

CMSC 436 Group Project Final Report

Group 8

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Overview

Procrastination, an increasingly popular vocabulary that describes people's unmotivation of finishing their work early, has become the trend among college students. Therefore, helping college students maintain their daily tasks to manage their time is extremely important.

Based on this need, we decided to build an IOS application to help people manage their daily tasks: DAKA, short for the Daily Activity Keeping App.



In this app, users can take advantage of notification and automatic daily task updating to enjoy being notified and motivated by this application. Conceptually, DAKA has featured functionality of

- Error Handling that safely handles error cases when something unexpected occurs during execution
- Tab Views that provides a more efficient UI layout to divide sections with different functionalities
- Navigation Views that provides a strong and rapid connection across different views to proceed forward and backwards
- Animations to provide an attractive dynamic UI interaction with user to maintain their interests
- A scrollable list that not only improves the UI layout design but also provides users with sufficient space for their goals
- User default that helps the app to store user's preference and details conveniently and globally
- Core Data that helps the application to store users' data locally to maintain the consecutive display and usage of those data.
- Notification that displays messages and makes sounds on the IOS devices to help users getting notified by their customized goals
- Build-in Data model such that entitify user's input to store and display data neatly and conveniently
- Date system to check the date each time resuming active of the app

Goals

The primary goal of this app is to store and maintain a list of "task streaks" that users may interact with on a daily basis. First of all, users must be able to create tasks. Since the primary purpose of these tasks are to keep track of progress over time, users must be able to set a desired starting date and ending date of the event. Users may see how many days they have completed and how many days they have left on a certain task.

Each task can also be assigned to one of the following categories: "Study, Workout, Hobby, Habit, Other, None". This attribute allows the app to later separate the tasks into different types. Another feature that could be set with a task is a desired frequency for when the goal is expected to be completed. For example, some tasks may need to be completed twice a day, while some other tasks may be expected to be completed every two days.

In addition to adding tasks to the stored list, we want users to be able to edit and delete tasks from the list too. The user should be able to edit the following attributes of a task: starting date, ending date, type, notification preference, as well as deleting the task as a whole.

Since this is a daily activity keeping app, we want to create two separate lists. One for tasks that are waiting to be completed today, one for all tasks stored in the system. At the beginning of each day, the app should detect the arrival of a new date and update the "Today's tasks" list with all the tasks that are assigned to that day. On the other hand, users should have access to a "goals" page to view, edit, and delete all ongoing tasks. In the "Today's tasks" page, users can click off tasks as they complete them throughout the day, to mark their progress for that day. In the "goals" page, users can add and modify all existing tasks even if they have already been completed for that day.

One important feature that we did not think of immediately initially is the ability to store tasks on different runs of the app. It doesn't make much sense if the task list is cleared each time the system is rebooted or the app is closed. Therefore, another goal is to maintain the task list throughout application use, no matter if the app has ceased to run and then restarted. This goal is also important because as we know that due to mobile device capacity and other errors, apps can crash. We do not want the user to have to re-enter their tasks every time.

We also want to include notification to alert users of tasks that they should be completing. Users can select whether or not to turn on notification for each task in the editing page of that task. Users can also specify what time in the day they would like to receive the notification. For example, I can set a 7:00pm alert on my "Working out task" so that this app can remind me to work out every night.

Last but not least, we want to create an easily-interactive UI overall. Page alignment and elements such as button placement should make sense and not be irritating to view. Controls should try to simplify the user experience. For example, instead of having the user input the dates as a text field, we will create a date selector defaulted for the current date. That way we simplify the input format as well as allow the users to access a small calendar while choosing their dates.

