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MAD CS 5520 NEU S25
Semester Project Final Report
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Reflection on concepts and learnings:

Concept From Class	Examples of concepts	Notes/Learnings:
Smooth UI ● Setting custom colors ● Adding fonts ● Image assets ● XML attributes ● Navigation ● Toast ● SnackBar	● Light/Dark themes ● Toasts throughout app saying status of saves, breathing time completion, progress updates ● Consistent colors throughout the app.	● Set up themes and styles as soon as possible! Saves so much time with formatting. I waited to do this last and realized how much time this would have saved me overall. ● At first layouts were a lot easier with the GUI, however the more I used the different assets it became easier to implement using the XML files. Knowing what attributes are available and what they control was very beneficial. ● I am not 100% happy with the UI but I do think that it flows well and is visually appealing.
Design Concepts ● XML ● Image View ● TextView ● Multiline Text ● Buttons ● Recycler View ● TabLayout ● Constraint Layout ● FragmentContainer View ● ProgressBar ● Custom Color ● Image Assets	● RecyclerView ○ Journal page ● TabLayout ○ Goals page ● Radiogroup/buttons ○ Breathe Select fragment ● ProgressBar ○ Daily and Weekly goals fragments ● Custom colors ○ Throughout ● FragmentContainerView ○ Goals Page	● Overall I think that the design concepts were one of my favorite things to experiment with. I feel like there is so much there that can add to the user experience for the app. ● The biggest thing I will take from this part is to set up themes and styles quickly as it will save a lot of time configuring different aspects such as buttons and text.

• Vector Assets
• CardView
• Radiobutton
• Radio Group
• Themes
• Styles
• Floating Action buttons
	• Constraint Layout
	  ○ Most activities and fragments
	• Linear Layout
	  ○ Most fragments	

Gradle Imports
• Binding
• Adding in additional dependencies
	• Build features:
	  ○ View binding
	  ○ Data binding
	• Dependencies:
	  ○ Firebase
	  ○ Retrofit
	  ○ Navigation
		• View binding was so helpful
		• Dependencies or it won't work

Life Cycles • Activities • Fragments		• I still don't 100% understand what some of the lifecycle functions do. I do understand that Activities and Fragments have slightly different life cycles that need to be utilized for functionality.
Fragments • Communication between fragments • Loading fragments • Switching between fragments	• Setting goals • Updating progress • TabLayout for goals activity • Breathing exercise time selection and timer	• This was really helpful to understand more about the fragment lifecycle. I think that after using them for this app I would try to incorporate them more instead of creating so many activities. • My biggest challenge was making sure that the communication between the different fragments was set up correctly and that they could access the assets they needed to update. I used some helper classes to accomplish this.
Activities • Launching activities • Utilizing fragments within the activity • Communication between activities and	• HomeScreen ○ Launches all activities with button pushes • Fragments	• I really liked experimenting with Activities and what they could do. I think that I would try to incorporate more fragments within the activities as

a database	○ Goals Activity ● Communication ○ Goals fragments set up and save goals. ○ breatheAnimation fragment updates progress on goals ○ The updates are shown in multiple textviews based on the goal ○ BreatheSelect sends the amount of time selected to the BreatheAnimation fragment for the timer	now I know they can facilitate a lot more than I originally thought they could.
Firebase ● Setting up ● Connecting to the app ● User set up ● Storing data ● Retrieving data ● Utilizing data within the app ● Updating data	● Login authentication ● Journals ○ Saving journal entries ○ Retrieving journal entries for recyclerView	● I enjoyed implementing the Firebase Authentication. I think this add a lot to an app. ● I would also like to explore the other options and functionality that Firebase has to offer. I think that this could be a good platform to use in a lot of different applications. ● One struggle I did have was with the rule. I don't fully understand what rules should be used when. ● I am also still trying to figure out how to store the journal entries by user.
SQLite ● Setting up ● Connecting to the app ● User set up ● Storing data ● Retrieving data ● Utilizing data within the app ● Updating data	● Goals ○ Locally save goals ○ Track if a goal is active ○ Show current goals in the DailyGoals, and WeeklyGoals fragments	● This type of database was helpful for the goals part of my app since I wanted users to still be able to update their progress regardless of their internet connection.

