

Project Deliverable 3
Smart Prosthetic Arm
Hybrid Prosthetics™

Prepared for:

Haki Sharifi, Austin Tian
CENG 322 - CENG 317

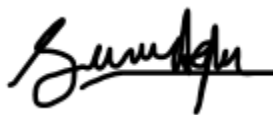
Prepared by:


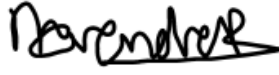
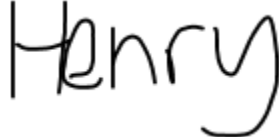
Team Leader - Samad Agha n01364908
Kevin Santizo n01382533
Narendre Ramdhan n01240746
Henry To n01365792

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Project Scope

The focus of this project is a synthetic arm meant to benefit disabled individuals. This arm will have many functions, including temperature measurement, object detection, rotational axes (servos) and supports bluetooth/wireless connection. These functionalities will all be displayed to an app for the user to get all the information and control necessary to help with their everyday lives.

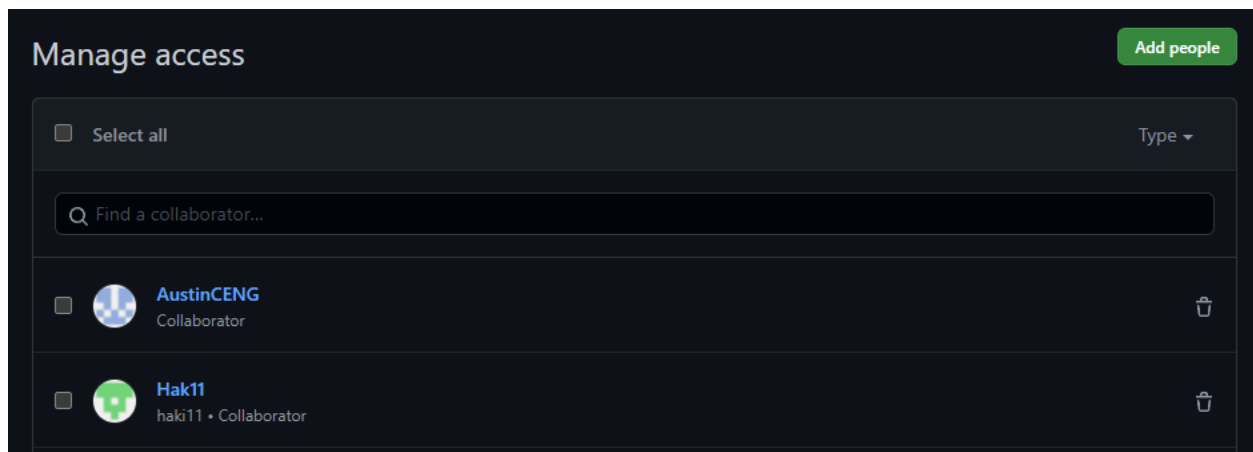
| Name | Id | Signature | Effort |
|------------|-----------|--|--------|
| Samad Agha | n01364908 |  | 100% |

| | | | |
|------------------|-----------|--|------|
| Kevin Santizo | n01382533 |  | 100% |
| Narandre Ramdhan | n01240746 |  | 100% |
| Henry To | n01365792 |  | 100% |

Github Repo

<https://github.com/KevinSantizo2533/SmartProstheticArm>

Github Invites:



Progress Since 2nd Deliverable:

- Implemented Login Screen functionality
- Implemented Register Screen functionality
- Implemented Forgot Pass functionality
- Implemented Firebase read and write
- Implemented screen layout lock to portrait
- Implemented shared preferences
- Implemented functionality for all menu items
- Added Customer Review screen with functionality
- Added google sign in button with functionality
- Added remember me checkbox with functionality
- Added an option to reset password on settings screen
- Added several images
- Added more landscape views
- Added more French Strings
- Updated UI and UX on all screens
- Bug Report
- Changed naming conventions

Runtime implementation

We have used bluetooth runtime permission which uses location permissions.

