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Hot Car Seat Safety Alarm

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Hot Car Seat Safety Alarm

Final Project Report

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4/29/2016

ENGW 421 Technical Report Writing Project

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This document holds the complete development of the Hot Car Seat safety alarm. This device notifies the user if there is an occupant in their vehicle via text notification and then strobe when the Relative Humidity reaches dangerous zones. Images and testing documentation and development of the final device are all included within.

Executive Summary

Overview

As a busy parent it can be easy to need to run into a friend's house or just stop by some place with your child in the car. There is that moment of thought for many parents, "I can just run in real quick and leave the child in the car seat. The baby is sleeping, if I get her out it will wake her up. It is just going to be a minute." They crack a window slightly, get out of the car, lock the doors, and within minutes the inside of the car goes from a comfortable 72 degrees Fahrenheit after running the A/C to a blistering 85 degrees, 95 degrees, and then it is too hot to even handle. What seems like a minute for the parent can turn into what seems like hours for a baby. If the temperature is 85 degrees outside, the temperature inside a parked car with the windows cracked can reach above 100 degrees within 10 minutes. (FPRC, 2009)

The Hot Car Seat Safety Alarm is a device that will help avoid this situation or worse by measuring humidity and occupancy in a vehicle and notify the user that there is a child present in dangerous conditions. The goal is to allow people who have moderate to low income to be able to safely monitor the potential for such tragedies to put them at ease. There are some car seats that come with a device similar to this, but they aren't interchangeable and the aftermarket devices are fairly expensive.

Deliverables

This device will be a working prototype that will consist of a humidity sensor, switch to detect occupancy, and 2 separate alarm/notification circuits. This final report and a presentation shall take place at the end of the semester to demonstrate said deliverables and also to solidify the need for such requirements in car seats.

Schedule

The overall schedule was slated for December 2015 through April 2016 with the final presentation taking place on April 29th. The design phase has been given an 8 week time frame and part ordering was during that time. Integration and testing was scheduled to start at the end of February leaving an ideal prototype completion of the end of March into mid-April. During this development notes have been taken to assist with the final presentation and also the report.

Cost

The device cost was projected to be around \$35 originally but with the need to purchase additional parts the total plus shipping came out to around \$62. Since there was an issue with shipping causing a massive delay, there was a refund granted to get the overall cost to around \$50. This total includes some items that were in bulk. For example, I ordered a set of 20 switches so this expense will be able to stretch out between that many devices. The greatest expense was the purchase of two Arduino boards, which in real world environments would only be a single board set up with the appropriate programming to communicate to the receiver.

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