

# Smart Room Controller

Household Leak Detection

# Use Case - Dishwasher leak

Fisher & Paykel 2 drawer dishwasher has a random leak from the bottom drawer.

The unit already has a water tray with leak sensor under the unit.

However the bottom drawer leak is happening outside the built-in leak detection area.

Leak is discovered because water runs from the dishwasher along the cabinet front and I end up stepping in the water.

Present solution is to lay out towels to catch the leak if it occurs.

# The dishwasher



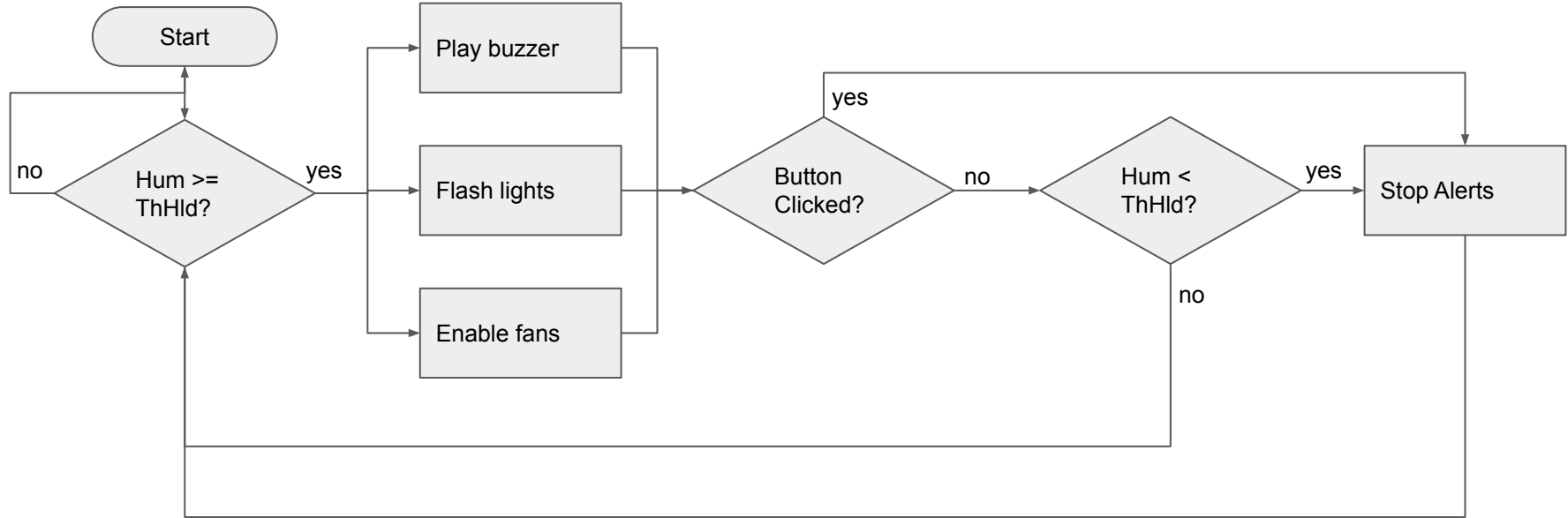
# Components

- Teensy microcontroller 3.2 powered by USB to computer.
- Simple button (generic)
- Passive buzzer (Elegoo)
- Humidity sensor (Elegoo Temperature and Humidity Sensor DHT11)
- Ethernet Port (Wiznet Wiz820io)