User Interactions

- 1) The app looks like this from the iphone 12 home screen:

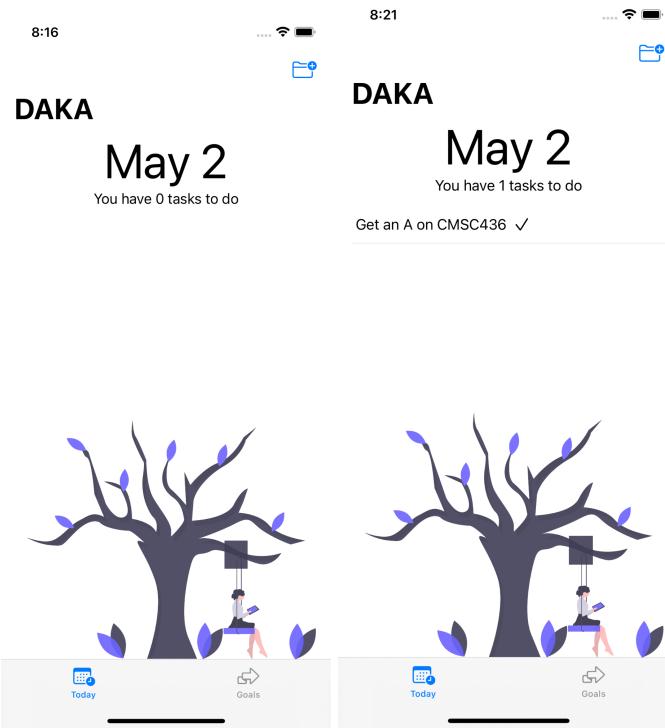


- 2) When you first start the app, you will arrive at the initial launch screen, with the DAKA logo:

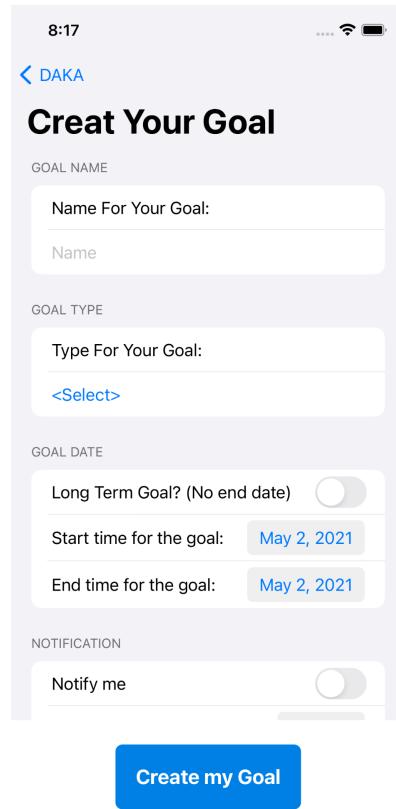
8:16



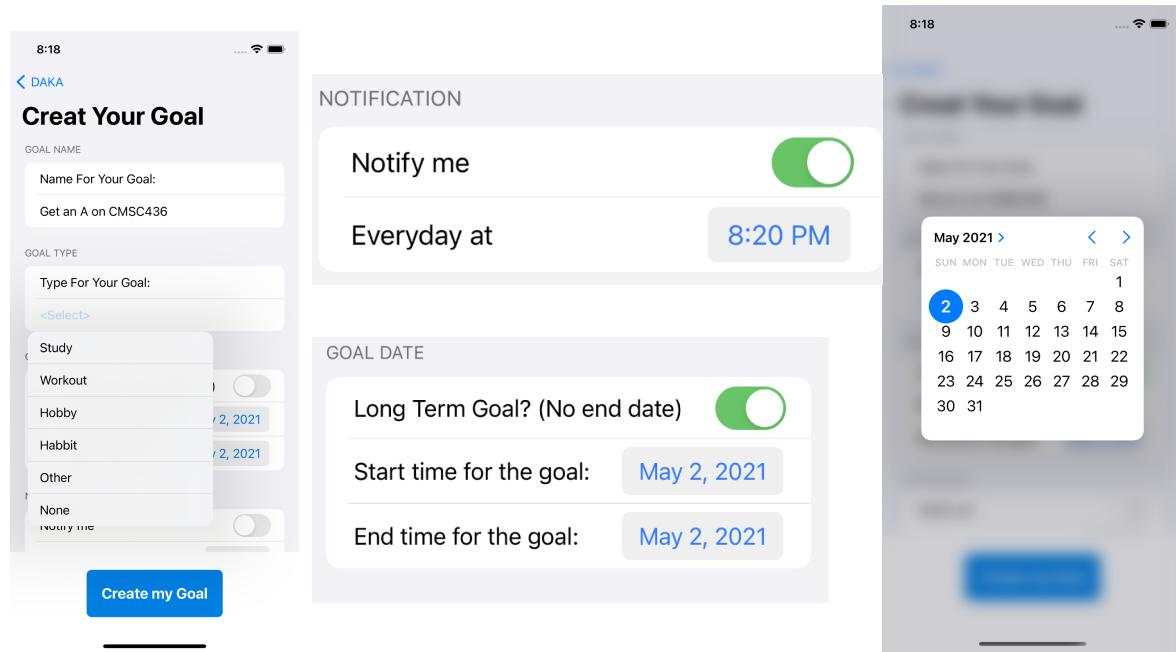
3) After a few seconds, you will arrive at the "Today's Tasks" page, which shows (if any) your currently active task of the day.



