IOT Project

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Meet Kaylee!

Using The Mailbox

Says

- Do I really need to check it right now?
- Ugh! Its empty
- Son, go check the mailbox real quick
- The mail guy does't even knock the door for me!

Thinks

- This is so annoying!
- How can I fix this problem?
- People can steel my stuff if I do not secure my mailbox
- When will my paperwork arrive?

Does

- Checks the mailbox every afternoon
- Leaves a note to the mail guy to knock the door before leaving
- Put's a camara to secure his mailbox

Feels

- Stress
- Insecure
- Desperate

Purpose Statement

What I am creating

- I will be creating IOT project
- This project is a mailbox with a circuit that would trigger an alarm inside of your residence in order to notify me that the mailbox has came

Purpose Statement
Why is being created?

- Tired of checking the mailbox? Not being able to catch on time who is stealing your bills?
- This circuit would not only allow us to save a lot of our valuable time, but would also make our mailbox more safer from evil individuals

Purpose Statement
Who would be using it?

- The main goal for this project is to make it as versatile as possible
- By allowing people that own either apartment or traditional mailboxes be eligible to use this sensors.

Market Research
The Mail Chime

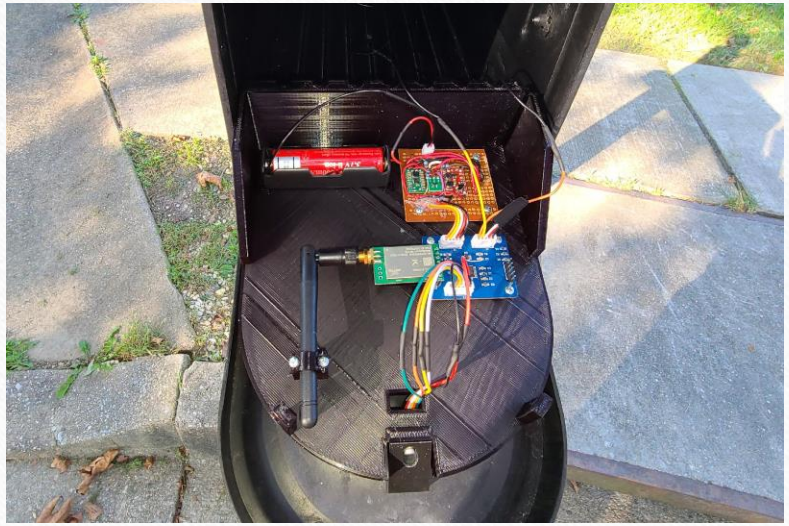
- When mailbox is open, the sensor triggers an alarm that is plugged in anywhere in your house.
- Sensors are wireless

- **Key take away:**
  - Sensor + alarm + mobile app = Efficient mailbox detector

