Demonstration Equality Contribution

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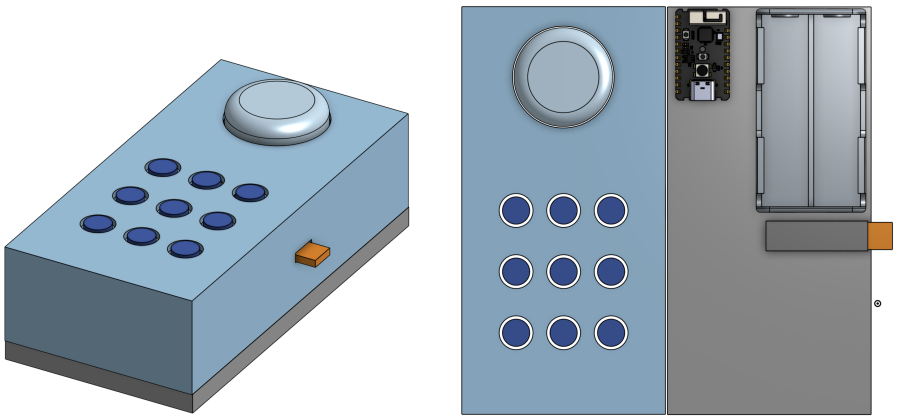
1 Adam Wu

1.1 Github Setup and CI Checks

I started working on setting up the Github and worked on building a CI checks, rulesets, and artifact for compiling our LaTeX file. This helps to ensure that the LaTeX file is always compiling during the development process. Furthermore, it prevents other members from pushing code that breaks the LaTeX file.

1.2 Design For Assembly

On the design for assembly portion for submission 2, I worked on the CAD of the aesthetic prototype of the smart lock. I tried my best to make sure that the parts were designed in a way that they could be easily assembled and disassembled.



(a) Isometric View (b) Top View

Figure 1: First lock design

1.3 Setting up ESP32-C3 toolchain (ESP-IDF)

Since I am planning to work with the ESP32-C3, I started setting up the ESP-IDF toolchain on my local machine. I also started working on the initial setup of the ESP32-C3 to work with the "Hello World" example. Furthermore, I put in my researched information on the ESP-IDF documentation on where we can get started to connect to the WI-FI and to connect to Firebase.

1. ESP-IDF have examples on basic wifi connection:
    - in: `esp-idf/examples/wifi/getting_started/station`
2. ESP-IDF also have examples on connecting to servers
    - in: `esp-idf/examples/protocols`
3. We might also need to get another library for firebase connection
    - link to firebaseClient: https://github.com/mobizt/FirebaseClient
    - Another one: https://github.com/dahmadjid/Firebase-idf

1.4 Gantt Chart

For submission 2, I worked on the Gantt chart. I utilized a gantt chart template from a youtube video and modified it to fit our project. I also added the tasks that we need to complete for the next quarter.

1.5 Test Plan

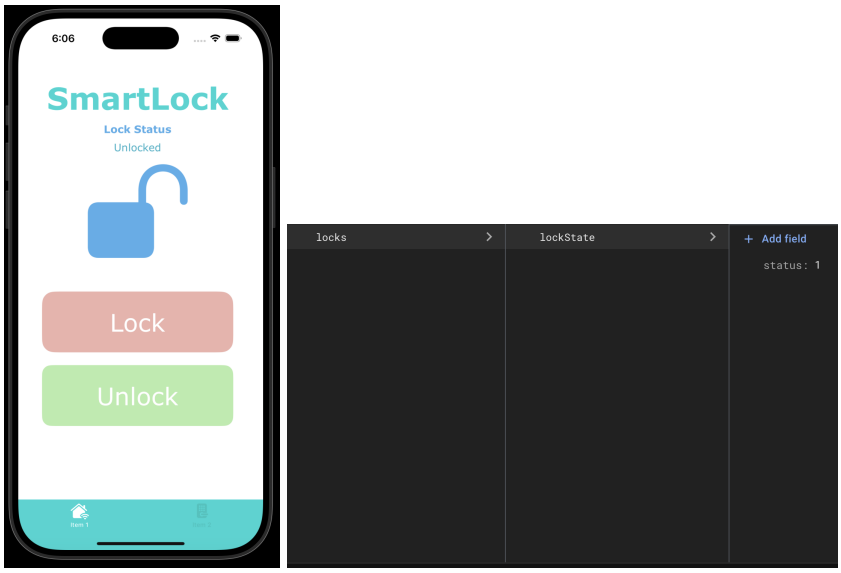
I helped editing the test plans for ideas that was not put on the paper. I also helped with the formatting of the test plan.

2 Jackson Kennedy

2.1 IOS App

As a sector of the project, I took on the IOS portion of the project as my own task.

Pictured below is the main screen where the user will lock/unlock the smart-Lock. The phone screen you see is not a simple concept drawing, but is actually coded. The buttons both work, and reflect the lock status in the database. Attached is a picture of the database reflecting the status, 1 - unlocked, 0 - locked. This is significant because now, data can be pulled from the cloud in real time.



(a) (b)

Figure 2: Unlocked State on mobile device reflecting in cloud database.

