EE/CprE/SE 492 BIWEEKLY REPORT 6 (11/9/2019 – 11/22/2019)

Group Number & Project Title: (5) Road Safe Phone Case

Client: Christine Shea-Hunt

Advisor: Dr. Diane Rover

Team Members/Role: (Software) Zixiao Lu, Yifei Wang

(Hardware) Kedan Xin, Yue Chen, Sarah Baratta

Weekly Summary

For the past two weeks, the team has been focusing on implementing the messaging system, presenting the group's difficulties regarding the project to peers, and preparing documentation to finish up the project. As for the messaging system, the bluetooth module has been tested and certain members are developing the code for the app that will be used to send messages. Regarding the team's technical difficulties, the 3D printing aspect of the case along with the marketing side showed to be the biggest challenges. The team has been reviewing feedback from peers to see if plausible solutions have been provided. Lastly, the project timeline is nearing its end. Thus, the team has begun work on the project poster, a user manual, and the final case design.


Past week accomplishments

The team is using google firebase as our project's server and back-end development. Firebase is a framework which is help for building portable and web application for your business with real-time database which implies when one user updates a record in the database, that update would be conveyed to every single user, be those users on a website, iOS or Android device. It gives a basic and unified platform with so many Google features packed-in. When you use Firebase, there is no need to configure a separate server. Everything will be taken care of by Firebase automatically.