Market Research
HACKADAY.IO
Mailbox Sensor

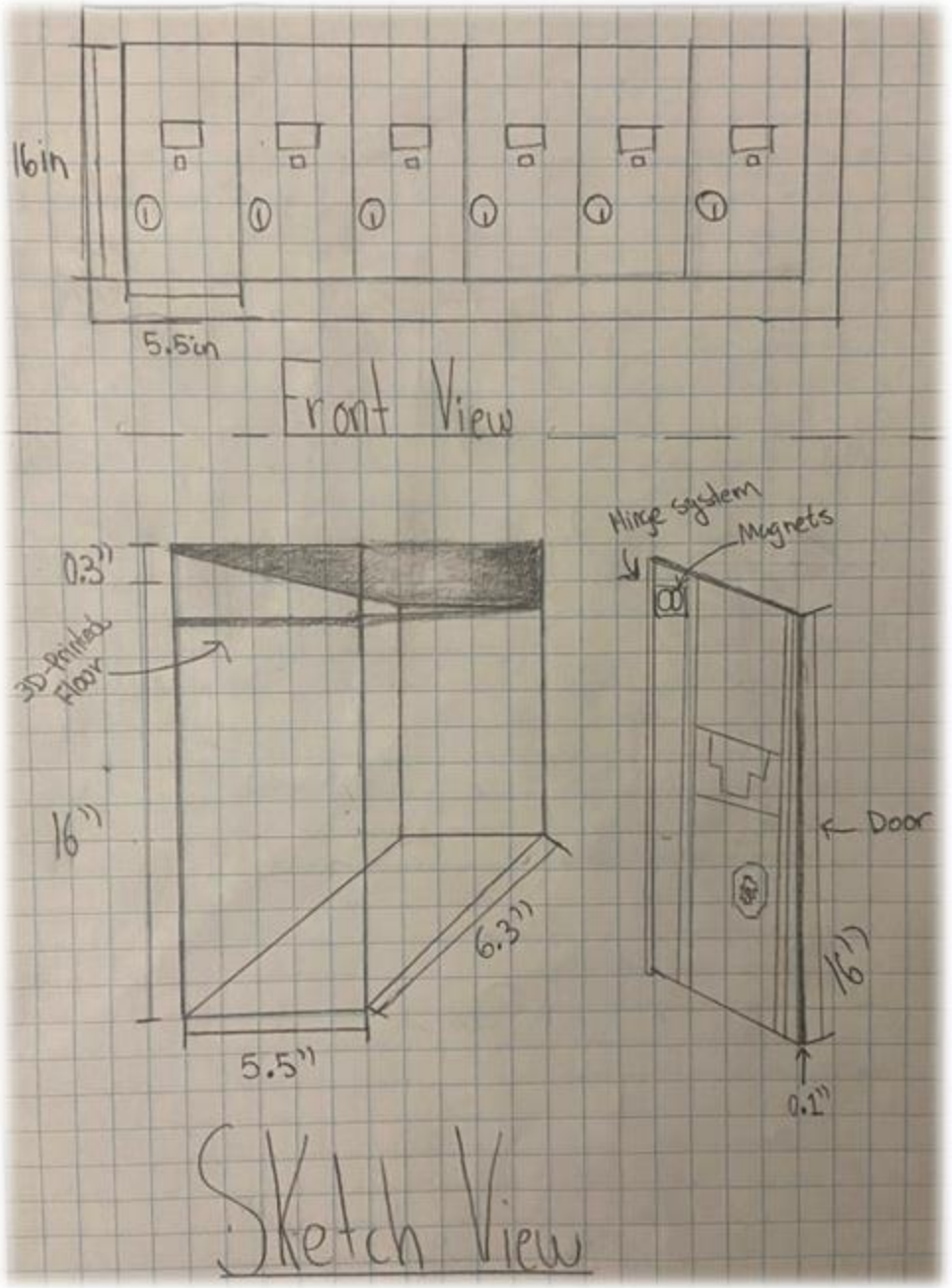
Key take away:

