**DMN Alarms**

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# Introduction

Our IoT application is an alarm system for single-entry rooms containing valuable documents of some form. After passing fingerprint and facial recognition, the electric strike door lock is unlocked, and entry is granted. There is a door sensor to detect when the door is open and closed. A Database is used to store fingerprint, facial images, date, and time of access. Each stage of the process is accompanied by a speaker, buzzer, or light (to facilitate various levels of abilities). A flask website is to be used to facilitate a typical front-end user.

# Hardware

## Circuit Diagrams

**Circuit:**

Diagram, schematic

Description automatically generated

**Fritzing circuit commentary:**

* Raspberry pi 3 used for diagram.
* Assuming leds need 2.2 forward voltage, the resistor needed is a 68.75 ohm one.
* The grounds of all the leds may be connected, and then plugged into a single ground pin on the pi, freeing up n-1 ground pins. Although unknown if diodes will need to be added.
* Momentary switch button will be used for sending a signal to raspberry pi.

**Problems to solve:**

* Figure out if common ground for all the LEDs need diodes to restrict electricity to flow in one direction, towards the GND pin on the pi.
* Experiment and figure out connection of PIR sensor to the PI.
* Research how to restrict the “Field of vision” of the pir sensor to only see a specific area.
* Build homemade door switch & add to Fritzing diagram
* Figure out a way to use less power and perhaps less connections to GPIO pins for the LEDs (Since there is a 50mA current limit the pins can provide in total).

## Hardware Requirements:

**Acquired:**

1x pir sensor

1x pi camera module (specially made, plugs into special port)

1x buzzer (works with gpio and 220 ohm resistor)

1x speaker (hdmx, connected to aux, perhaps powered thorugh usb)

**Purchase required:**

1x fingerprint sensor <https://thepihut.com/products/round-all-in-one-capacitive-fingerprint-sensor-d?variant=41540357849283>

1x USB to UART <https://thepihut.com/products/usb-to-uart-module-micro-mini-type-a-or-type-c?variant=41771472584899>

(3x red leds & 3x green leds **OR** 3 rgb leds) <https://thepihut.com/products/ultimate-5mm-led-kit?variant=188614180881>

1x electric strike lock <https://www.amazon.co.uk/gp/product/B0027VB810?psc=1>

1x door switch (commercial or built)

1x button

# Data, Data Storage and Data Processing

What Data is gathered

How it will be stored

How it will be processed

# Security

How to secure stored data

Physical device security

Locking mechanism

# The UI, User and User Testing

Front-end Interaction

# Versioning

Version 1: Document Creation – 07/10/2022

Version 2: Introduction, Table of Contents and Hardware requirements – 08/10/2022