Stories

https://kevinsantizo.monday.com/users/sign_up?invitationId=16554461040520670000

- ▼ Sprint 1 (Sept 28 - Oct 4) - Epic: Create layouts for basic screens

| Design base of all basic screens | | | | | | | Subitems... | Person | Status | Date |
|-----------------------------------|-------|--------|------------|----------|--------------|--|-------------|--------|--------|--------|
| | | | | | | | 6 | SA HT | Done | Oct 13 |
| Subitems | Owner | Status | Start Date | End Date | T-Shirt Size | | | | | |
| Create toggles and Sliders | KS HT | Done | Sep 27 | Sep 28 | S | | | | | |
| Button Redirects to screens | HT KS | Done | Sep 28 | Sep 30 | M | | | | | |
| Input text fields for credentials | SA AR | Done | Sep 28 | Sep 30 | S | | | | | |
| Set backgrounds and fonts | KS HT | Done | Sep 29 | Oct 1 | S | | | | | |
| Make screens complementary | AR +2 | Done | Sep 29 | Oct 2 | M | | | | | |
| Add images and constraints | HT +2 | Done | Oct 2 | Oct 4 | S | | | | | |
| + Add Subitem | | | | | | | | | | |
| + Add | | | | | | | | | | |

- ▼ Sprint 2 (Oct. 1 - 8) - Epic: Interface for sensors

| Sprint 2 (Oct. 1 - 8) - Epic: Interface for sensors | | | | | | Subite... | Person | Status | Date |
|--|-------|--------|------------|----------|--------------|-----------|--------|--------|--------|
| Sensors screen(temperature, ultrasonic information) | | | | | | 5 | KS AR | Done | Oct 12 |
| Subitems | Owner | Status | Start Date | End Date | T-Shirt Size | | | | |
| Image buttons to redirect user to their desired sensor scre... | KS | Done | Oct 3 | Oct 4 | S | | | | |
| Create tempraure and ultrasonic sensor screens | KS SA | Done | Oct 4 | Oct 5 | M | | | | |
| Create onClick methods in sensors fragment | KS | Done | Oct 4 | Oct 5 | S | | | | |
| Button(layout) to retrieve temperature/object distance me... | KS AR | Done | Oct 5 | Oct 8 | S | | | | |
| Program button to retrieve readings from sensors | HT | Done | Oct 5 | Oct 8 | L | | | | |
| + Add Subitem | | | | | | | | | |

📌 Sprint 3 (Oct 4 - 10) - Epic: Improve Login

Sprint 3 (Oct 4 - 10) - Epic: Improve Login

Validate Login/Register

6

SA +2

Done

| Subitems | | Owner | Status | Start Date | End Date | T-Shirt Size | + |
|---|-------------|------------------|--------|------------|----------|--------------|---|
| connection to firebase | <div></div> | <div>SA AR</div> | Done | Oct 4 | Oct 8 | L | |
| store user/pass to Firebase on register | <div></div> | <div>SA AR</div> | Done | Oct 4 | Oct 8 | L | |
| Display login success with Toast | <div></div> | <div>AR KS</div> | Done | Oct 6 | Oct 8 | S | |
| Display error if blank/invalid input | <div></div> | <div>SA</div> | Done | Oct 6 | Oct 8 | S | |
| Encrypt password to Firebase | <div></div> | <div>AR SA</div> | Done | Oct 8 | Oct 15 | L | |
| Send email for Forgot Password | <div></div> | <div>SA HT</div> | Done | Oct 8 | Oct 15 | M | |
| + Add Subitem | | | | | | | |
| | | | | | | | |
| + Add | | | | | | | |

▼ Sprint 4: (Oct 10 - 15) Settings/Preferences

Sprint 4: (Oct 10 - 15) Settings/Preferences

Settings Screen

5

KS

SA

Working on it

| Subitems | Owner | Status | Start Date | End Date | T-Shirt Size | |
|--|---------------------------------------|---------------|------------|----------|--------------|--|
| Setup settings fragment/root_preferences | <div><div>KS</div><div>HT</div></div> | Done | Oct 1 | Oct 1 | S | |
| Add screen orientation customization(portrait/landscape) | <div><div>KS</div></div> | Done | Oct 2 | Oct 2 | S | |
| Add language preference(French/English) | <div><div>HT</div><div>KS</div></div> | Working on it | Oct 3 | Oct 4 | M | |
| Reset password | <div><div>SA</div></div> | Done | Oct 4 | Nov 4 | M | |
| Add notifications switch (on/off) | <div><div>HT</div></div> | Working on it | Oct 11 | Oct 12 | M | |
| + Add Subitem | | | | | | |