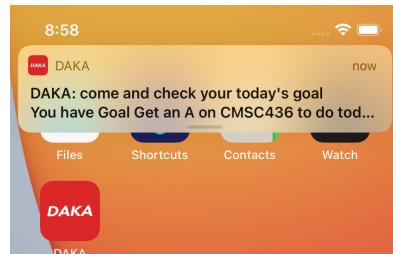
4) Clicking the button on the top right will take you to the "Create Your Goal" page, where you can customize a new task and add it to your list of goals:



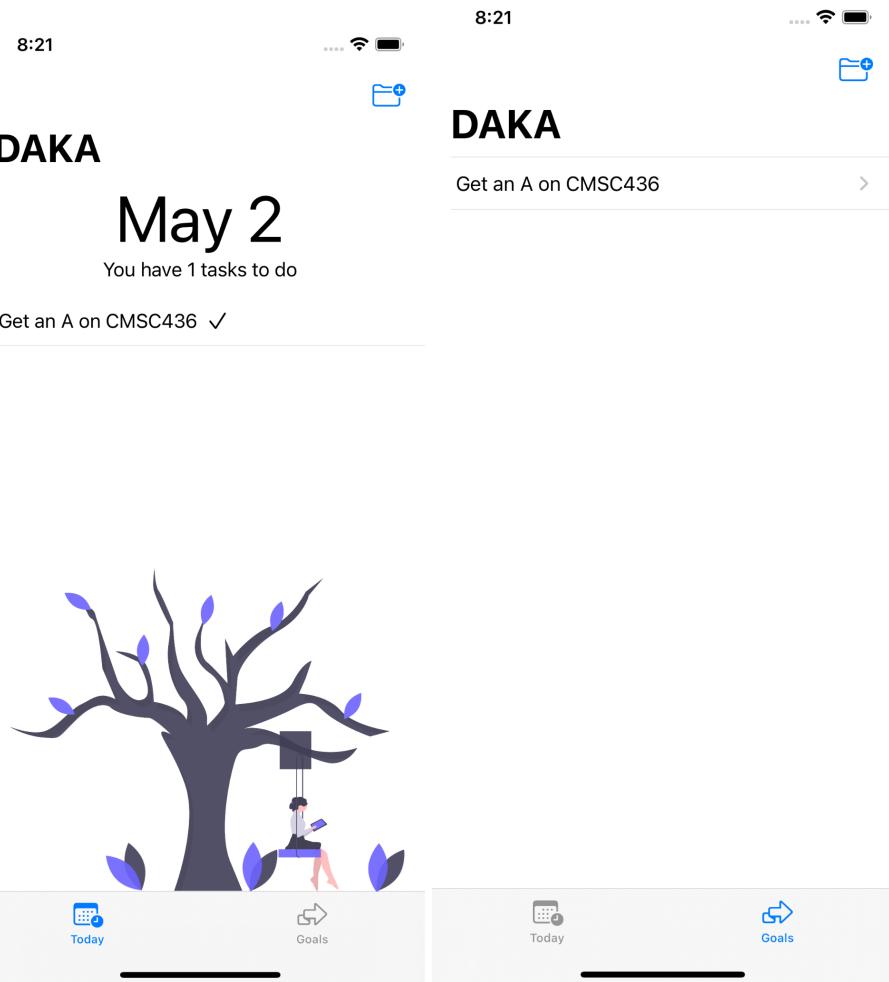
5) Here are some of the options you can customize in the "Create Your Goal" page, including name, type of your task, starting and end date, and notification preference:



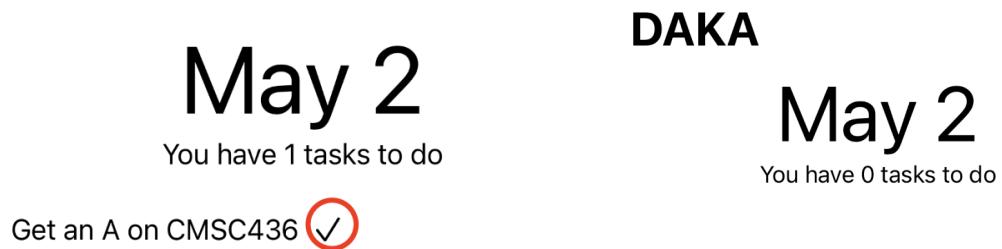
6) You will receive notification at your desired time if the "Notify me" setting is turned on:



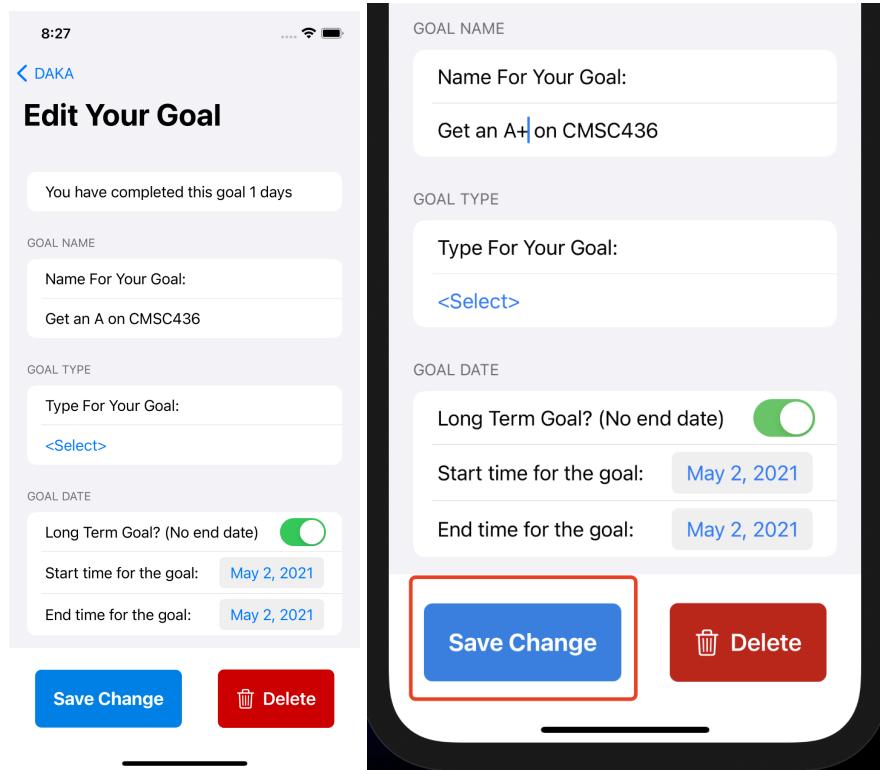
7) After tasks are added, you can see them in your "Today's Tasks" page as well as the "Goals" page. The "Goals" page will display all tasks, even if they are inactive or have been completed already for the day:



- 8) In the "Today's tasks" page, tasks that have not been completed for the day will be displayed with a checkmark next to it. Clicking the checkmark will mark the task as done and delete it from the page.



