Team 2   Weekly Progress Report   10/3/2023

Team Members:

      Xavier Howell   Ahmad Saeed

      Dev Gohil   Eric Zizumbo

Group Meeting Minutes: 22 minutes

Summary of Team Tasks Assigned:

1. Major tasks assigned this week have been to receive and develop the additional hardware components. This includes the bluetooth module and haptic feedback. Getting them to work with the STM32 and code for app development.
2. Developing the app to be at the initial testing phase.
3. Eric has also redesigned and printed the cases needed to house our hardware components in a smaller package.

Summary of Team Accomplishments:

1. Created the basic layout of the app and different pages of information access and registration. Was able to create the initial app launch screen and pages responding to the menu buttons displaying user information.

Tasks Assigned for Next reporting period:

1. Layout map of design for hardware and wiring diagram for cane use.
2. Power source testing.
3. Connecting the app with STM32 module once the app is navigable in simulation

Issues:

1. Bluetooth module doesn't work with ios devices
2. The in app communication setup in between screens has been an issue as while using Kotlin as the design language had to download various importable to allow communications between classes

Please include supporting documentation

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Individual Summary (cont.)

Name: Xavier Howell

This week I've been mostly sick. I've been testing the ultrasonic sensor for better accuracy and developing triggers for overhanging objects to be detected.

Accomplishments this reporting period:

1. None

Issues:

1. Sick.

2. Need to develop housing to hold additional sensor for overhead ranging.

Tasks Assigned for Next reporting period:

1. Layout map of design for hardware and wiring diagram for cane use.

2. Power source setup and design.

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<u>Individual Summary (cont.)</u>
<u>Name</u>: Ahmad Saeed

<u>Accomplishments this reporting period</u>:
1. Working on programming the bluetooth HC-05 module on the STM32 - L4 series board. Using the stm32 board to communicate to the bluetooth module via UART. Debugging issue for 4 hours.

<u>Issues</u>:
1. Having some issues trying to read the received data being sent out to the bluetooth module from stm32 via terminal.
2. Module is not compatible with iOS.

<u>Tasks Assigned for Next reporting period</u>:
1. Ordered bluetooth 4.0 BLE module to be able to test communication via iOS
2. Get HC-05 module working

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Individual Summary (cont.)
Name: Dev Gohil

Tasks assigned this week:
I took the task to set up the user Authorisation and server setup for the information storing from the app and have a simulation of the apps screens working together. Also to hev the server be able to communicate with the Maps API to track the device.