Additionally, I have set up the framework and programmed another screen that is accessible via the toolbar on the bottom of the screenshot. This is not yet connected to any database, but I populated it with a sample array of sample pins that I will later set up for secure user generation. This sets up the app for easy configuration down the line, where user generated pins can be used to populate the array and present as a part of a scrollable view on the app to consolidate the user's data.

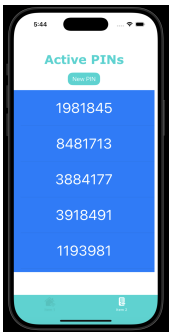


Figure 3: Pin Tab

One of the main requirements for the end of this quarter was to get the phone communicating with the cloud, which I have been successful in transmitting data

from the IOS device to the cloud provider and database.

2.2 Test Plan

On top of the mobile app, I helped to contribute to the test plan by writing a lot of the test plan based on project requirements. This includes things like hardware testing, and software communication testing.

2.3 Morphological Chart

I completed my section in the Morphological chart and added my design ideas and communication protocols.

2.4 Mind Maps

I helped to create the mind map by adding relevant sections and subsections with related technologies and ideas. This mind map helped us to push forward to strategize our different sections and account for different features and fields involved in the project.

3 Neena Nguyen

3.1 Personas

I designed a few user personas to represent the type of consumer likely to use or to benefit from the project prototype.

3.2 Ethics Statement

3.3 Lifecycle Assessment

3.4 Understanding ESP32 Integration with Firebase

I read up on documentation for connecting the ESP32C3 to Wi-Fi and Firebase with the goal of exploring how

4 Nathaniel Laurente

4.1 Goal Statement

I worked on coming up with a Goal Statement that fits the new project.

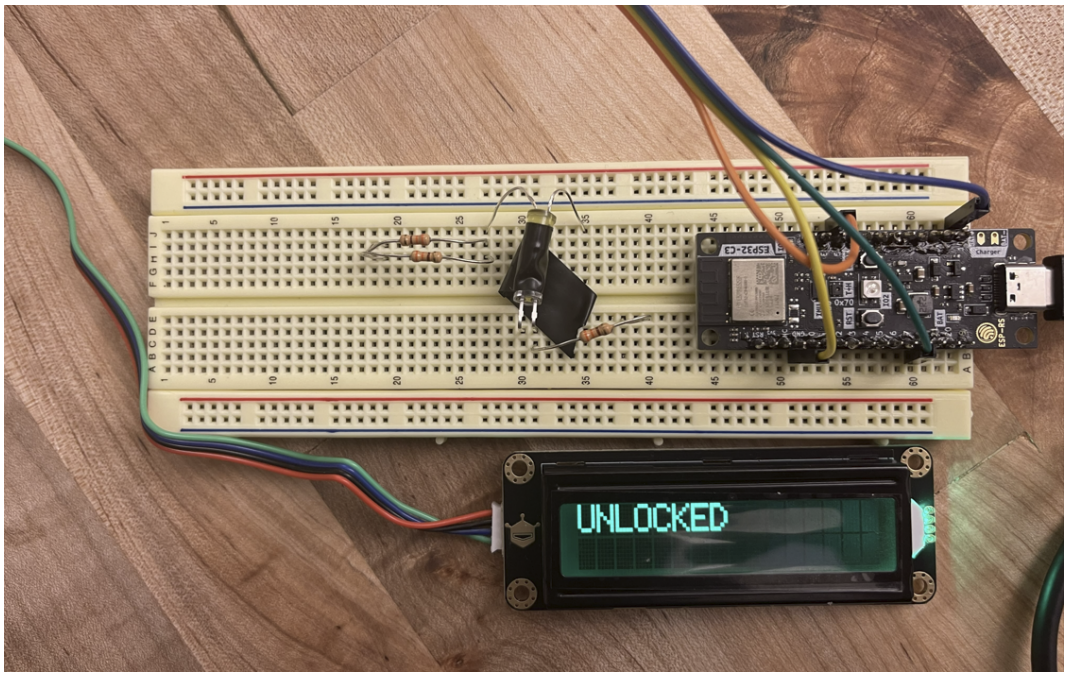


Figure 4: ESP32-C3 Established Communication with OLED RGB Display

4.2 ESP32-C3 Communication With OLED Display

I was able to configure the ESP32-C3 to display "Unlocked" and "Locked." I set the toolchains such that there will be no issue sending signals from ESP32-C3 too the OLED dislay with minimal delay. My testing interface involved making sure there were no leaks and data was being power efficient when sending signals.

4.3 Design For Manufacture

In the design for manufacture, I meticulously evaluated and selected components that strike an optimal balance between power efficiency and cost-effectiveness. This careful selection ensures that our auto-locking door system is not only marketable but also operates with minimal power consumption, thereby enhancing its overall functionality and sustainability.

4.4 Decision Tables

I made the decision tables for the weights of the necessary parameters for our auto-locking door. This allowed our team to decide on a final design out of the three options we had come up with for our design. For an auto-locking door design, of course security was the number 1 concern for our project, and

we decided to go for an option that prioritized security while maintaining cost efficiency.