Hot Car Emergency

Deliverable F: Prototype I & Client FeedBack

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November 1, 2021

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1.   Introduction

In this deliverable we will be presenting our first prototype and how we tested it. We will be explaining what is expected of it and visualising how it functions. We will also discuss the feedback we got from our client on our idea and how we have incorporated that into our product to fit his needs.

2.   Prototype I

Our first prototype consists of an Arduino, Breadboard, DHT11 sensor, PIR Sensor, and a buzzer. > Figure 1
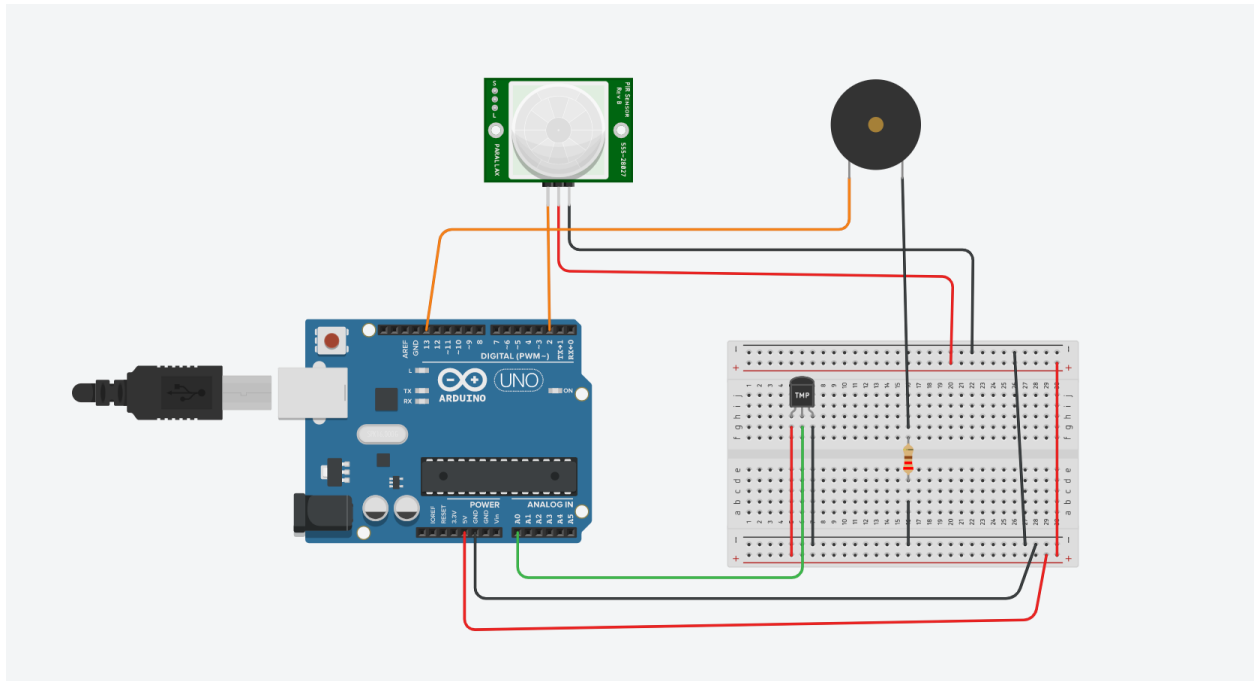

Figure 1

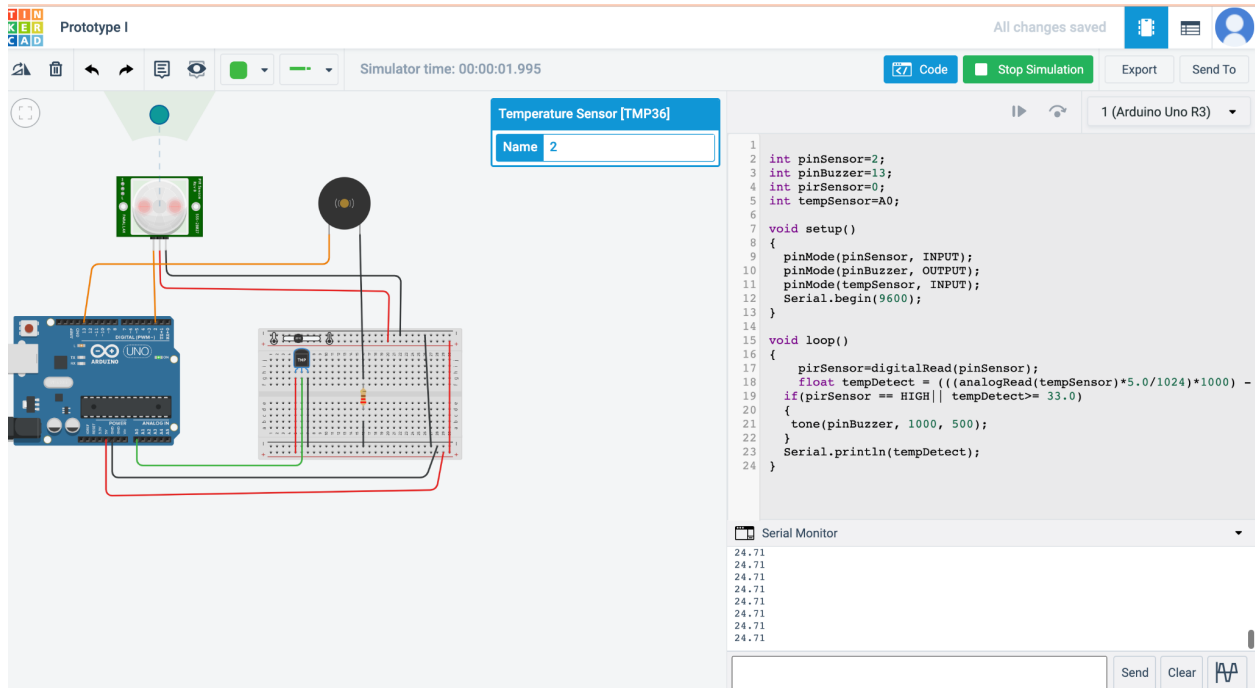When motion is detected, the buzzer is activated. >Figure 2