Accomplishments this reporting period:
I created the App launch screen demo with two buttons allowing the app user to either register the device or track an existing device. The simple layout is as follows:
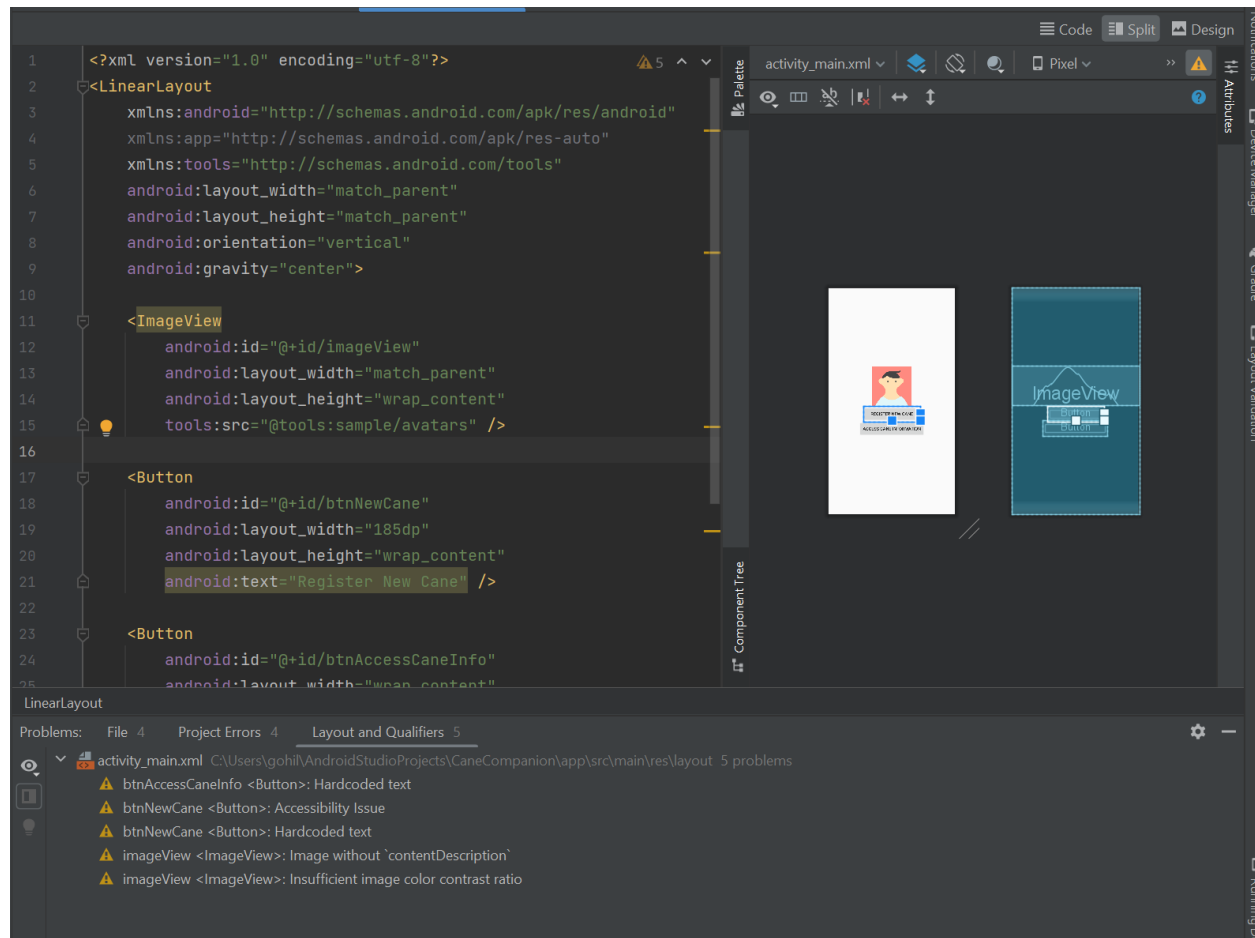
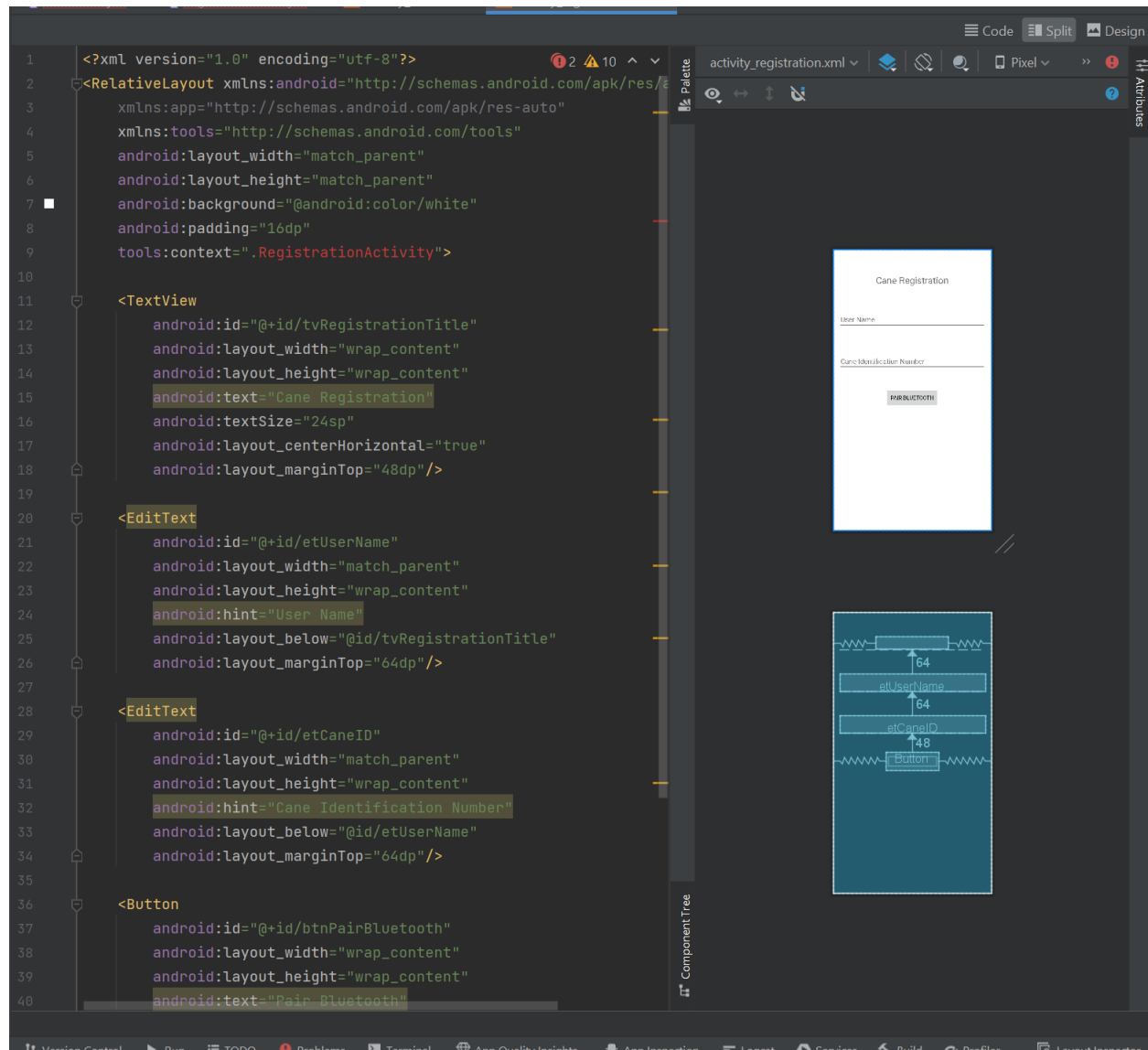Please include supporting documentation