• Sprint 5: (Oct. 15 - 22) Send/Retrieve sensor data

| Subitem... | | | | | | Person | Status |
|--|---|-------|---------------|------------|----------|--------------|---------------|
| Implement hardware components to bluetooth | | | | | | AR +3 | Working on it |
| Subitems | | Owner | Status | Start Date | End Date | T-Shirt Size | |
| Implement bluetooth adapter | + | AR | Ready | Oct 12 | | L | |
| add connectivity function | + | KS | Working on it | Nov 2 | | L | |
| Retrieve information from servos | + | SA | Ready | Nov 2 | | L | |
| Send data to servos | + | SA HT | Working on it | Nov 2 | | M | |
| display data on app (temperature) | + | HT | Working on it | Nov 2 | | M | |
| + Add Subitem | | | | | | | |
| + Add | | | | | | | |

Daily Standup:

Daily Standup

Hybrid Prosthetics
October 14th, 2021

Narendre Ramdhan

What did you work on yesterday?

- Added Google login logic
- Added Google login button functionality
- Updated some french strings
- Cleaned up strings.xml

What will you work on today?

- Add help screen with email/ phone number contacts
- Update look/feel of feedback form
- Fully implement Google sign in

Any blockers?

None at this current time

Samad Agha

What did you work on yesterday?

- Improved register activity
- Fully completed login with Firebase credentials
- Email verification
- Add class user with Realtime Database

What will you work on today?

- Update the design of the layouts
- Get userID on welcome screen
- Complete forgot password functionality

Any blockers?

None at this current time

Henry To

What did you work on yesterday?

- Added functionality to menu items
- Completed Feedback Screen
- Feedback can be sent to Firebase

What will you work on today?

- Add more menu items with full functionality
- Add remember me (checkbox) functionality in login screen
- Update feedback screen

Any blockers?

None at this current time

Kevin Santizo

What did you work on yesterday?

- Started screen orientation locking implementation
- Added configuration selections in settings screen
- Can now display configuration selections

What will you work on today?

- Get portrait locking fully implemented
- Get configuration settings to save in shared pref.
- Send configuration settings can be sent to the Firebase

Any blockers?

None at this current time

Daily Standup

Hybrid Prosthetics
November 14th, 2021

Narendra Ramdhan

What did you work on yesterday?

- Added Google login logic
- Added Google login button functionality
- Updated some french strings
- Cleaned up strings.xml

What will you work on today?

- Add help screen with email/ phone number contacts
- Update look/feel of feedback form
- Fully implement Google sign in

Any blockers?

None at this current time
bomb has been defused

Samad Agha

What did you work on yesterday?

- Improved register activity
- Fully completed login with Firebase credentials
- Email verification
- Add class user with Realtime Database

What will you work on today?

- Update the design of the layouts
- Get userID on welcome screen
- Complete forgot password functionality

Any blockers?

None at this current time

Henry To

What did you work on yesterday?

- Added functionality to menu items
- Completed Feedback Screen
- Feedback can be sent to Firebase

What will you work on today?

- Add notification
- Add remember me (checkbox) functionality in login screen
- Update feedback screen

Any blockers?

None at this current time



Kevin Santizo

What did you work on yesterday?

- Started screen orientation locking implementation
- Added configuration selections in settings screen
- Can now display configuration selections

What will you work on today?

- Get portrait locking fully implemented
- Get configuration settings to save in shared pref.
- Send configuration settings can be sent to the Firebase

Any blockers?

None at this current time

Daily Standup

Hybrid Prosthetics
November 13th, 2021

Narendra Ramdhan

What did you work on yesterday?