Functional requirements

Priority	Status	Detailed description	Notes	Reflection:
Primary	Done	Ability to set goals (daily/weekly/~~monthly~~)	• Breathing minutes • Frequency ○ Times per day/week	I used an SQLiteDatabase so that even if the user was not connected their progress would still be counted and tracked.
Primary	Done	Journal option	• Notes app style • Automatic date entry? • Store in database ○ Use Firebase	I decided to use a Firebase Realtime Database for this. I found it easier to implement than an SQLiteDatabase and would also have to ability to have more st
Primary	Done	Breathing exercises for preset times	• 1, 2, 5, 10 minute options	I decided to use a Radio Group for this functionality.
Primary	Done	Progress trackers	• Daily goals met • Progress reminders - Toast?	I was able to use a horizontal progress bar to show the progress towards each goal (daily and weekly) For future I would like to try and implement a streak tracker to count how many days or weeks have been completed consecutively
Second...	Done	Daily affirmations	• Random affirmation generator	I ended up using an API for this. I found an open source option for this that was pretty decent. Setting up the API was a learning experience however it made more sense after dealing with Firebase than I was anticipating.
Second...	Done	Haptic cues for start and end	• Single vibration for start	Initially I thought that I could just select the haptic response attribute. I soon

Priority	Status	Detailed description	Notes	Reflection:
			• Double vibration for end	discovered there is a lot more to creating the haptic responses. I had fun with this part and would like to add more to the rest of the app.
Second...	Done	Light/Dark mode		I wish I would have done this as one of my first steps. This would have saved me so much time formatting the XML files. I learned a lot about themes and styles and how they can be utilized throughout the app for visual consistency
Second...	Done	Ability to see past journal entries		The biggest hurdle I had with this was retrieving the information and setting it in the recyclerView
Second...	Done	Ability to search for past journal entries based on date		This was a little more challenging since I had to make sure the date format was consistent EVERYWHERE. The time package was a lifesaver for this part.

Tertiary	Done	Custom breathing time	• Ability to give custom time frame
			• Minutes and seconds
			  ○ Dropboxes? 15 sec intervals
			  ■ Convert to total seconds
				This was a lot easier than I was envisioning

Priority	Status	Detailed description	Notes	Reflection:
Tertiary	Not s...	User profile		I have a user model set up for this. I hope to implement it at a later time.
Tertiary	Not s...	Haptic cue through the duration of breathing exercises.	• inhale/exhale vibrations	After getting the initial haptic cues I think that this is more doable than I was initially thinking. I just need to do some more research on the functions for haptics.
Tertiary	Not s...	Animation for breathing time		I still have not really researched this yet, but would really like to get this part functioning.

Resource Statement

Resources include online tutorials, Textbook, Dr. G, and TA (Ryan). I do not envision needing any additional resources to complete this app to a prototype stage.

Partnership Statement

No partnerships will be needed for this. Some individuals might be used to test functionality and provide feedback.

Intellectual Property Statement

Currently I do not have any plan to licence this app.

Grading Statement

Final Package Evaluation				
		Possible points:	What I think:	Comments:
Complexity	0 - 5 Project demonstrated very few concept explored in class 5 - 10 Project demonstrated a few concepts explored in class 10 - 15 Project demonstrated some concepts explored in class 15 - 20 Project demonstrated most or all all concepts explored in class	20	15	I did not include any gestures or sensors, however I think I incorporated everything else that we covered over the semester.
Design	0 - 5 Project showed little or no design concepts 5 - 10 Project showed a few design concepts 10 - 15 Project showed some design concepts 15 - 20 Project was outstanding when it came to design	20	20	I think that I utilized a lot of design concepts to create an effective, easy to follow UI.
Functionality	0 - 5 only a few 1st obj met 5 - 10 most or all 1st obj met; no or very few 2nd obj met 10 - 15 all 1st obj met; only a few 2nd met 15 - 18 all 1st obj met; all 2nd obj met 18 - 20 all 1st obj; met all 2nd obj met; 1 3rd obj met	25	25	I met all my primary, secondary, and completed 1 of my tertiary objectives
	Total without Adjustment	65		
Additional Adjustments				
Creative, high quality final product	0 - 10 bonus	20	10	I incorporated the use of an API which was not covered in class. I also did not have any thinking partners in class to get feedback from as I made progress.
	Total Score:		70/75	