

Executive Summary

The original design problem was to create a way to scan and record an individuals' temperature without having them come in contact with a thermometer. The temperature scanner should be reasonable in size, easy to use, and operate over a distance of 10 cm max. To allow for our scanner to be easy to use we decided that we would want to have an app that controls when the scanner measures a user's temperature. The app would be used through a bluetooth connection from the phone and it will also be used to store the recorded temperatures to allow the owner or users to view past data of the scanner.

We wanted our system to be compact and easy to use, this is why we decided to create an app to handle when our system should scan a user's temperature. For our system we decided to use an Arduino Uno R3 microcontroller, MLX90614 infrared sensor, custom PCB for the infrared sensor, HC-SR04 ultrasonic sensor, and a bluefruit UART BLE Friend which was used for the bluetooth connection between the phone and the app.

The arduino uno microcontroller was the core of our system, it handled the connections to our other components. While our app was coded in Java, how the temperature sensor works is the bluetooth module will wait for a connection and once that connection is established the app has a scan button that can then control when the microcontroller will send data to the app. Upon pressing the scan button if the user is within range of the scanner, the appropriate temperature will be displayed on the app otherwise, if the user is not within the acceptable distance, the app will prompt the user to either move closer or further away from the sensor.

To reach this result, in the beginning we started by brainstorming ideas about different designs and considering which design would best fit our given problem. After agreeing on a desired design we discussed which parts we would use for our system. Once we had those tasks complete we chose to split the tasks up into different blocks and have each individual complete their block and once each of us completed our blocks we would try to combine each section and from there test and revise the whole system to allow for it to work as a temperature scanner. This process was not always smooth and there were difficulties along the way. For example when we started to combine our individual blocks together we realized that our enclosure design would need to be re-evaluated, we also noticed how our sensors were not the best at providing accurate measurements over a long distance.

Looking back at the project now that it is complete, some lessons that we have learned is to put in more time when deciding on the components for our system to check and ensure that they will accomplish the desired requirements provided by the customer. With that being that, if we were to improve this project in the future we would probably change some of our sensors that are more accurate over a longer distance. Lastly, below is our project timeline.

[illegible]