- Added edit text asset
- Started feedback screen
- Sign out in overflow
- Send email to verify

What will you work on today?

- Added Google login logic
- Added Google login button functionality
- Updated some french strings
- Cleaned up strings.xml

Any blockers?

Google sign in error

Samad Agha

What did you work on yesterday?

- Fixed layout constraints
- Removed hardcoded
- Started firebase login
- Adjusted rt database

What will you work on today?

- Improved register activity
- Fully completed login with Firebase credentials
- Email verification
- Add class user with Realtime Database

Any blockers?

Google sign in error merge conflict

Henry To

What did you work on yesterday?

- Add more menu items with full functionality
- Started feedback screen
- Sign out in overflow

What will you work on today?

- Added functionality to menu items
- Completed Feedback Screen
- Feedback can be sent to Firebase

Any blockers?

None at this current time

Kevin Santizo

What did you work on yesterday?

- Translated text
- Worked on landscape layouts
- Adjusted settings layout
- Fixed merge conflicts

What will you work on today?

- Started screen orientation locking implementation
- Added configuration selections in settings screen
- Can now display configuration selections

Any blockers?

None at this current time

Daily Standup

Hybrid Prosthetics
November 12th, 2021

Narendre Ramdhan

What did you work on yesterday?

- Added buttons
- Removed hardcoded strings
-

What will you work on today?

- Added edit text asset
- Started feedback screen
- Sign out in overflow
- Send email to verify

Any blockers?

None at this current time

Samad Agha

What did you work on yesterday?

- Added progressbar visibility
- Added toasts on success and fail

What will you work on today?

- layout constraints
- Remove hardcoded
- Start firebase login
- Adjust rt database

Any blockers?

None at this current time

Henry To

What did you work on yesterday?

- Added functionality to menu items
- Completed Feedback Screen
- Feedback can be sent to Firebase

What will you work on today?

- Add more menu items with full functionality
- Started feedback screen
- Sign out in overflow

Any blockers?

None at this current time

Kevin Santizo

What did you work on yesterday?

- Started screen orientation locking implementation
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What will you work on today?