- Sensor key: Reed Switch & magnet
- Fake wall to hide circuit



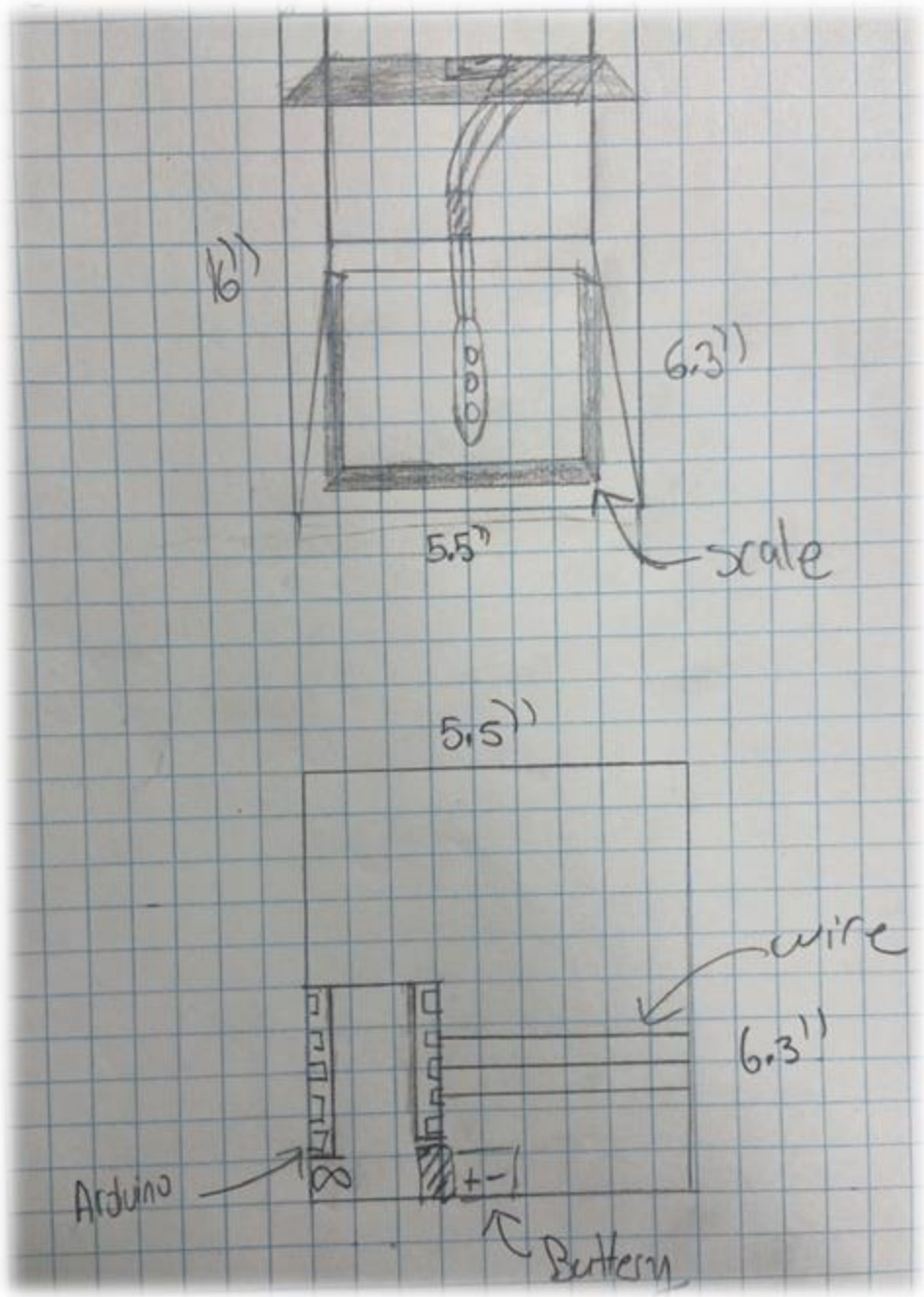
Mailbox Sketch
Apartment Edition

- 3D-Printed floor is attached at a height of 15.7” which is were the circuit is going to be hidden
- Magnet is attached next to the hinge of the mailbox door



