Project Title: Plan-t a Pomodoro

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Abstract

We live in an age where patterns of procrastination are pervasive in our society. It would not be common to say that we don't get interrupted by notifications while concentrating. As the pace of modern life increases, people start to feel anxious and stressed out. Common procrastination behavior makes people seek out time management solution to increase their productivity rate. One of the most effective methods is the Pomodoro Technique, created by Francesco Cirillo.

The project is aimed to build an app that implements the Pomodoro Technique in a two semesters development cycle. The app will be built on Android with the goal to satisfy users through the stages of planning, visualizing, tracking and recording. Designs and features/components of the app will be implemented in XML and Java in Android Studio. Open Libraries such as Graphview and JSoup use for graph plotting and parsing website's data. Backend service will be provided by Google Cloud-Based API Firebase to handle user's authentication and app's data.

Plan-t a Pomodoro is an app that builds off the Pomodoro method's philosophy. The objective is to achieve more with less, but also move through tasks quickly and consistently. The reduced complexity lets users focus solely on their efforts in their activities.

Background

Everyone procrastinates. It's inevitable. What if there is an app that can increase the productivity rate by implementing the Pomodoro Technique. A technique that satisfy users through the stages of planning, visualizing, tracking and recording. The technique, created by Francesco Cirillo in the late 1980s, with an assumption to view time a different way. The rules are simple:

1. Decide on the task you want to do
2. Set a timer for 1 pomodoro = 25 minutes
3. Work on the task without disruption
4. When time is up, record the pomodoro
5. If you are not tired, Continue. Else, Take a break.
    - Short Break = 5 minutes
    - Long Break = 30 minutes, required 4 pomodoros completed for a long break.
6. Repeat the Process

The action of recording provides an effective tool for self-observation and decision-making. Users can track how many pomodoros they work on or average per day, week, or month. There are many applications that adapt this technique. Here are some examples. Timerdoro,

web application, for people who need multiple timers. Engross, android app, that can compile reports at what times of the day you are focused on your pomodoros. What set Plan-t A Pomodoro app from other pomodoros technique are its user-friendly features and free of cost. The project is aimed to create an app with a user-friendly system to manage tasks by the Pomodoro Technique.

Objectives

Plan-t a Pomodoro is an app that is developed around the Pomodoro technique to break down work into intervals, therefore making tasks seem more manageable. The app will provide forms for users to create an account and sign in, using Google Firebase API to authenticate and register users. The real-time database will keep track of users' data in real time when data is recorded/submitted. As users try out different features in the app, the app can start measuring user's productivity rate. Using the recorded data set, users can view their stats to implement changes in the future. Below is a list of the app's features and components...

1. Panic Button Component – Whenever users feel like they are distracted while working on a pomodoro, they can tap on the button and it will say "Just Do It, Hang in there...".

2. Pomodoro Timer Component – A built-in tomato timer to keep track of the work intervals. Each work interval ranges from 15 minutes to 45 minutes.

3. Pomodoro Planner Form – A simple planner form that users can use to fill out on what they want to do for the day. The tasks are listed based on importance or priorities.

4. Reported data(statistics) – Users can view their performance through data visualizations. From there, users can make improvements in the following day, week, month.

5. Motivational Quotes – When users open the app, there will be a motivational quote for users to read. The quotes are updated daily. In addition, users can save their favorite quotes.

6. Account Registration Form – A registration form for the users to sign up. Basic user's requirements: Name, Email, etc.

7. Login Form – A form for users to login into their account. When user select to sign in, the information in the form will be verified with the Firebase Database server.

8. Forgot Password Form – A form for users to fill out and submit if they forget their password. An email to reset their password will be sent to their registered email.

9. Stack a Pomodoro - A streak system that keeps tracks of activities. As long as the user dedicates one Pomodoro a day for that specific task, the Pomodoro stacks up for each completion.

10. Animations (If time permits) – Animations between activities to make the app more appealing for users.Here is a diagram on how the components/features are working together.