- Translated text
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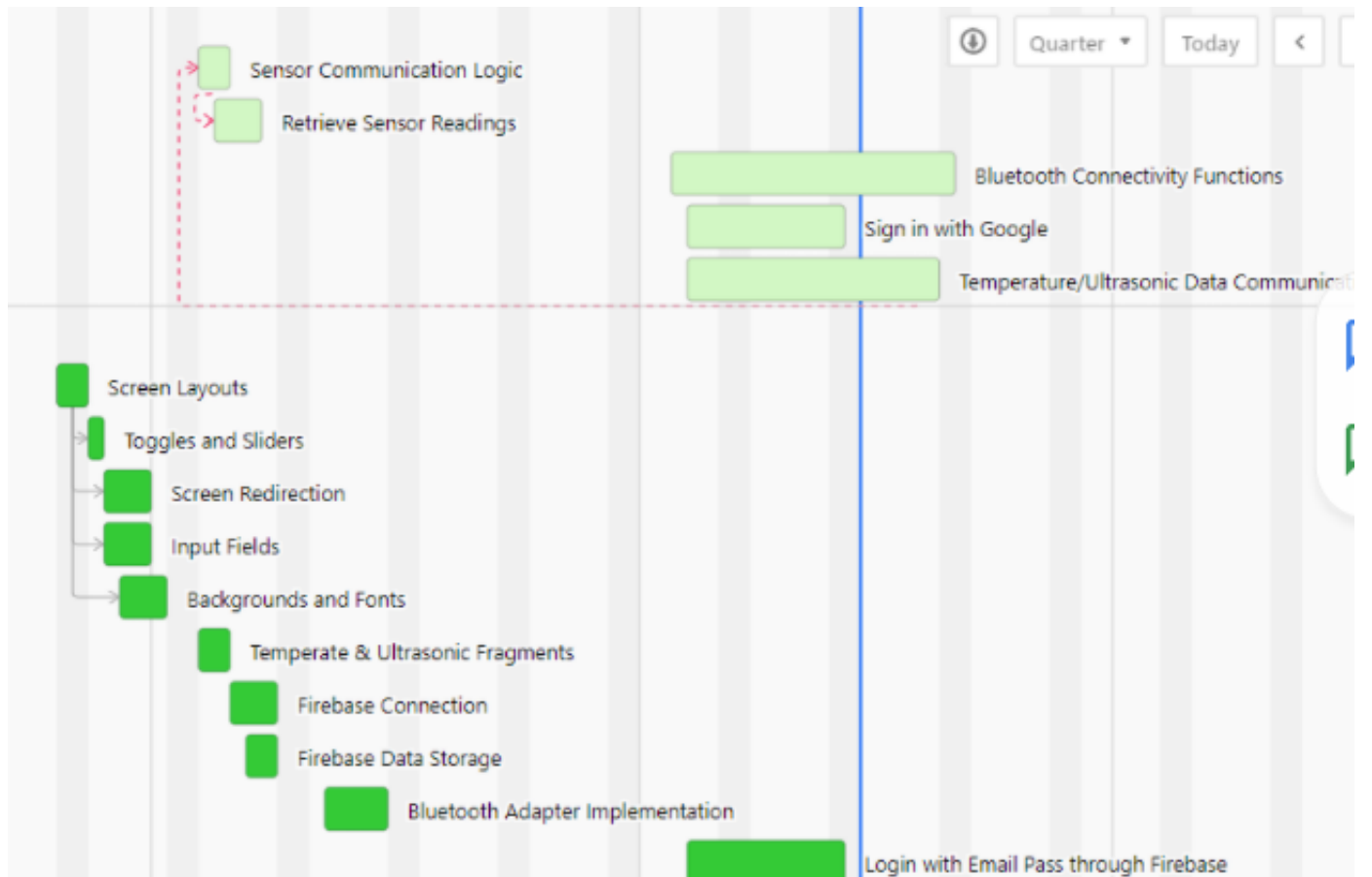
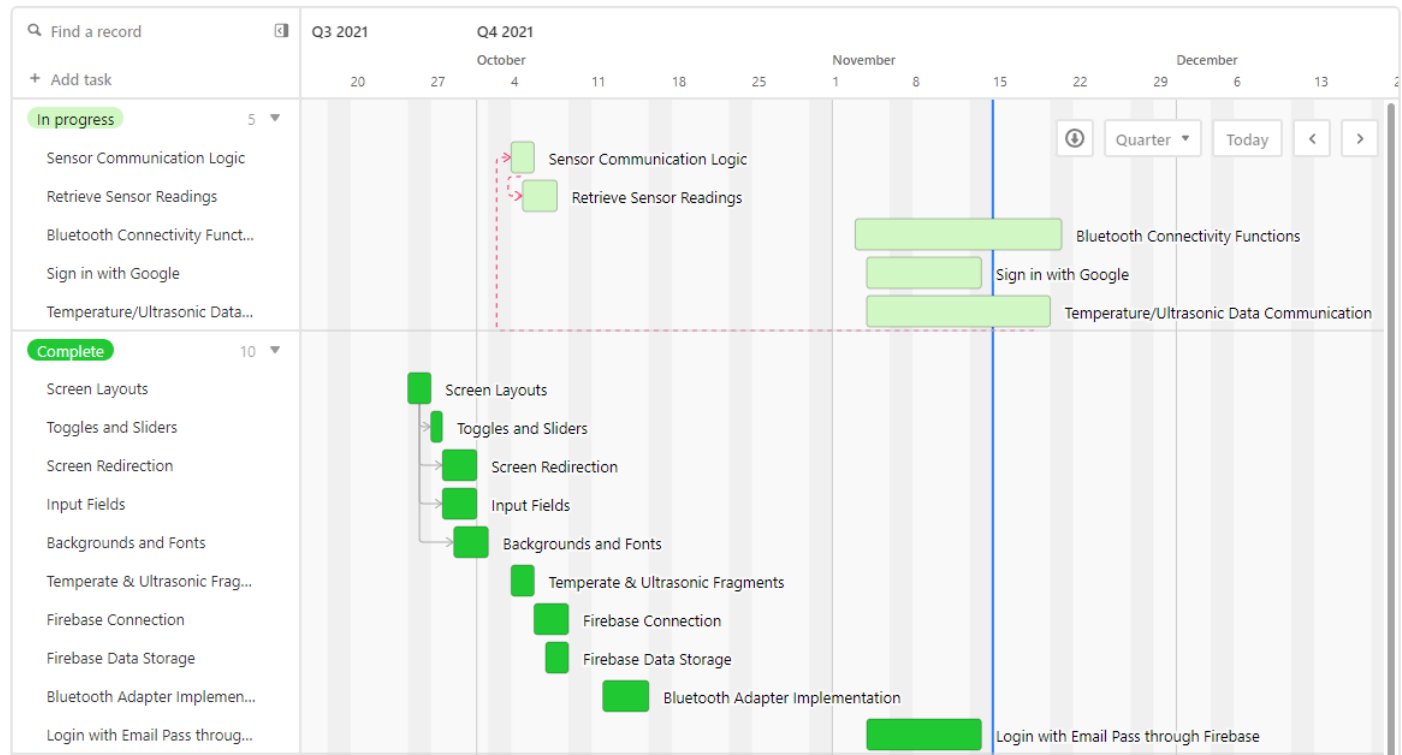
Any blockers?

