EE/CprE/SE 492 BIWEEKLY REPORT 1

September 3 - September 16

Group number: 9

Project title: Arinc429 Portable Receiver APP and Firmware

Client &/Advisor: Colin Cox & Daji Qiao, Mathew Wymore

Team Members: Eduardo Contreras, Riley Millam, Nicholas Morgan, Jared Staskal, Nate Trotter

- **Summary**

For the flutter application, we are currently completing further testing on bluetooth low energy (BLE). This involves using the Flutter reactive BLE library, although currently testing utilizing an iPhone has proven to be difficult. For the firmware, we have tested BLE connection to mobile devices using an example online. We have also begun to work on a GATT server for the Arinc429 using the previously mentioned example. With this we added services and characteristics for the Arinc429, but this still needs further experimentation. We have also explored BLE profiles.

- **Past weeks accomplishments/issues**
    - Label storage planning completed
        - User created labels will be stored in a json file with an array of label objects
        - A class diagram for the necessary classes was created
    - Data Display page skeleton was completed
        - Dropdowns for selecting different labels and label definitions with placeholder data
        - A framework for placing data
        - Places for the expected metadata
    - Successful BLE connection from ESP32 to Mobile Device
        - Using given ESP32 example: nimBLE Heart Rate Example
        - Sent information from ESP32 to Mobile Device
        - Can read and write
    - Working on Gatt Server
        - Working off of nimBLE Heart Rate Example
        - Still in Progress
        - Needs more testing
    - Issues:
        - Running the Flutter app on iOS was being difficult due to iOS' restrictions on user actions
        - BLE on iOS causing problems, but the Flutter app is running fine now
        - Still learning Flutter ins and outs with widget types and states
        - Firmare

