Eco Buddy Project Report

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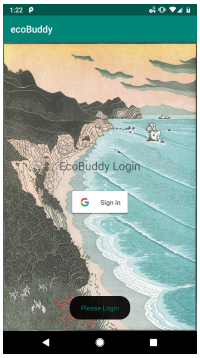
Abstract:

This final report is an overall outline of Ecobuddy, Ecobuddy's components, the development process, and the future work we couldn't accomplish during the quarter. Ecobuddy is an application to raise household awareness of resource consumption and streamline chore duty. With secondary features for inter-household communication regarding tasks such as, appliance usage, and bill dates and amounts.

Objective:

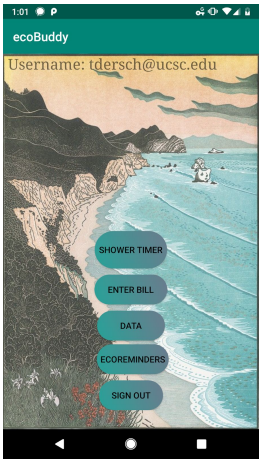
The purpose of Ecobuddy is to raise awareness of resources consumed by an individual household. We feel this is an important purpose in order to save money and have a lesser impact on our environment, starting with an individual and eventually leading to an entire household. We wanted to create an app that had daily environmentally friendly tips, bill trackers, bill reminders, visualizations for water consumption and bills over a given interval, and a platform to ease the distribution of household tasks such as, chore duties, appliance and water usage, trash night, bill breakdowns. With an ultimate hope of making a household highly aware of the resources consumed on a daily basis.

Components:



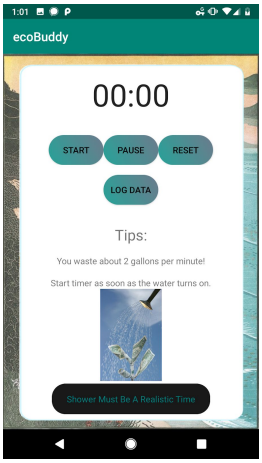
Upon starting Ecobuddy, we initially planned on greeting the user with a splash screen dedicated to environmentally conscious tips pooled from outside sources. On start today, the user is taken straight to our login page with a Tom Killion painting as our background. Our authentication procedure is run solely through Google Sign-in, as it is a very clean and simple solution that all users should be familiar with. The clean single button leads users into a Google activity where they are able to select from saved emails or enter new ones.

If the user has logged in previously, EcoBuddy will remember the current user and bypass the login screen, taking the user directly to the home page. Our main screen is responsible for navigation throughout the entire app. Buttons, aligned in a vertical linear layout, allow the user to select from the main features of EcoBuddy.

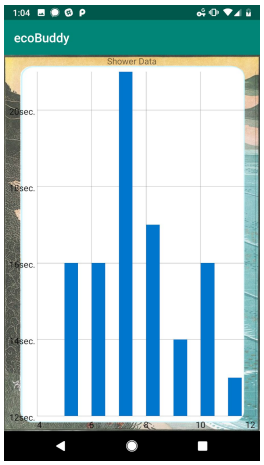


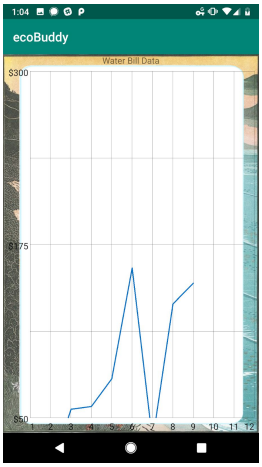
Our main screen is simple, with custom buttons to match Ecobuddy's overall theme. The activities all finish and return to our main activity, keeping a simple flow execution.

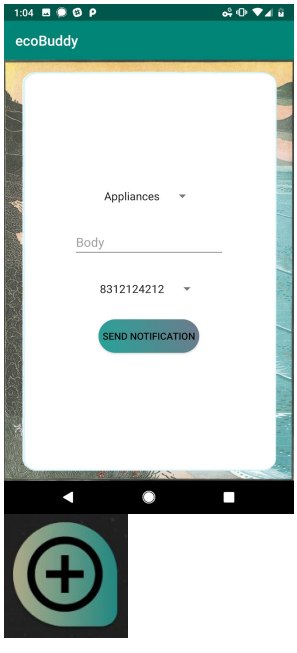
Ecobuddy offers several features to get an understanding of individual resource consumption, the first being a shower timer. The user clicks the shower timer button and navigates to the shower timer activity, which has the necessary components to record, pause, reset, and log users shower times to our Firebase console.