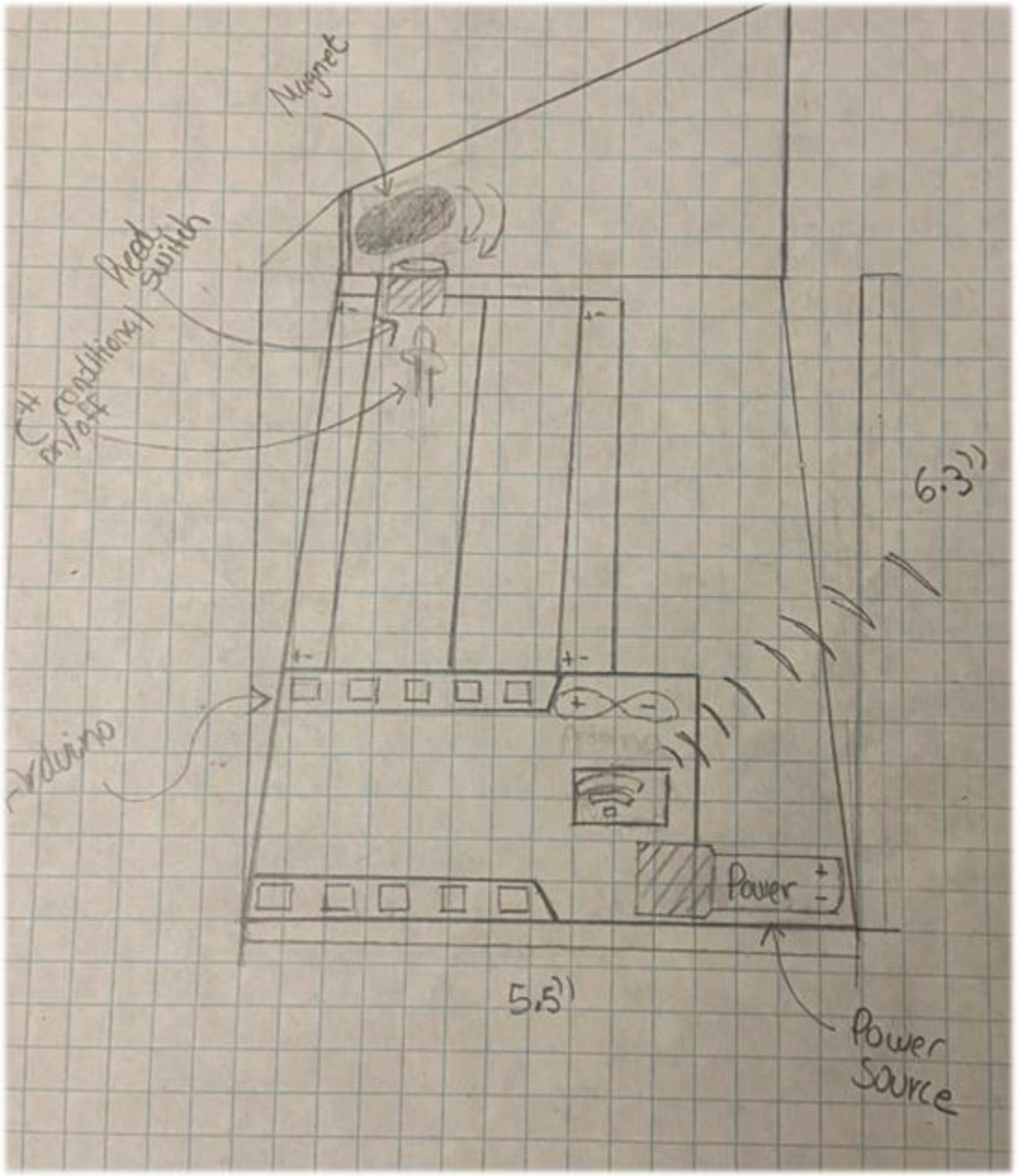
Brainstorming, Idea #1
Scale Detector
Circuit