- Running into issues with using UUID 128 bits instead of using UUID 16 bits

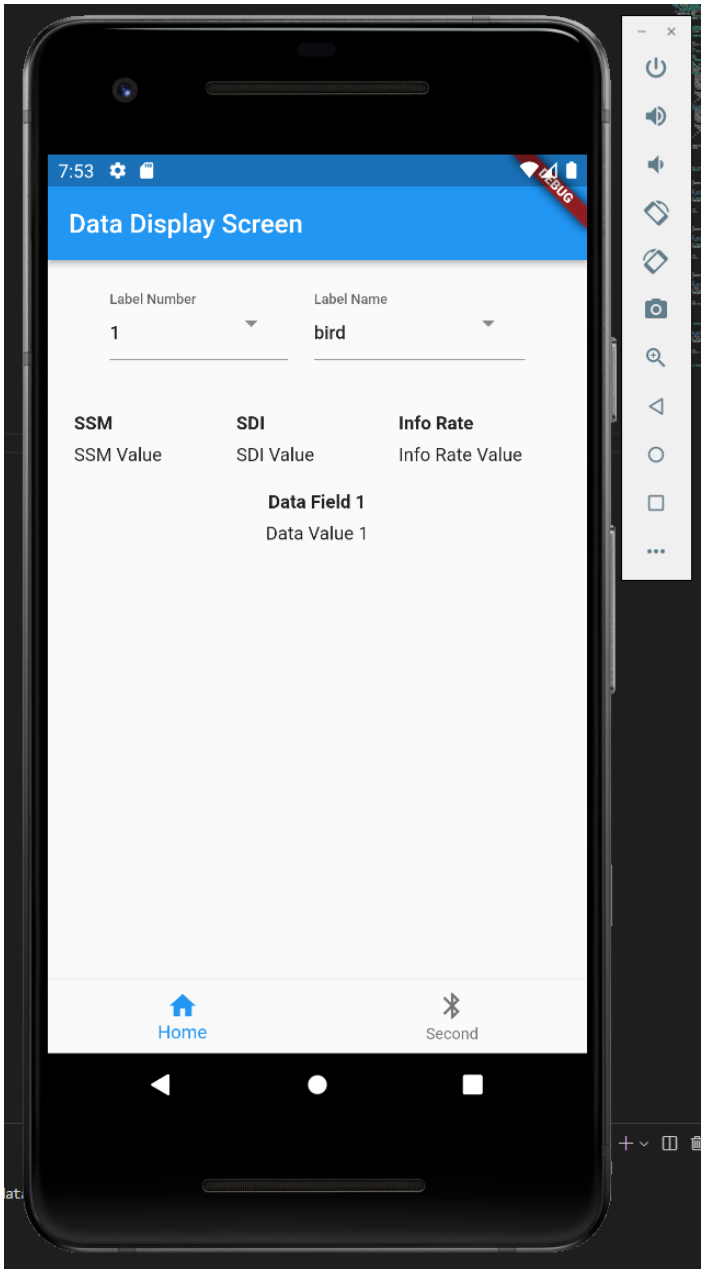
- **Individual contributions**

NAME	**Individual Contributions** *(Quick list of contributions. This should be short.)*	**Bi-weekly Hours**	**HOURS cumulative**
Eduardo Contreras	• Successful testing of BLE Connection from ESP32 to Mobile Device • Started working on gatt server • Added some services and characteristics to gatt server with their own UUIDs • Added function in gatt server needed to read UUIDs	7	7
Riley Millam	• ESP32 programming • BLE prototyping • Started working on gatt server • Successful testing of BLE Connection from ESP32 to Mobile Device	7	7
Nicholas Morgan	• Testing BLE connectivity from flutter to ESP • Setting up debugging and running from Flutter to iOS • Flutter on iOS worked, just BLE is causing problems	7	7
Jared Staskal	• Created JSON mockup for label storage • Created class diagram for label storage classes • Worked on a basic data display page	6	6
Nate Trotter	• Successful testing of BLE Connection from ESP32 to mobile device • Looked into GATT server and BLE profiles • Has been in charge of communication with the client and advisors	6	6

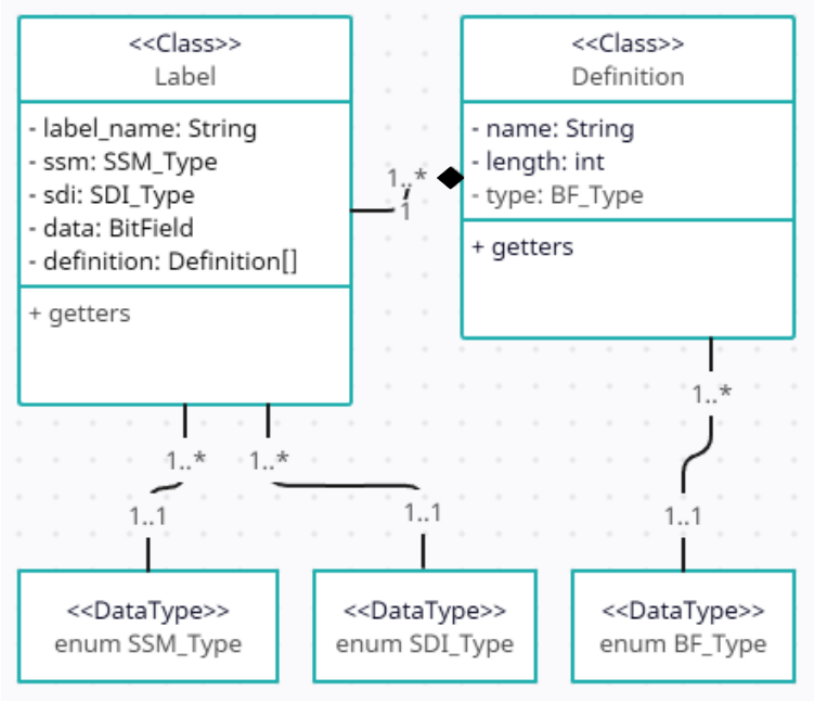
- **Plans for the upcoming weeks**

  The flutter app side of the team will continue working on making progress with the app, specifically in connecting with the microcontroller via bluetooth and beginning on other functionality of the app. On the firmware side, we plan on finishing up the gatt server and work out bugs that have been causing errors in the gatt server. We also plan to start working on the main firmware file in our project to handle how each ARINC 429 data is handled when read from an ARINC429 device.

- **Diagrams and Figures**



Start of work on data display screen



Class Diagram for Label Storage