One of the key features we need from Firebase is the real-time database. Real-time Database in Firebase is a cloud-hosted database. Data is stored as JSON and synchronized continuously to each associated client. When you build cross-platform applications with iOS, Android, and JavaScript SDKs, the greater part of your customers' demand is based on one Real-time
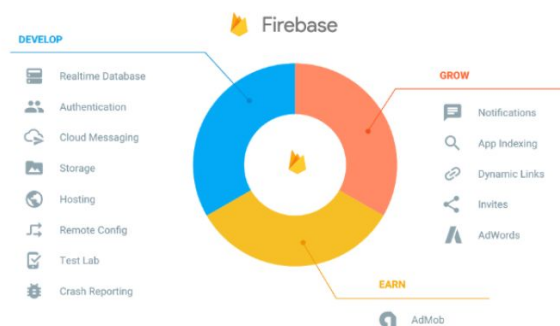
Database instance and consequently getting updates with the most current data. By utilising this feature of Firebase, there is no necessity to make your own database or own API, Firebase handles all the components that usually come along with creating a backend for applications. It gives an adaptable, expression-based rules language to define how your data should be organized and when information can be perused from or composed to. With this tool, the app has been created, as shown in the images below.
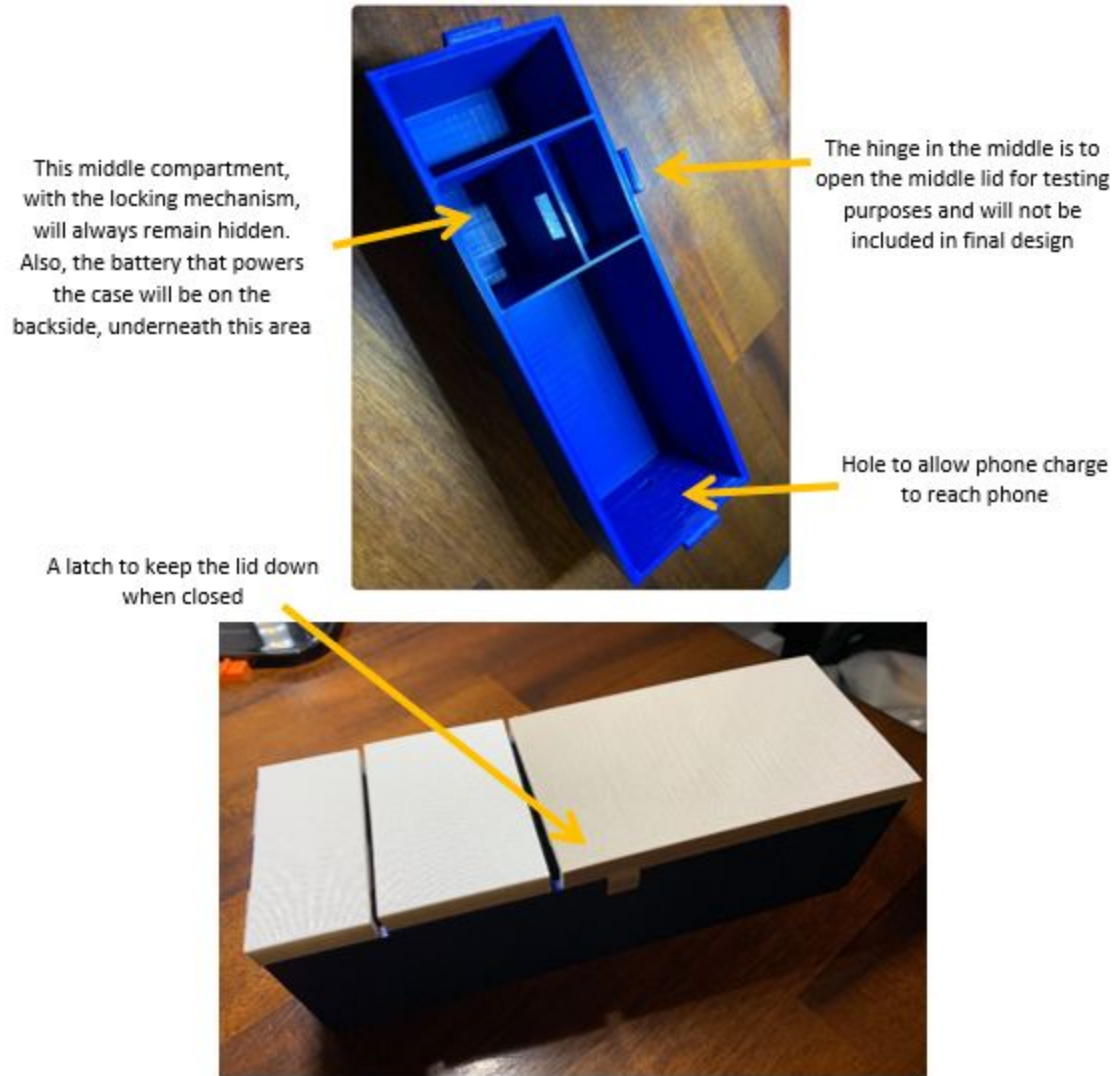
Messaging System App:
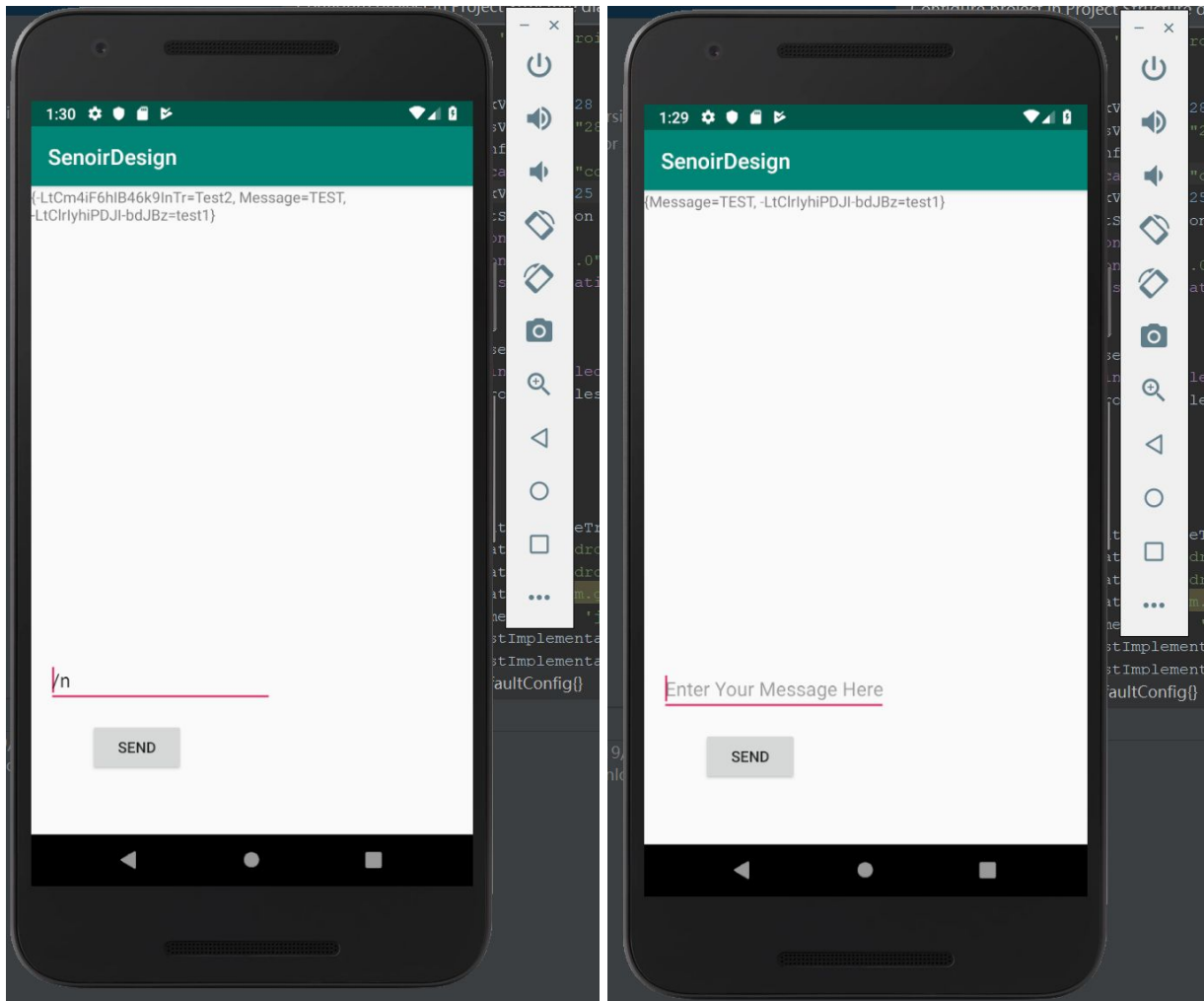
The team has been able to send messages through the app from one side to the other without GSM module. A screenshot of the code has been included on the following page.