None at this current time

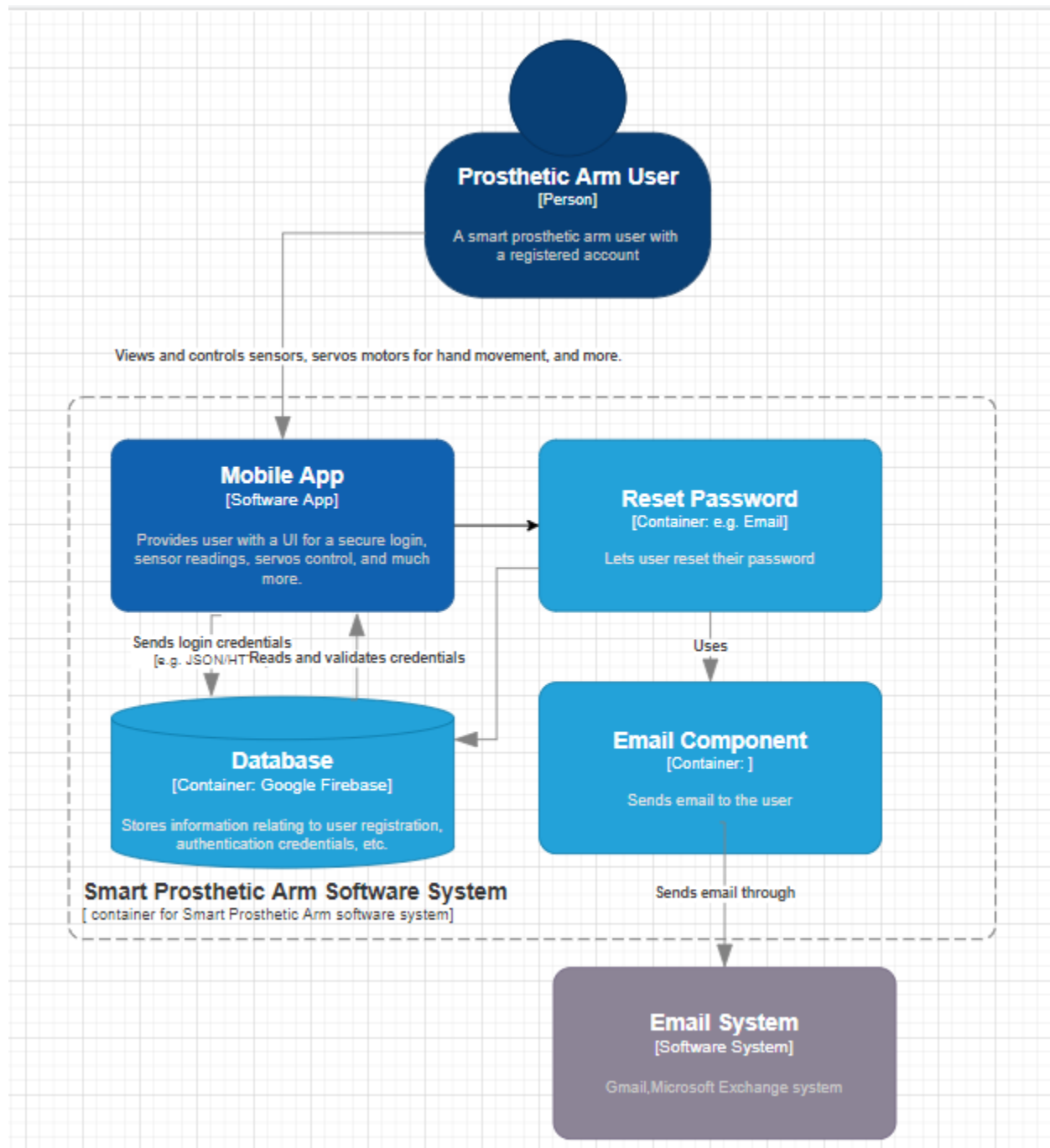
Gantt Chart:

| <input type="checkbox"/> | A Name | Category | Status | Assigned |
|--------------------------|---|------------------|-------------|--|
| | App Design | | | |
| 1 | Screen Layouts | App Design | Complete | Kevin Santizo Henry To Samad Agha |
| 2 | Toggles and Sliders | App Design | Complete | Henry To Kevin Santizo |
| 3 | Screen Redirection | App Design | Complete | Henry To Kevin Santizo |
| 4 | Input Fields | App Design | Complete | Henry To Kevin Santizo Samad Agha Alex R |
| 5 | Backgrounds and Fonts | App Design | Complete | Kevin Santizo Henry To Samad Agha |
| + | | | | |
| | CATEGORY | | | |
| | Sensor Interface | Count 3 | | |
| 6 | Temperate & Ultrasonic Fragments | Sensor Interface | Complete | Henry To Kevin Santizo |
| 7 | Sensor Communication Logic | Sensor Interface | In progr... | Henry To Kevin Santizo Alex R Samad Agha |
| 8 | Retrieve Sensor Readings | Sensor Interface | In progr... | Kevin Santizo Henry To |
| + | | | | |
| | CATEGORY | | | |
| | Login | Count 5 | | |
| 9 | Firebase Connection | Login | Complete | Samad Agha Alex R |
| 10 | Firebase Data Storage | Login | Complete | Samad Agha Henry To Alex R Kevin Santizo |
| 11 | Data Read Write with Firebase | Login | Complete | Samad Agha Alex R |
| 12 | Login with Email Pass through Firebase | Login | Complete | Samad Agha Henry To |
| 13 | Sign in with Google | Login | In progr... | Alex R |
| + | | | | |
| | CATEGORY | | | |
| | Bluetooth | Count 4 | | |
| 14 | Bluetooth Adapter Implementation | Bluetooth | Complete | Alex R |
| 15 | Bluetooth Connectivity Functions | Bluetooth | In progr... | Alex R Samad Agha |
| 16 | Servos Data Communication | Bluetooth | In progr... | Samad Agha |
| 17 | Temperature/Ultrasonic Data Communication | Bluetooth | In progr... | Kevin Santizo Henry To |
| + | | | | |
| + | 17 records | | | |