The user can enter monthly bill data by navigating to the enter bills activity and use a drop down spinner to select the month and enter a bill to be stored in Firebase. The user can navigate to the data activity to check out data populated by the shower timer and enter bill activities for two different visualizations. One of shower times for the past seven showers, the other for the yearly water bills. We chose to implement a bill tracking graph for water usage and cost to maintain a better understanding of their overall footprint on resources. We felt this was a great component for users to accurately track their individual consumption.







The user can also send an eco-reminder, a sms-message or calendar invite their housemates. We thought this was a component based on making it easier to communicate with housemates regarding bills, chores, appliance use and trash and reminding housemates when bills were due.

Once the send-message button is clicked, the activity returns the user to the main activity. At this point, the user can select signout button and return to the login activity. The user can choose to either sign in or exit Ecobuddy via a floating action button.

Development:

The development process for EcoBuddy was a journey and an excellent learning opportunity for group projects. We began as a three person group and acquired our fourth member a week late. With our project proposal finished and submitted, the group and idea for EcoBuddy showed great promise, but never achieved the success initially planned. Around week 4 we held weekly status meetings for brainstorming, in addition to the bi-weekly section meetings with our TA, and we began to develop a strong idea of how to start the app. We began to get the ball rolling and distributed work amongst everyone, it seemed like we had finally started making some progress, albeit slow, and that the four of us were making strides to get the work done.

A few weeks into the quarter we had only created a very basic UI, with several buttons connecting some sample activities, as well as the “Shower Timer” barely coming together. This was extremely worrisome with interim presentations right around the corner. It was clear that the group had to make large strides in a very short amount of time. One of the most blairing issues was the projects lack of back end compatibility. This of course was the responsibility given to a group member who had claimed they were knowledgeable of Firebase and could easily get us started with everything we needed. Without the function of backend it was nearly impossible to make solid progress on the app and the other members became discouraged. Finally we attempted to reach out to the member who took on backend so that the rest of us could begin to pick up his slack. We were met with silence and began to worry even more.

With a little less than a week left two of the original group members finally announced they would be dropping the class and leaving EcoBuddy, including the project leader. Manny and Ted were the only remaining groups members. We brainstormed to figure what was achievable within our time frame and began to work extremely hard. We created a new Firebase console account for the app and began to piece together some of our key features. We decided to focus on authentication, the shower timer, data retrieval and a new UI for the interim. Within four to five days we were able to grind out some very basic features that cooperated with our new database. Shower timer was able to record a time, save a single value to the database, and a data view activity was able to prove this communication by displaying the number.

We knew our first showing of EcoBuddy wasn’t the strongest; But, we used this to our advantage to show that by the end of the quarter we were capable of making a lot of progress. We went through a phase of brainstorming and redesigned our expectations for EcoBuddy. The app would now focus solely on the individual user and not a group of people creating a “household”. We’d also focus on the idea of water conservation as a strong suite. We began to prep for the final presentation shortly after the first. We finished up the shower timer and updated its back end capabilities to store multiple times per user. Another data point we thought the user could benefit from was

their water bill month to month. A new data entry activity was created and allowed the user to enter a bill amount per month. With two unique data points, we needed to represent this data in a useful way to our users, so we implemented the Graph View library. It was fairly simple to plot seven of the most recent shower times into a bar graph; however, a stumping challenge arose when trying to make custom titles for the water bill graph. We had to settle with representing the twelve months of the years with numbers 1-12. We also decided to revisit some of our original ideas from EcoBuddy and implemented some household connecting features through the “Eco Reminders” section. This instance of household connection was still focused on the individual user but enabled them to send reminders and notifications to their housemates. We could now set bill reminders through the Google calendar as well as send out text messages with built in “eco” related subject fields. All we needed now was to finalize the UI for our presentation and we were finished. With the implementation of a pretty splash background, new font colors and some fancy buttons, we were able to make our app presentable to an audience.

Contribution:

While we clearly had issues with time management and group members abandoning our efforts, the final contributors to EcoBuddy worked very well together. We split work evenly and remained in constant contact with the help of Slack and Github. At each of the bi-weekly meetings we would set immediate or long term goals to act on and would follow up with progress as we went. It ended up being both of us working on the entire project, helping each other when necessary.

Future Work:

Our ideal EcoBuddy of the future would be a more polished and interactive experience. In the reminders sections it would be ideal if we could search contacts and save lists of contacts of a household of people. The data viewing activities could improve greatly given more time. We would aim to show the user averages of shower times and bill amounts. It would also be useful for the user to be able to scroll and see wider plots of data, not just the twelve months and seven most recent showers. Our current UI uses buttons to navigate to each activity which isn’t very efficient or pretty. A toolbar view at the bottom of EcoBuddy would make our app much more streamline and easy to navigate.