Messaging System Code:

```java
public class MainActivity extends AppCompatActivity {

    private DatabaseReference myDataBase;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        final TextView chatMessage = (TextView) findViewById(R.id.textView);
        Button sendButton = (Button) findViewById(R.id.button);
        sendButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                sendMessage();
            }
        });

        myDataBase = FirebaseDatabase.getInstance().getReference();
        myDataBase.addValueEventListener(new ValueEventListener() {
            @Override
            public void onDataChange(@NonNull DataSnapshot dataSnapshot) {
                chatMessage.setText(dataSnapshot.getValue().toString());
                Log.d("WTF", "onDataChange: ");
            }

            @Override
            public void onCancelled(@NonNull DatabaseError databaseError) {
                chatMessage.setText("Canceled");
                Log.d("WTF1", "onDataChange: ");
            }
        });

    }

    public void sendMessage()
    {
        EditText messageToSend = (EditText) findViewById(R.id.send);
        myDataBase.push().setValue(messageToSend.getText().toString());
        messageToSend.setText("/n");
    }
}
```

The second life-sized version of the case was also printed out and assembled. The updated version includes a hole for charging the phone, an enclosure for the 9V battery that will power the circuit, and an inner wall to help hold the locking motor. The dimensions inside the case and the overall size were also altered to allow more phone types to fit in the case. An image of the newly printed case is on the following page.

This middle compartment, with the locking mechanism, will always remain hidden. Also, the battery that powers the case will be on the backside, underneath this area

The hinge in the middle is to open the middle lid for testing purposes and will not be included in final design

Hole to allow phone charge to reach phone

A latch to keep the lid down when closed

Described below is what each individual team members worked on:

Zixiao Lu: working on the user token authentication, finished up the database and display text format. Research on Bluetooth connection

Yifei Wang: Helped to connect bluetooth module. Assist Lu on developing the chat room app. And present the challenges we had at class time.

Kedan Xin: Helped to connect bluetooth module. Also, finished designing and printed out the 3D module of the second case. Assembled the parts together.

Yue Chen: Attended presentation, helped with case design and started poster design for the final presentation, made the plan for battery testing

Sarah Baratta: Began to work on the user manual for the case as long as sketches to depict use cases, which may possibly be added to the team's website. Meet with advisor to update and

receive feedback. Discussed current case design with client and asked for feedback. Present project difficulties to class.

Individual Contributions Table:

Name	Individual Contributions	Hours This Week	Hours Cumulative
Zixiao Lu	Working on the user token authentication, finished up the database and display text format, research on Bluetooth connection	8	82
Yifei Wang	Helped to connect bluetooth module, assist Lu on developing the chat room app, present the challenges we had at class time	8	86
Kedan Xin	Helped to connect bluetooth module, print out 3D module, assemble second life-sized prototype, meet advisor	8	100
Yue Chen	Attended presentation, helped with case design and started poster design for the final presentation, made the plan for battery testing	8	92
Sarah Baratta	Presenting difficulties to peers, discussing project with advisor and client, working on user manual and sketches	8	96

Plans for the Upcoming Week

For the upcoming week, the team will keep working on the Bluetooth module implementation on the microcontroller and create a more concrete connection between the cellphone and the case. The team will attempt to finish the poster and user manual during Thanksgiving break to allow time for tying up loose ends during the final weeks and to help the client search for ways to manufacture the case.

Described below is what each individual team members plans to work on:

Zixiao Lu: Finish up the Bluetooth connection and the rest of the application

Yifei Wang: Keep working on the bluetooth module and build up a connection from the case side to the phone side.

Kedan Xin: improve the module of the case, keep working on the bluetooth module

Yue Chen: Continue to work on the project poster and help the parts assembling.

Sarah Baratta: Research marketing options for the client. Record all changes that need to be adjusted from the second life-sized prototype so that the final product is as desired when printed. Also, continue working on documentation, such as use cases and the user manual.