL table and retrieval function that we created, we had to create another xml that would appear after going through the "log all-in-one" popups. This new xml is very similar to the main screen except it does not include any of the buttons or the calendar. The screen has a blank space for text and an image where the SQLite queries come in. Our queries randomly select a scenario from the scenario database and then display the selected text and image onto the screen. In the sample the scenario's image ID is that of the player's and the scenario text is simply "Player has found Player." Our SQL statement uses the following logic:
SELECT * FROM scenariotable ORDER BY random() limit 1;

This statement randomizes the scenario table and grabs a single row from it - this should be fine efficiency wise due to the scenario table being relatively low compared to what would be considered a large SQL table, although we will test it in Milestone 6 and change the logic if it proves to take up too much time.

Task 4: Add some "achievements" based on logged information to allow for more possible scenarios.

We have the SQLite table set up for storing achievements that can have a marker to see if they are cleared or not, so that we don't repeat achievement checks. Once they are cleared, we insert the new scenarios tied to the "unlocked" object into the scenario table to now be used by the generator for the user. No achievements have specifically been implemented yet, but the framework is in place. We chose to use an SQL table as achievements are subject to change - as in we need to modify them to flag them as complete, which would require file system saves in a file or using an SQLite table for them, which is according to SQLite more efficient time wise anyways. We can easily add the scenarios unlocked by an achievement by hard coding INSERT statements to the scenario table that are triggered when the achievement is unlocked, which will permanently include those statements in the pool for randomly grabbing a scenario.

Task 5: Research for any modifications to be made to notifications or logged information.

We did not find any information conflicting with our previous information, or anything very pressing to add at this time. We plan on continuing to monitor research papers to reference in case we want to add new choices to log for the user, although at this point in the project entirely new factors outside of diet, exercise and mood would likely be unfeasible to add.

Task 6: Complete calendar that shows a day's logged information to the user.

The calendar is mostly completed, although we did not have the time to completely finish the pop up that displays the stored information on a given date clicked by a user. We do have the SQL logic done and retrieved for this pop up, and aside from some issues with implementing a visual indicator to the calendar's days to signify what day has data or not, we just need to finish the xml for the pop up and call it from the the large calendar having its days being clicked.

Task 7: Finish deciding over a name for the app that properly expresses the desired usage.

We decided on the name "Daily Log" to use for the app as it straightforwardly explains exactly what the app does, while remaining fairly simple. It also does not convey any medical authority which we wish to avoid insinuating the app has, as it is primarily a logging and self monitoring tool, not an app that could "heal" mental difficulties.

Task 8: Finish the graph implementation.

The graph correctly shows the mood levels and exercise minutes in bar graph format, and the graphs now include the averages for the month and year. The time measurement differences are all included on one screen, so looking at for instance the mood graph you would see the mood graphs across all units of time. The user can select a button at the bottom to toggle between the graphs for mood levels and exercise, which each show their respective graphs. Currently there are plans to add a new feature that merges all three measurements of graphs into one for visual trend examination for the user.

2.3 Discussion of Team Contribution

- Joshua Breininger worked on the database, graphical assets, implementing the assets, the scenarios, the achievements, and the poster and E-Book page.
- Daniel Bornemann worked on implementing the graphical assets, the scenarios, the achievements, and the poster and E-Book page.
- Phi Duong worked on the database, the calendar, the graphs, and the poster and E-Book page.