All of these features will be implemented into an android app using Android Studio. Android Studio Ide support built-in emulators for different android versions to run the app, in addition, enables app integration with Google Platform: Firebase. The app will be tested on real users throughout the development cycle to test the effectiveness of each feature. Then using feedback to refactor and improve the features.

Significance

The project is worth considering because the selected features/components can benefit many people and increase their productivity rate over time. The applications of this project can be used as a system to help users be more strategic, reflective, and aware. For future development, the flexbility of features and components allows the system to be extended/replicated to other applications based on user's preferences- web app, ios app, etc. Below is a list describing how these features can help users to recognize and meditate on their patterns of procrastination.

- Pomodoro Timer: A built-in tomato timer to keep track of intervals, notify users, and breaks. Users don't have to rely on an external timer.
- Stack A Pomodoro - The feature works effectively if the user wants to develop a habit. As long as the user dedicates one Pomodoro a day for that specific task, the Pomodoro stacks up for each completion. The stacks of pomodoros create a chain image in their mind, making users not wanting to break the chain.
- Data Visualizations – Images to help users see their performance through data visualization of graphs and tables. From there, users can make improvements in the following day, week, or month. The cycle of improvement is enforced through usage.
- Google Cloud-Based Platform (Firebase) – Database can be developed across platforms/applications and accessed in real-time. All applications can retrieve and sync data dynamically.

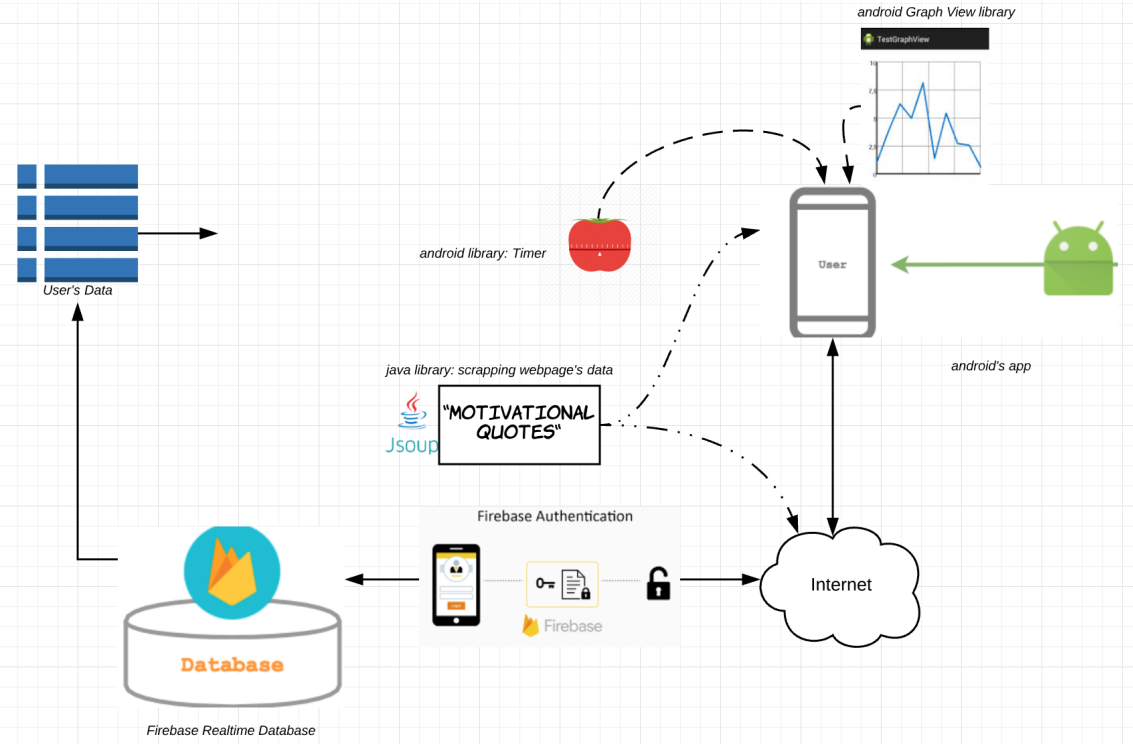
Methods and Procedures

The app is developed with an android framework. The built-in IDE provides all the necessary tools to build the front-end and back-end components/features for the app. The user interface of each component/feature can be designed with android widget layouts and implemented with XML code. The layout elements instantiate at runtime and are manipulated by java code to change their behaviors. Some components require additional library for their functionality. Libraries are provided by google android library or open source libraries such as java Jsoup[1] and android Graphview[2].