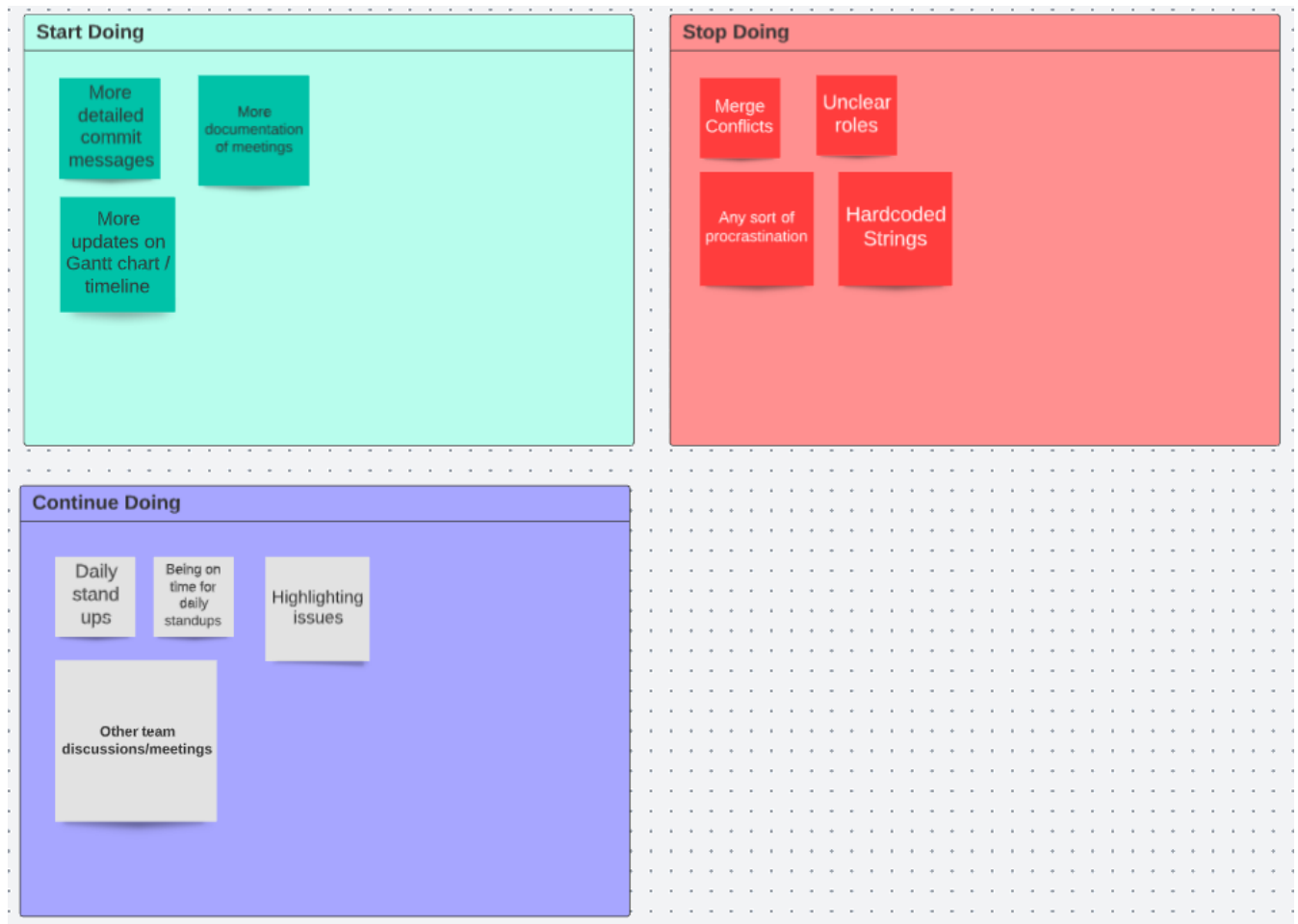
Gantt grouped by status ▾



System Context Diagram(C4 Model):



Sprint Retrospective:



Design Principles Used:

Single Responsibility Principle:

With the single responsibility principle, each class had its own purpose (one single functionality) which then minimized any sort of coupling between functions within our code.

KISS (Keep It Simple and Stupid)

Using the KISS principle is crucial when working within a team. We tried not to overcomplicate any of our code so that any teammate can easily make modifications to existing code later on and also to just overall save time and decrease the chances of bugs.

Design Patterns Used:

Builder

editText / Toast with several commands used such as .setError .setText .setSelection

We use the same class objects and different properties. With specifying the functions which allows us to simplify when building with these commands.

Dependency Injection

With Firebase implementation we were able to implement reusability and testing of the real time database. An instance of the database was created for this to take place.

USER CREDENTIALS:

samad564337@gmail.com

654321