2.4 Plan for Milestone 6

Task matrix for Milestone 6

Task	Josh	Phi	Daniel
Test/Demo the entire system	20%	30%	30%
Create User/Developer Manual	70%	15%	15%
Create Demo Video	50%	20%	30%
Continue adding scenarios and art	70%	10%	20%
Add achievements using the framework laid down	20%	20%	60%

Allow user to change name of player character	70%	15%	15%
Add disclaimer splash screen	20%	20%	60%
Finalize graphs	10%	80%	10%
Finalize calendar	10%	80%	10%
Prune Database	40%	40%	20%

2.4 Discussion for Milestone 6

1. Testing the entire system is required for the showcase, and will require us to be finished completely with our database and overall app. We will check over each feature to ensure there are no errors or major efficiency losses, as well as run the app on an actual phone to time how quickly the app loads, and ask our clients and some test users to use the app for the first time to see how long it takes them to use it fully to demonstrate how intuitive it is.
2. The User manual is a required document that will describe how to use the app as a user, explaining the features and how they should be used. We also will include aside from the required information how to add to the scenario and achievement list for developers, as they were made to be very easy to expand upon. We will most likely include a demo video going through the entire app, examining each feature that is available to the user, being a mock example of how someone might use the app in a day.
3. Since our scenarios and their object art associated with them are currently low in number, we need to add to them. Since the framework to use them and grabbing them randomly is in place, we just need to add to the database of the scenarios as much as we can with the time we have to try and avoid repeats at least in a month's time.

4. Our achievement database table is set up, so we just need to add many achievements, and implement the various ways they will be completed, such as data being completed for X amount of time, and so on. Each achievement already has functionality to be tied to a certain number of scenarios which will be inserted into the scenario database when the user completes the achievement. Actually triggering an achievement will be fairly simple and we have flags in the achievement table in place to avoid checking for an already completed achievement.

5. We want to allow the user to change their name, which we can simply save to the database to be stored for future use, to which we can just call it when we need it when printing a scenario. The option to change the name will be placed in the settings menu, which will trigger a pop up which saves the contents to the database. Although beyond our scope, ideally checks would be made to avoid offensive names.

6. We want to include a simple splash screen that plays at the start of the app, which lasts only a second or two to ensure the app is still streamlined. It will display a disclaimer to ensure the user understands the purpose and scope of the app and to consult professionals in matters of mental health. This can be accomplished with a simple xml that occurs for a few seconds before calling the main part of the app.

7. We need to complete the graphs for the diet and exercise logging, as well as complete the overlay graph. This graph will require some calculations to ensure that it visually makes sense, ensuring the maximum of the exercise minutes in the graph matches the maximum of the mood in the graph, so trends can be viewed. We elected to remove all units of measurement in the overlay graph as they will only make it more confusing to read.

8. For the calendar, we just need to finish up the pop up displaying the already obtained information about a given day, along with its respective close button. This is just a repeat essentially of our adventure log pop up, with different text being displayed. We also need to give it a special background to make it visually match the rest of the app. We also have had some issues making a visual indicator to say if a day in the calendar has data, to which if necessary we can set aside the scope of the project.

9. To prune our database, we will make a check on app activation to see the current date. Currently we will prune all information in a previous year's log, to which only the average month and year information will be saved to avoid bloat. We are prepared to change this to occur every other month as it is possible that saved database information can be larger than we expect and require more intense pruning to keep the app size small. We also will consider just pruning all days X number of days before the current date, although we would rather do it by an

immediately understandable unit of time that is clear to the user of what will be pruned.

2.5 Dates of Meetings with Clients

1. March 8th, 2022
2. March 15th, 2022

2.6 Client Feedback

- Finish making the app look consistent visually.
- Add more food groups to track?

2.7 Dates of Meetings with Faculty Advisor

- March 21st, 2022 - Email sending documents and progress report for feedback.

2.8 Faculty Advisor Feedback

Faculty Advisor Signature: _____ Date: _____

Evaluation by Faculty Advisor

Faculty Advisor: detach and return this page to Dr. Chan (HC 214) or email the scores to pkc@cs.fit.edu

Score (0-10) for each member: circle a score (or circle two adjacent scores for .25 or write down a real number between 0 and 10)

Joshua Breininger	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Daniel Bornemann	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Phi Duong	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10

Faculty Advisor Signature: _____ Date: _____