User and app's data are handled by Google cloud-based Firebase REST API. Android Studio provides an option for the android app to conveniently communicate and work with the server. Firebase is a real-time[3] data storage. It also has built-in email/password authentication, in addition, built in security protocols to handle data traffics.

To meet the objective requirements, the project must take on an iterative approach when implementing the features for the system. The features have to keep users interested and be simple to work with. As more iterations, the desired outcome will be greater, producing a more user-friendly system. Below is a list of what tools/software and libraries to implement the app.

- Tools/Software: Android Studio, Google Firebase cloud platform, version control(git)
- Languages: Java, XML
- Libraries[4]: SoundPool, Graphview, Jsoup, JSON, WebRequests



[1]Java library for HTML parser. It provides API to extract and manipulate data from websites.

[2]Android open source library for graph plotting.

[3]Users can receive data as soon as app updates or when users change the data, all connected clients get an update instantly.

[4]Note: at the time, these are the required libraries. More libraries may be added if needed.

Timeline/Expected Outcomes

FALL SEMESTER

Dates	Tasks/ Objectives	Expected Deliverables
9/24 – 10/7	- Identify User Stories Identify Functional - Requirements and Dependencies between them - Describe the data flow within the system	- Product backlog - List of Functional Requirements - UML and User Case Diagrams
10/8 – 10/21	- Identify database requirements Start Designing Database schema - Start reading about android developments concept - Set up the app and push it onto GitHub	- Database schemas diagrams. - UI/UX design mockup for Login/Registration form - Project on GitHub
10/22 – 11/4	- Start designing UI/UX for components/features. - Implements logic for widgets: authentications - Create a prototype to communicate with firebase database	- UI/UX mockup for Pomodoro Timer, Stack A Pomodoro - App can register/login user
11/5 – 11/18	- Implement Pomodoro Timer logic - Design Panic Button - Record sound for Panic Button - Implement Panic Button logic	- Working Pomodoro Timer - Panic Button can say “Just Do It!”
11/19 – 12/2	- Implement Stack A Pomodoro Logic - Design Pomodoro Planner Form	- Stack A Pomodoro feature is now available. - Pomodoro Planner Mockup
12/3 – 12/16	- Connect all activities for all the components together - Testing/Debugging	- A functional app with all the main user-facing features implemented.

SPRING SEMESTER

1/28 – 2/10	- Read documentation Android Graphview API - Create a simple app to test out different graphs	- App now has statistics features.
2/11 – 2/24	- Create sample data sets - Implement user data table structure on firebase	- User's data can be retrieved/viewed from firebase to app.
2/25 – 3/10	- Implement user's statistics table structure on firebase.	- App can update/retrieve information for users to see how well they are doing?
3/11 – 3/24	- Read about JSOUP API - Pull motivational quotes from websites with API - Design and Implement Motivational component	- App now has daily motivational quotes.
3/25 – 4/7	- Test for bugs - Refactor code - Release app for public testing	- Collect Feedback
4/8 – end	- Make modifications based on feedback. - Keep Refactoring - Write project feedback	- Fully functional app.

Special Considerations

For further learning android development concepts, UDACITY or COURSERA will be used. In addition, Software Design Patterns concepts will help with the extensibility and adaptability of the system. Also, it is important for the code of the system written cleanly. Tutorials and concepts of design patterns and writing clean code will be referred back to previously taken course- Software Design 310.

References

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