

FamilyInspire: Application concept and design report

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ABSTRACT

This report aims to detail the process of development of the FamilyInspire app. With the FamilyInspire app, we aimed to create an application that allows families to turn dull, monotonous house chores into exciting and rewarding tasks. Through a brief study, we have concluded that children benefit from the use of gamification contexts in education. Therefore our primary purpose of helping children attain healthier domestic habits can be achieved more easily by implementing a points-based reward system for completed tasks.

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1 Introduction

One of the more pertaining aspects of living in a house is doing chores. Most families designate house chores to different members, though many times those chores end up not being completed or are forgotten, which leads to family unrest a lot of times. This family aspect is crucial, especially to the children's education, shaping future behavior and children's way of life. It's critical parents find ways of completing house chores a more rewarding activity for children so that they can build positive habits. In our opinion, this can be done by using incentives, as seen in several articles [1]. Therefore, in our application, we developed a reward system for completing tasks, helping children feel rewarded for doing their house chores. Furthermore, we attempted to create an application with a strong emphasis on gamification of house chores since it's been proven effective in education contexts, as seen in the referenced article [2].

2 Related Work

This section reviews past work on family chores and event management systems explored similar designs and alternatives and described our application's inspirations.

2.1 Google Family Link

This application is the first that comes to mind when thinking about applicational systems that aim to better families' habits, although it focuses more on digital habits. It achieves this by allowing parents to establish basic sets of digital rules to help and guide children as they learn, play, and explore online environments. This application's main feature is the option to limit the time children spend on their mobile phones. Secondly, the app allows parents to manage their kids' apps by blocking access and downloading certain apps from the Play Store. Another essential feature of this application is the option to monitor children's location to avoid them getting lost. Overall, we find that this app is very good at creating healthy digital habits but doesn't help to develop healthy domestic habits as we aim.

2.2 Cozi Family Organizer

This application aims to organize certain domestic sections, such as shopping, tasks, calendars, and members' schedules. While this application shares many features with our own, it does not attempt to reward users for completing designated tasks.

2.3 OurHome

This is probably the most similar application in the market to our own. It allows turning the family routine into a game where each family member can create and edit to-do lists, tasks and assign specific deadlines. Adults can then create rewards that are redeemed by using points awarded for completing tasks assigned to each member. Although this app is very similar to ours, we only found it after development and during the making of this report, since it's not very well known.

2.4 Chore Monster

In this app, parents can distribute tasks among children and assign points for each of them. After completing the task, kids can exchange points for a reward. This reward is chosen by the parents, similar to our implementation, although children cannot create rewards themselves, whereas, in our app, children can submit requests for their rewards. Besides prizes, children can spend points to play mini-games and receive pet monsters. This app has a very similar counterpart developed by the same company called Mothership.

3 Concept/Idea

This app's idea came from the lack of capacity on the part of some families to make their children perform the tasks that the parents assign to them, such as doing homework, tidying up personal divisions, etc. This lack of chores creates a hostile environment inside the family, and in extreme cases, creates a lot of problems and makes family members separate from each other.

The principal concept of this app is an intrafamily system with functionalities with objectives:

- Increase family unity;
- Development of discipline habits in children, in particular concerning financial management through a points system;
- Stimulation of family dynamics;
- Stimulation of good domestic habits;
- Share help among all family members;
- Stimulate and create bonds between families by scheduling combined outings, vacations, restaurants, and places to visit, and share ideas with other families;
- Know the location of children and family members if authorization is granted;
- "Negotiation" of hours of use of specific applications or rewards between family members.

4 Implementation

In terms of implementation, various features were used to accomplish the app requirements. Sensors were not used since the app currently did not need them. However, in future improvements of the app, they could be added to offer the feature of tracking child members of a family.

Java was used as the primary language for Android, and Cloud Firestore as Database. The reason behind the choice of Cloud Firestore is because of its accessibility, consistency, and the way data is modeled being very similar to MongoDB, another No-SQL database, that was used in previous projects and that the team was already confident to use.

The app was made following a data model structure using an OOP approach, and several classes were defined to model the app objects as real objects. For that reason, models like User, Family, Task, Event, Reward, Requests, Message, and Help were created.

In these objects, besides the features required from the app's state and commonly used like date, name, description, start, and expiration date for prominent data models, if some relations are established, they were done using the document identifier in the required document. These documents were then obtained and retrieved asynchronously using Java and presented to the user.

In terms of Java itself, five main components define the app. Those components are the activities that are launched depending on the user interactions, namely, the Login Activity, the Register Activity, the Drawer Activity, the Edit Profile Activity, and the Inbox Activity, which control respectively, the user authentication via Google Sign-In and Email/Password Sign-In; controls the registration of the user by indicating its username, birthdate, email, and password, and limits the creation of a username with 15 characters maximum; the nucleus of the application and all the components for the task, family, events, points, achievements, settings, community, and help fragments that together construct the full essence of the app; the editing of the user profile of features like its username and birthdate, following the same restrictions as the registration activity; the flow of notifications a user has in terms of tasks completion, events creation, redeemed rewards and also friends' requests.

In addition to the app's primary use, a quick-add functionality was built to facilitate users' interaction with the app since shortcuts and showing information quickly and dynamically lead to better adoption and user experience. The quick-add has three built-in buttons for promptly add a new task, add a new event, and check the user points to redeem for rewards.

Avoiding a detailed explanation, other crucial points in terms of implementation were the following:

- The user profile picture management was left for future improvements since it was not the core of the app.
- Requests and messages display respectively a check and refuse button and a dismiss button.
- In terms of Google Sign-In, its use was left for further development since a release key was required to create to make the operation available to all users.
- When trying to add a recurrent task or event, it provides that information in the description rather than multiple tasks. However, if the evaluation with users proved to better by using checkboxes for the days of the week, it would've been adopted.
- The family community was not implemented so far due to its complexity and is similar to Instagram and others.
- The features in terms of accessibility, like the voice assistant or the text size, were left for future updates since it required a lot of effort and wasn't the focus or core of the app.

5 Evaluation

Due to time, our app could not implement all desired heuristics, although we had in mind the following design heuristics:

- Minimalist and straightforward application;
- Night mode;
- Good readability;
- Standardized items sizes;
- Use of magnifying glass to maximize image sizes.

We also pretended to test our app with users to evaluate the different heuristics, user experience, and usability requirements.

6 Conclusion

While our app doesn't use sensors or many external APIs, its complexity stems from the management of users information like notifications, tasks, events, points, and rewards, which came with its fair number of challenges. However, we believe we have created a competent app, and while we didn't implement everything we wanted (due mostly to time restraints), we are satisfied with the result.

Many usability features could be implemented to improve user experience in our app, like allowing users to create tasks, events, and rewards faster by saving some of the most common ones and thus allowing the user to select them when creating a new one, for example quickly. Implementing these quality-of-life changes would make the app more enjoyable to use.

Our team thinks that our app could help children create healthy household habits and strengthen family bonds.

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