To register a new cane device the button takes the app to the next screen allowing the user to add information and connect bluetooth:

The second button on the menu screen take the user to a similar screen with just the option of entering the cane users name and ask for tracking permissions

The registration app screen upon successful first time connection asks for general information and location access of the device and updates this information to the server every minute. And also the preferred notification access for the device to alert the user for obstacles

The Tracking screen generally only shows basic information of the primary cane user but can also request for location access by becoming a secondary user (for user family/friends).

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Issues:
The app development needed new packages to be downloaded at every step and mending the code accordingly of all the components to be acting together this led me to not be able to test the comprehensive application by this week as planned. The device also needs to connect to the STM32 via bluetooth before the application updates the data.

The server setup took permissions of the APIs to be able to update periodically and I need a less server expensive way to make the communication.

The Device permissions also hindered the app as the emulated device was required to give access at every step of navigating the app instead of just once and storing the Cache.

Tasks Assigned for Next reporting period:
 The emulated app needs to work proficiently before connecting to the STM32 and upon connection checking that the accurate information is being displayed. And testing the notifications feature is functional to reduce the battery consumption of the device.

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Individual Summary (cont.)

Name: Eric Zizumbo

Tasks Assigned for this reporting period:

1. The case design is too bulky, so the professor suggested going back to the basics and imagining *how* our new parts should fit onto the cane itself. This week's task is about creating a physical model of how the parts should fit onto the cane.

Accomplishments this reporting period:

1. This was a very short experiment, but I managed to have a concept for how to fit the parts onto the cane. With the help of 3D printing and my imagination, I taped my "parts" on the cane.

The 3D prints for the STM32 and sonar sensor

I left out the Bluetooth module as the ones I looked up online are typically small (one design from Amazon is 2 in. x 1 in.). The sensors are also ~2 in. long, so it falls in line with the dimensions of the other parts.

Here is a side shot of the mock up design and how it compares with the case. It's slightly above the tip as it was suggested to make the case slimmer. While the case could be lighter, I feel the final case design would only be slightly thinner on the horizontal axis. It was suggested to have the sonar sensor turned 90°. However this will only limit the range

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width of the sensors. This will be implemented on the handle design since it was decided to check for shoulder-level obstacles from the user's wrist.

Issues:

1. My tasks are bottle-necked by a parts list. Some parts are still decided upon, so I had to omit a few "models" from the mockup (though some parts are just simple square-like objects, as is the case with the Bluetooth module).
2. The 3D prints do not account for wiring or for a breadboard.
   a. The professor asked that I have a Blue Sky approach to this week's design, so my omissions should be addressed for next week.

Tasks Assigned for Next reporting period:

1. I had a lax week, so for the next report, I plan on going back to last week's design and fitting the parts back in. I know everyone does not like the bulkiness of that design, so I will try to make it slimmer and longer (or as long as the Makerspace will allow me to print).
2. The mockup I have is quite ugly. I could spruce it up by 3D printing some molds to hold my other molds in place, though I would rather work on the case again.

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