

Application Name: Rootine

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Problem Statement

Many people struggle with maintaining consistency in performing small (but important) tasks. There's a lot of existing habit tracking apps out there (*Finch* was most common in user surveys), but we found in our needfinding that they have low rates of long-term retention. This was due to a number of factors, but often users would quit using a habit-tracking app (and therefore lose track of their tasks) due to it being overly complicated, a paywall, or completing the main "story" associated with many apps. We found that users desired simplicity, positive reinforcement, and tangible rewards in a habit tracker. They also desired more customization with specifying the required timing of different habits.



Implementation

We put together a cross-platform mobile app called *Rootine* that lets users take care of a virtual plant. It includes user-defined prizes when a goal is reached.

The core *Rootine* application is implemented with the Flutter framework (and therefore the Dart programming language). This framework was chosen because it allows for fast iteration, versatile widgets, and runs on a large variety of platforms. User data is stored using local storage, instead of requiring a user to create an account. This has the added benefit of trust with sensitive information (like a gift card code) that may be included in a user-defined prize.

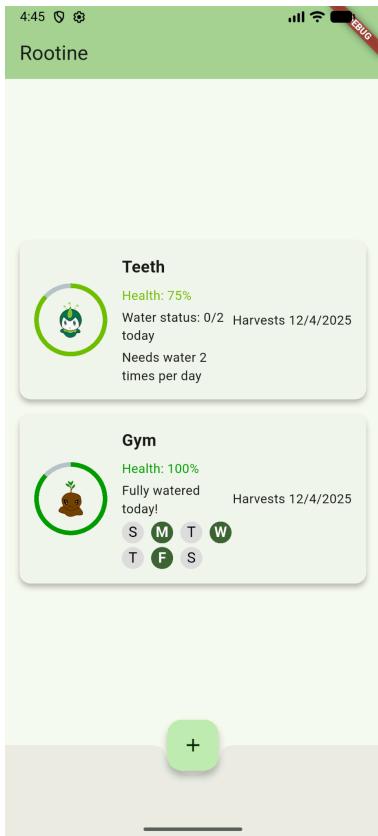
Upon launching the app, users are prompted to add a plant for their garden. Each plant represents a routine task in the user's life. The user picks the plant's name, description, and when it will be done growing. Users can specify if the plant needs to be watered on specific days of the week (e.g. a user may want to go to the gym every monday, wednesday, and friday), or a number of times per some duration (brushing one's teeth twice a day, going rock climbing

seven times a month, etc). There are three plant types currently defined for added variety – these have three pictures each which will demonstrate the plant's growth cycle. Then, users are prompted to add an associated prize for the plant. These can be user-defined, such as a user buying a gift card for themself (and likely forgetting the exact code) to only redeem after the plant is done growing. Or, the user can share a link to a friend to get a prize.

To keep the implementation simple and serverless, a static website hosted on Github pages was used for the friend-sharing feature. This allows a friend to define the prize (maybe a code to a safe, for example) and even allows the ability to add a drawing. Information about the particular habit and the plant's expiration date is shared with the friend using GET request headers. Then, an obscured “.routine” file is downloaded by the friend and can be shared with the Routine user. The .routine file is just a renamed zip file, with a “meta.json” of metadata and either a text file or drawing PNG. While further accountability could be gained by encrypting this file, we felt that there is no benefit to the user by cheating.

The user can then upload the friend's .routine file into the app to be linked to a plant, and then start “watering” it when the task is performed. If a user misses the task, the plant loses health, and this is indicated by both text and a gradient color change of the plant's progress circle. If the user can successfully keep their plant alive by the plant's harvest date, they can view the prize.

Our system is both simple and robust. The implementation gives a lot of customization for each plant, allowing the user to meet a variety of needs. The user is motivated to take care of each plant through a positively reinforced prize that they likely care about. The fact that it relies entirely upon local storage and a static website means that there is no third party required to keep track of the user's data – it's trustworthy, reliable, and free to operate.



Evaluation Study

- **Participants**
 - 7 users, mixed ages and experience with habit trackers; all tested the same prototype individually.
- **Study Design**
 - Within-subjects usability test.
 - *Independent Variable*: using the app prototype
 - *Dependent Variables*: task completion, usability ratings, errors, satisfaction
 - *Controls*: same tasks, same device, same instructions.
- **Tasks**
 1. Create a habit
 2. Set plant name, schedule, and description
 3. View progress
 4. Harvest a plant
 5. Send harvested plant + drawing to a friend
- **Procedure**
 - Participants used the prototype on the Observer's laptop, completed tasks while thinking aloud, and answered a short usability questionnaire. Observers recorded completion rates, confusion points, and overall impressions.
- **Results**

- **Quantitative:** All completed all tasks without help, avg completion time ~1–2 minutes, and all rated the app “easy” or “very easy” to navigate.
- **Qualitative:** Enjoyed plant-growth visuals and gifting features, slight confusion around harvest timing and sending to a friend, and requested more customization such as characters.

Discussion and Reflection

Our findings suggest that the app’s core concept, using plants/characters to visualize habit progress, is effective. Most participants completed tasks successfully and reported that the app made habit-completion feel more engaging and rewarding. All in all, this validates our main design goal: turning small daily habits into a playful, motivating experience.

Strengths:

The habit-creation was intuitive and required minimal explanation, users felt positive emotional engagement from watching plants grow, and the send-to-friend feature was seen as a unique and fun way to stay accountable.

Areas for improvement:

Some participants suggested animation or sounds to make progress feel more satisfying and users requested more customization options for the characters. Additionally, testing the prototype helped us understand how small UI adjustments can significantly improve usability and motivation.

If we were to do this project again, there’s a few additional things that we would want to do:

- **Better defined behavior when a plant dies.** This would probably entail allowing the user to pick a new harvest date, or automatically pushing back the harvest date.
- **External reminders** of notifications and/or a home screen widget
- If we had more time, a **longer-term evaluation study** with more participants and control variables of other (or no) habit-trackers to fully measure long-term success.