Door lock detection

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420-N55-LA IOT: DESIGN AND PROTOTYPING OF CONNECTED DEVICES

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December 6th, 2022

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Project Introduction

In this project, our goal is to build a system to make it easier for people to know if their door is locked or unlocked. Whenever the door is locked or unlocked, you will get a text notification on your phone to give you that certainty you did not forget. When the door is locked, our product will also emit a sound to reassure door was locked.

Target Audience

Our target audience is anyone who may forget to lock their doors. People who get up in the middle of the night to make sur they did, people who get out of their car to make sure they did not forget. Mainly adults 20-40.

User Stories

- As a mother, I want to make looks if my door is locked so I can sleep in peace.
- As a mother, I want to make sure my kids to not forget to lock the door so that I don't have to keep thinking about it
- As a student I want to make sure my roommate closes the door because he keeps forgetting so that no ones can enter our apartment
- As a mother I want to know if my door is unlocked late so that I know if my kids are sneaking out without me knowing
- As teenager I want to use my cellphone so that I know if I locked the door before leaving.

Hardware design

Sensors Used

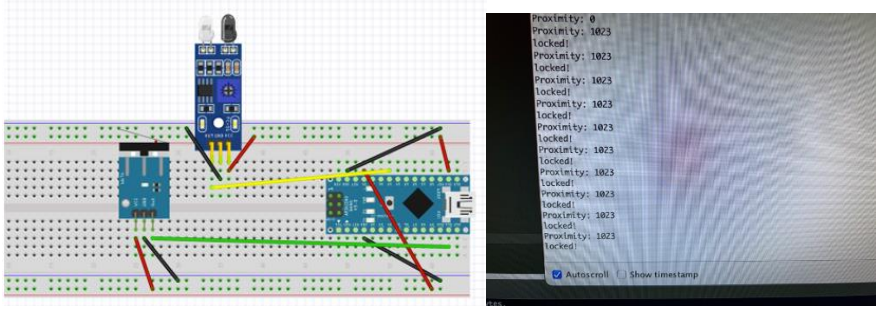
- IR Receiver
- Passive Buzzer

Hardware schematics

Wire connection diagram

Data Sampling

The buzzer is simple to use and simply emits a small buzz. But the IR sensor is harder to use. It checks for distance and can measure from 0 to 1023. In our case, the door will be locked when the sensor detects 1023, or when the door lock does not block the sensors vision.



MongoDB Schema

We will have an ID field, date field to know when door was locked or unlocked, the time of the action, and the action, to know when was door unlocked or locked. We will also have locations, because customers might have multiple systems, and install them on multiple doors and finally, a customer ID.

A	B	C	D	E
_id	action	location	customerid	timestamp
638ee3f7703e0f92293097c7	unlocked	front-door	b733d7b2-75e9-11ed-a1eb-0242ac120002	2022-12-06T01:40:55.000+00:00

GitHub repo

https://github.com/fewdw/flask-iot-api
A documentation for the API can be found on there.

References:

[1] "Use a buzzer module (piezo speaker) using Arduino Uno," *Arduino Project Hub*. [Online]. Available: https://create.arduino.cc/projecthub/SURYATEJA/use-a-buzzer-module-piezo-speaker-using-arduino-uno-89df45. [Accessed: 12-Nov-2022].

[2] "Use an IR remote transmitter and receiver with Arduino," *Arduino Project Hub*. [Online]. Available: https://create.arduino.cc/projecthub/electropeak/use-an-ir-remote-transmitter-and-receiver-with-arduino-1e6bc8. [Accessed: 12-Nov-2022].