9) In the "Goals" page, you can click on tasks to edit any information, or delete them:



Development process

Discussion of the development process, including when/how tasks were completed; any setbacks encountered; decisions and changes made to the initial plan; and what you learned, both about the development process and the features you used that were not covered in class

- Throughout our overall development process, we basically followed all of our milestones listed in our initial proposal and completed milestone benchmarks.
- For milestone #1, we initiated basic functionalities and overall looking including the general structure of the App, the user was able to create a new goal with necessary information, and view all the goals that the user has created. We used tab bar (TabView) to split the App into two main components: a homepage and a goal display page. Though we did not consider any UI design at that point. Also, we were trying to find a proper way to store all the data so that next time the user enters the App, all goals that the user has created previously can still be displayed. The first idea that came to our mind was Firebase.
- For milestone #2, we modified and optimized the data model so that it can store users' information. We modified the homepage so that it can display all goals that are currently active and the user still needs to take action in order to complete those goals, basically serving as a reminder to the user about what's left. What's more, we added a feature that once the user has accomplished his/her goals, he/she can simply click on the goal, then the goal will disappear, removed from today's goal board. We added navigation view and modified tab view in order to make the UI look slightly nicer looking, with a title of "DAKA" displayed on top of each view.

- For milestone #3, right after milestone #2 has passed, we tried to connect to Firebase as our database. It turned out that we did make it work, but we struggled with storing data into Firebase. After we had a discussion, we decided to transfer from Firebase to the CoreData feature. This was one of the most significant setbacks we encountered. We spent a lot of time trying to figure out the way to properly store data into CoreData. We also found out that in our “AddView” page, we were unable to go back to the previous page after clicking “Create My Goal”, so we spent some time on that and fixed it eventually. We have tested the CoreData and when users close and reopen the App, all the goals can be correctly displayed on both today’s goal board and overall goal board. We also planned for a setting page for users to customize settings of the App including background scene, display style, etc. After the majority of our core functionalities have been met, we move to design better UI, font and text style that make the App more modern and attractive looking. At this point, we found that the notification to the user would be helpful so we planned to add that to our App.
- Before our final deployment, we added the notification feature so that the user can customize when they want to be notified when they create a new goal, on a specific date and time in the future. Meanwhile, when the very first time a user uses our App, an alert will show up and ask for the user request on whether to allow the App to display notification or not. We also divided the homepage goal board and overall goal board into two separate data models, so that modifying one of them will not affect the other. We designed an icon for the App as well as the Launch Screen when the App started, and we decided to abandon the “setting page” because of how complicated it can be. In the “home page” we added a background of a tree and a swing. For “goal page”, the user is able to delete goals that they have created previously. When delete a goal on “home page” will not affect the same goal on “goal page”.
- During the development process, one of the most important things we have learnt is that it is always beneficial to start early. Because we often encountered bugs that were not obvious and sometimes very annoying. A program will never be flawless, even after deployment, it is physically impossible to think of everything in advance. We learnt that we should always deal with bugs or problems that we know how to solve or where to find a solution. Because most of the bugs are often connected with each other, fixing one of them may have a surprise result into another. Dividing into “easily fixed” and “uncertain” made it easier for our life when it comes to bugs. Throughout the entire development process, topics that were covered in class are extremely helpful. For any development, starting small then extending is always the best strategy. We started by making a very basic version with almost none of the necessary features, and then it was gradually extended until it met all the necessities. We never planned out everything meticulously from the beginning. What’s more, testing during development is unavoidable. Because things were never assumed to work, everytime we introduced a new feature or implemented a new functionality, testing could cut the development efforts off and save us from mismatched interfaces between parts of the code. Last but not least, team cooperation was extremely important as no developer can understand the system, what it does, and how it works when it comes to developing an App. Sometimes tasks appear hard to solve, so never hesitate to collaborate with team members, everyone is here to help each other. Ask as many questions as you can, collaborate, and hear as much as you can

about the situation and alternative solutions. We never criticize anyone who was ashamed to inquire, all of us want our App to look nice and work just fine.

Potential future directions

If we have a chance to implement more features, we definitely want to add a setting page for sure, since most of the App in App Store have the similar feature that the user can customize user settings on their preferences. We definitely want to spend more time on designing better UI to make our App look more attractive to users. Such as letting the user add colors manually or just simply have color for each goal based on the type of goal the user chooses(workout, study, etc). Login system will be considered as well, so that if we use Firebase as our backend database, distinct user information will be stored for each user. Another possible feature can be added is a calendar system, the application will have a calendar of the current month on the homepage of the application to deliver a better visualization of goals and progress. Moreover, we could import a mission system and consecutive check-in feature to encourage people to check in everyday, everytime that users forgot to check in, this challenge will reset to 0.