- When scale reads a measurement > 0, alarm is triggered
- Power source: Battery



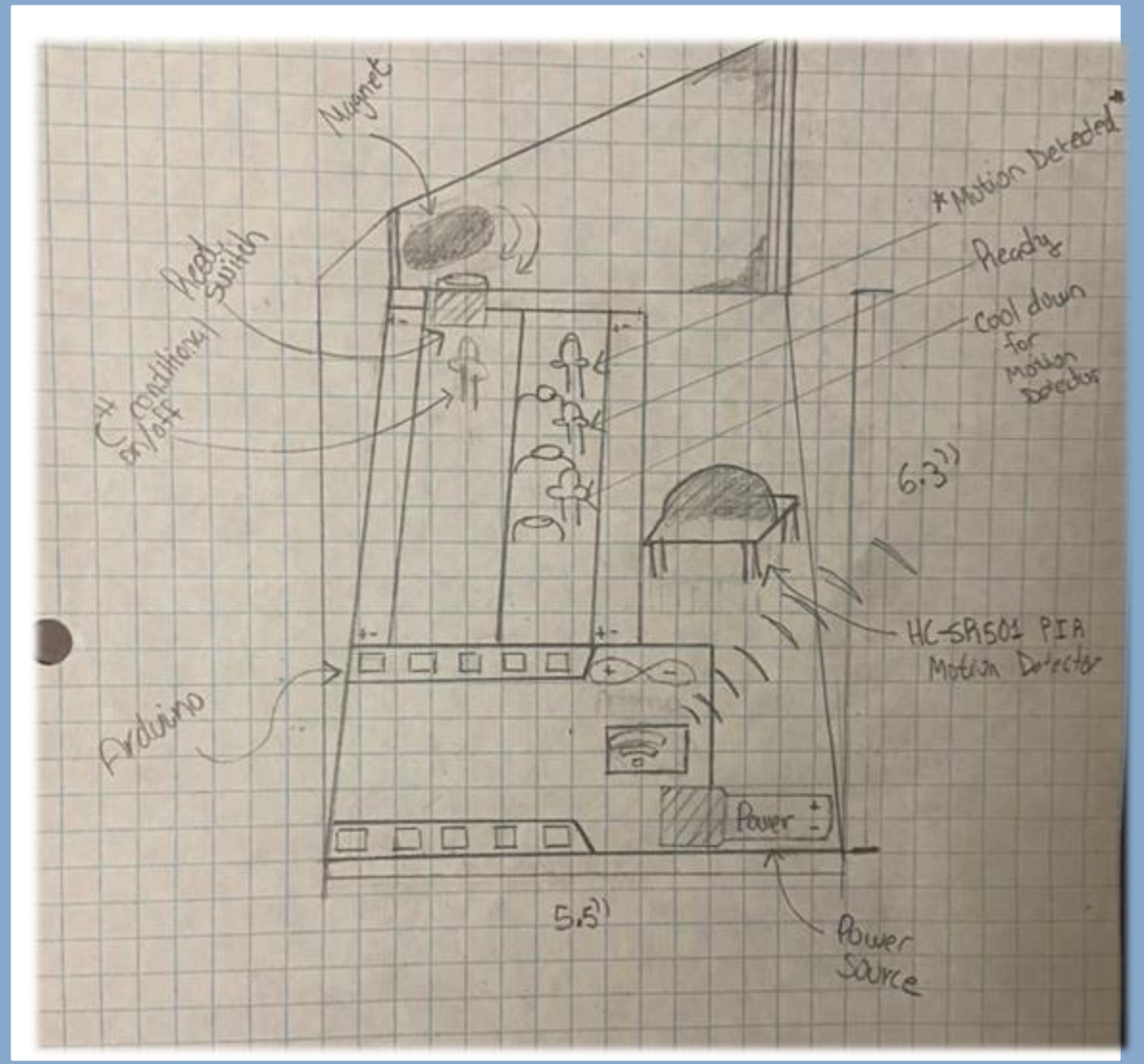
Brainstorming, Idea #2
Magnet & Reed Circuit

- When mailbox is opened, magnet stops interacting with reed switch
  - LED would turn off, signaling that mailbox has been opened
- When this LED is turn off, it should trigger an alarm to your house in order to notify you
- Alarm should go turn off once LED turns back on
- Power source: Battery



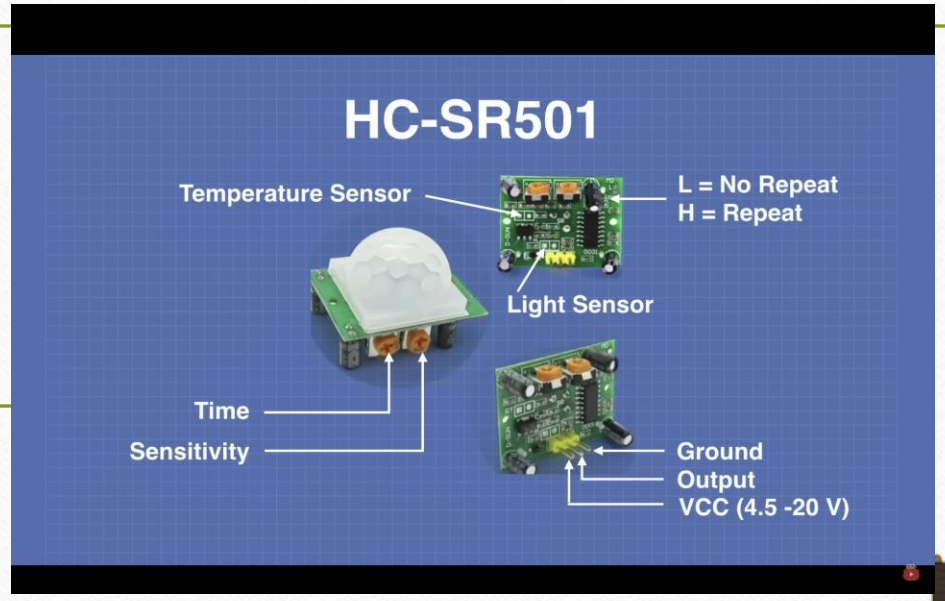
Brainstorming, Idea #3
Motion Detector, Magnet & Reed Circuit