Figure 2

Finally, when the temperature rises to or above 33∘C, the buzzer is activated. In Figure 3 the temperature is 53.03∘C (which is >33) therefore the buzzer was activated.
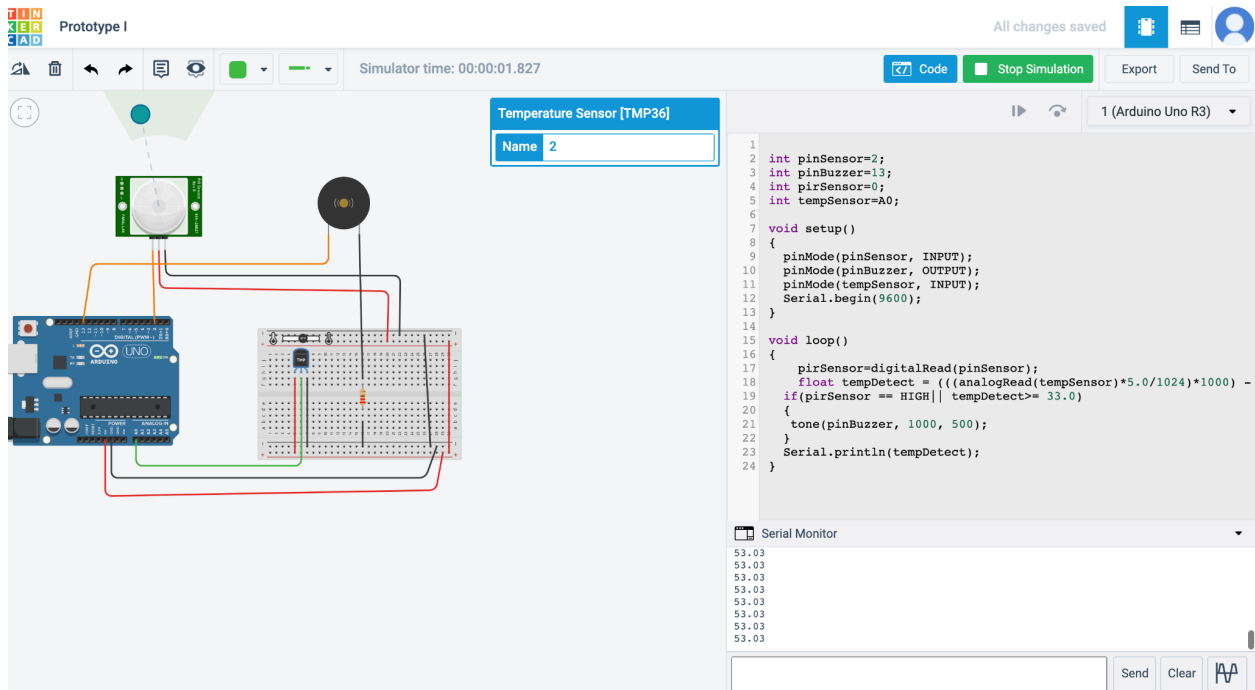

Figure 3

3. Prototype testing plan

3.1. What

We will be testing our first prototype which consists of an Arduino and connected to a breadboard and motion sensor and temperature sensor. Once motion is detected or the temperature rises above 30◦C the buzzer should make a sound.

3.2. Why

We are testing this to make sure that there are no complications in our product and that it meets our client's needs.If any problems arise we can solve them ahead of time and understand what is causing them before adding all the components to our final prototype. Additionally we will present this to our client to show him how our product is comin along therefore, we need to make sure it is functioning properly to correctly visualize to him our construction process.

3.3. How

We will start by composing our circuit on TinkerCad and running the code with the buzzer and temperature and motion sensor to prevent damage to our parts. Once everything is connected and functioning properly and the code is running, we will start working on the physical copy of our prototype. We will first connect the motion sensor and speaker with the resistor to the arduino using a breadboard and run the code. If everything is working we will move on to testing the temperature sensor and speaker separately from the motion sensor. If that is also giving us the expected output, we will test our whole system together including the temperature sensor, motion sensor, and the speaker. We are testing our prototype in gradual steps to prevent any damage to our parts and be able to identify any issues right away rather than having to figure out which sensor is not functioning properly or causing the issue.

3.4. Stopping criteria

We first attached the motion sensor and put an object within range, the speaker started to make a sound as shown by Figure 2. Next, We attached the motion sensor and set the temperature 53.03 ˚C and as expected the buzzer made a sound (as illustrated by Figure 3). We are currently in the process of building our physical prototype and will be repeating these steps to our physical model and recording them in the same manner.

4.　Client Feedback

　　　After having our client meeting, we received feedback on our product allowing us to make adjustments to our product. Our client told us about how they wanted our product to take immediate action. This means that if there is a child inside the car, then the parent should be alerted. When we are writing our code, we will include whether the arduino is powered by the discharge of the battery, meaning that if the car and its engine are off, then the motion sensors will detect motion and immediately alert the parent.

5.　Conclusion

　　　After our client meeting, we have gone over our prototype and taken into consideration our clients feedback. We have gone over what our prototype is and how it will work, as well as what our prototype testing plan is, how it will work and why we have it.

6.　Wrike link:
https://www.wrike.com/open.htm?id=758826332