

EE/CprE/SE 492 BIWEEKLY REPORT 6

November 9 - November 22

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've completed the Word Viewer, the Label Creator and the Word History parts of the application as well as finished their associated testing. The last work that needs to be completed is cosmetic tuning. Additionally for the firmware, our main focus has been to filter the labels we send. This will be accomplished by receiving which labels we want to filter for from the flutter app, filtering the data, sending it, and removing unwanted filters. We have been able to filter by label, send the data, as well as take up to any given amount of inputted labels from the user and filter by them. All remaining work will be to ensure proper cooperation between firmware and flutter app.

- **Past weeks accomplishments/issues**

- Words Viewer has been completed
 - Testing completed also
- Word History has been completed
 - Testing completed also
- Label Creator has been completed
 - Testing completed also
- Able to add labels to the label filter - input from user
- We have functions for removing labels from the filter and clearing the label filter
- Receive a list of labels from the flutter app and use those labels in ESP32 label filter
 - Completed
- Working on helping to implement with flutter team

- Issues:
 - Connecting via bluetooth on Android

- **Individual contributions**

<u>NAME</u>	<u>Individual Contributions</u> <i>(Quick list of contributions. This should be short.)</i>	<u>Bi-weekly Hours</u>	<u>HOURS cumulative</u>
Eduardo Contreras	<ul style="list-style-type: none"> ● Sent ARINC-429 words from ESP32 to flutter app ● Helped make label filter ● Helped implement BLE GATT service that can receive labels from flutter app and add those labels to label filter in ESP32 BLE GATT Server 	14	83
Riley Millam	<ul style="list-style-type: none"> ● Completed Word Viewer ● Completed Word History <ul style="list-style-type: none"> ○ Completed Filtering ● Fixed bugs and made tweaks 	12	81
Nicholas Morgan	<ul style="list-style-type: none"> ● Label Creator done ● Integrating label storage with creator ● Start working on Android BLE 	12	81
Jared Staskal	<ul style="list-style-type: none"> ● Started integrating label storage with label creator ● implemented data translation with the word viewer 	14	83
Nate Trotter	<ul style="list-style-type: none"> ● Sending labels from testing device to client ● Helped to make label filter ● Receiving multiple labels at a time ● Has been in charge of communication with the client and advisors 	14	83

○ **Plans for the upcoming weeks**

On the flutter app side all work is completed besides expected last minute adjustments such as color tweaks, padding, margin, etc. adjustments. On the firmware side, we plan to complete integration with flutter. We also plan on cleaning up the code and making the code easier to understand.

○ **Diagrams and Figures**

Adding the received labels from the BLE GATT client to the label filter. Below is the list of labels received.

```
I (48278) esp429: gatt_svr_chr_receive_client_ARINC429_labels_uuid value : 213
I (48278) esp429: gatt_svr_chr_receive_client_ARINC429_labels_uuid value : 214
I (48278) esp429: gatt_svr_chr_receive_client_ARINC429_labels_uuid value : 215
I (48288) esp429: gatt_svr_chr_receive_client_ARINC429_labels_uuid value : 0
I (48298) esp429: gatt_svr_chr_receive_client_ARINC429_labels_uuid value : 0
I (48308) esp429: gatt_svr_chr_receive_client_ARINC429_labels_uuid value : 0
I (48308) esp429: gatt_svr_chr_receive_client_ARINC429_labels_uuid value : 0
I (48318) esp429: gatt_svr_chr_receive_client_ARINC429_labels_uuid value : 0
I (48328) esp429: gatt_svr_chr_receive_client_ARINC429_labels_uuid value : 0
I (48338) esp429: gatt_svr_chr_receive_client_ARINC429_labels_uuid value : 0
```

After adding the received labels from the BLE GATT client to the label filter, the BLE GATT server starts sending over ARINC-429 labels (that are included in the filter) to the GATT client. Below is a screenshot of the ESP32 only sending the specified labels.

```
I (48348) NimBLE: ARINC-429 Word is 0xE00323D5
I (48348) NimBLE: ARINC-429 Word is 0x0
I (48368) NimBLE: ARINC-429 Word is 0xE00323D5
I (48368) NimBLE: ARINC-429 Word is 0x0
I (48378) NimBLE: ARINC-429 Word is 0xE00323D5
I (48378) NimBLE: ARINC-429 Word is 0x0
I (48388) NimBLE: ARINC-429 Word is 0xE00003D7
I (48388) NimBLE: ARINC-429 Word is 0x0
I (48398) NimBLE: ARINC-429 Word is 0x7FFFE3D6
```

The Word Viewer now shows the contents of the word in a human readable form that maps directly from our stored dictionary of labels.