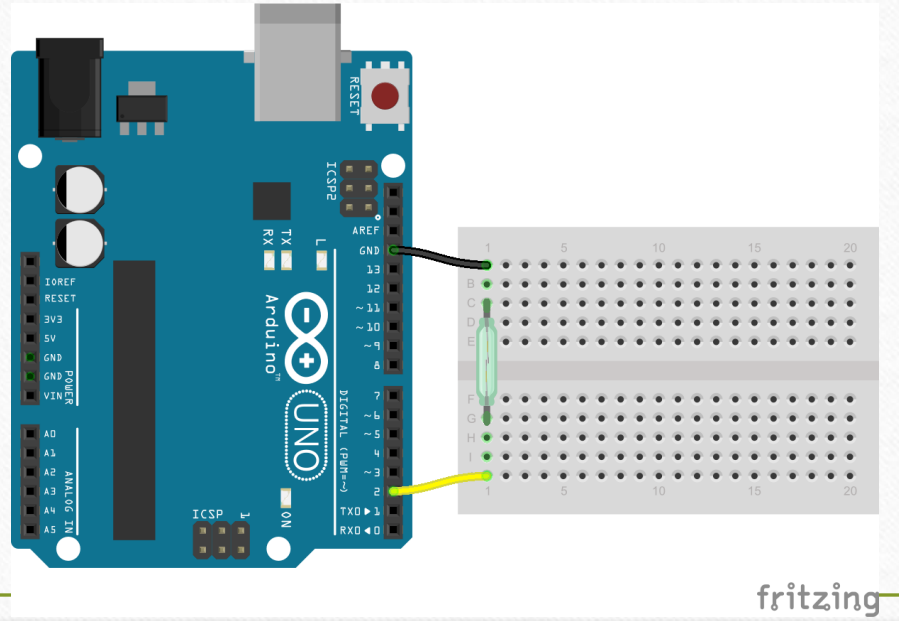
- First Conditional: Magnet & reed system (if LED is turn off)
- Second Conditional: If motion sensor detects activity within its area.
  - LED #1: Cool down, motion detector needs a x amount of time so it can function
  - LED #2: Ready, when cool down time has passed
  - LED #3: Motion has been detected
- If both conditions are meet, alarm would be triggered
- Power source: Battery



Materials

- **Arduino Oplà IoT Kit**
  - This kit should already include the motion detector
- An additional Arduino MKR WiFi 1010
- Magnetic Reed Switch
- Batteries (must be compatible with Arduino)
- 2 Breadboards
- 5 LED's
- 5 Resistors
- Lots of wires/cables
- Buzzer
- 3D-Printer Fake Walls





Market Research Sources

- Mail-Chime-Model-A-1400
- https://hackaday.io/project/166138-mailbox-sensor
- The importance of mailbox sensor article

Project Research Sources

- How To Connect Arduino With a **HC-SR501 PIR Motion Detector**
- **Arduino Reed Switch (magnet sensor) with LED**
- **Chat GPT:**
  - **Confirms that with usage of the motion detector and magnet sensors are possible to create this project.**