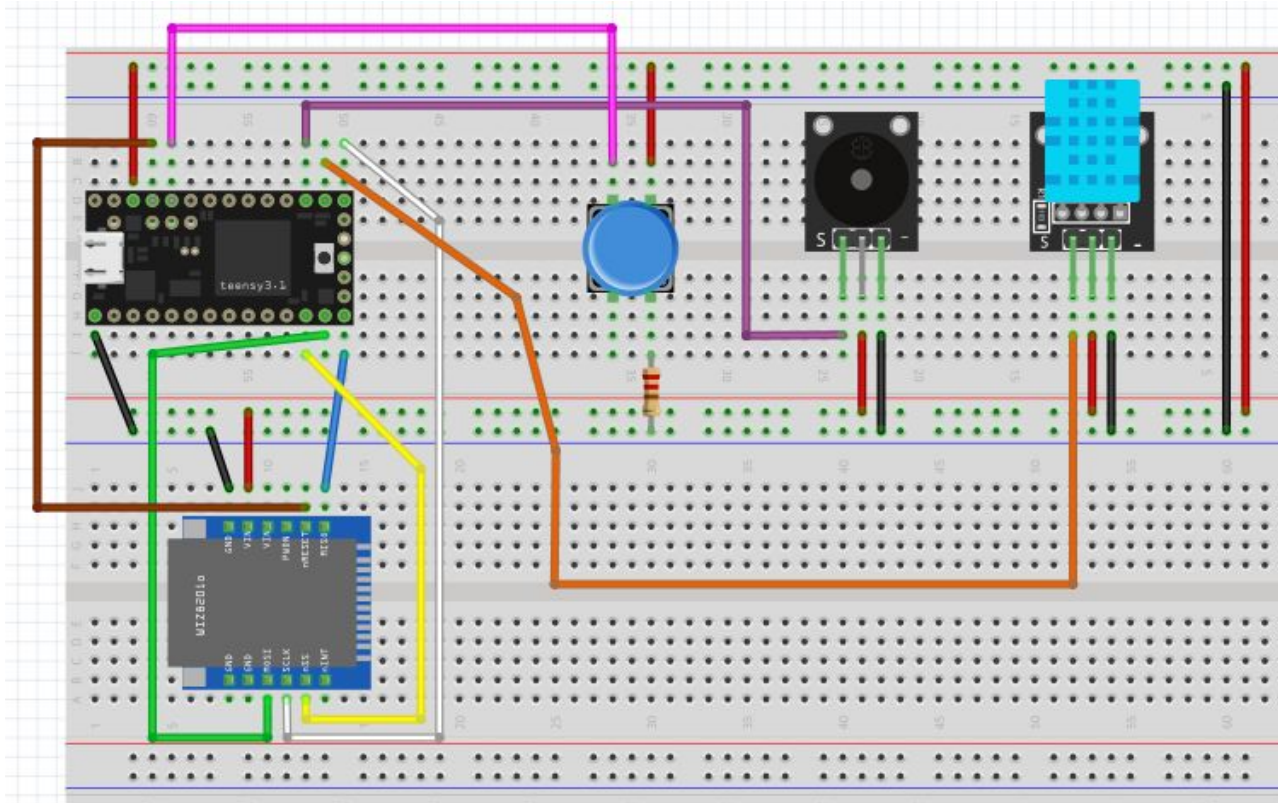
# Solution 1 - humidity sensor

- Place a cotton or sponge pad in a dish in the leak area
- Put the humidity sensor near the moisture collection area
- To conserve battery power for the sensor, user activates sensor when turning on the dishwasher. Sensor automatically deactivated after 2 hours (wash cycle complete)

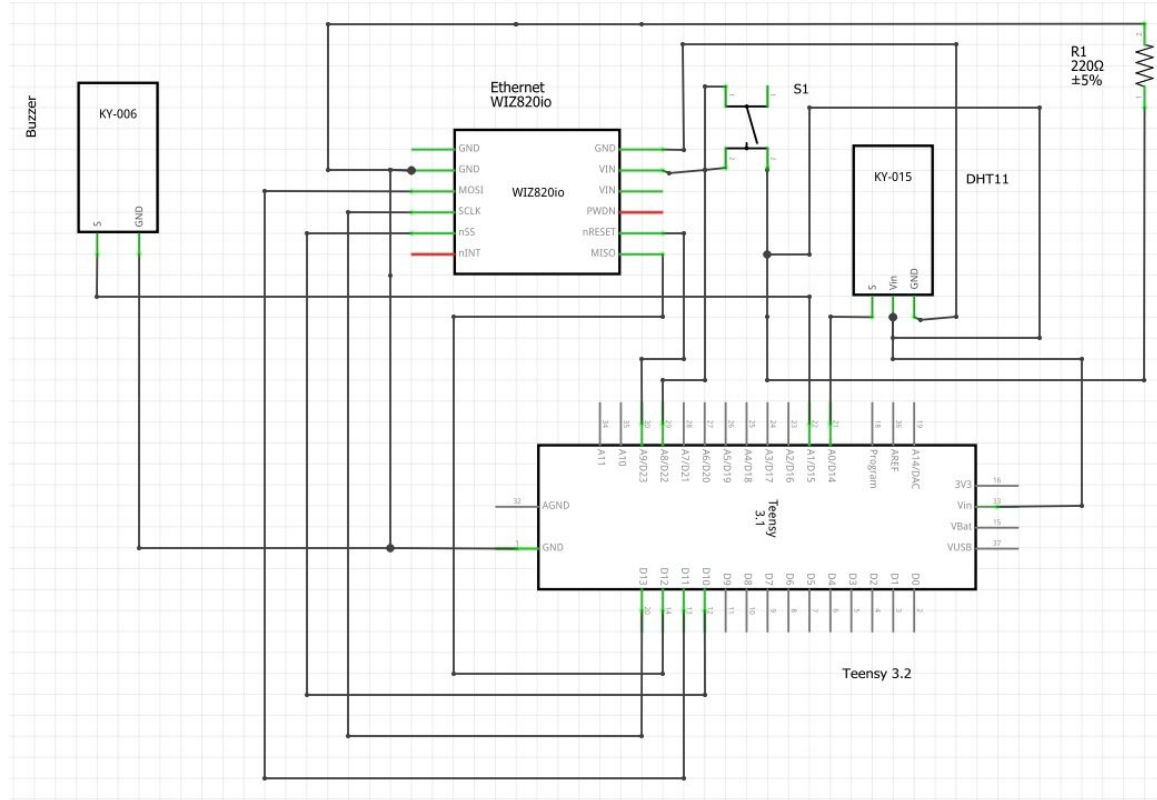
# Solution 1 - Flowchart



# Solution 1 - Breadboard



# Solution 1 - Schematic





# Alternate Solutions - proposed by Mauricio

- Capacitive Sensor
  - Run wires along leak area to catch leak at source
  - Install camera to see where leak is occurring
- Laser Sensor
  - Aim at leak area to catch change in surface; i.e. water vs. no water

# Manufactured Item - water tray

3D printed a small water collection tray to hold the moisture collector; cotton ball or small sponge.

**FUTURE ITEM. NOT YET DONE.**

# Demo

1. Moisture water collector
2. When humidity sensor value exceeds threshold
  - a. Buzzer will sound
  - b. Lights will flash
  - c. Fans will go on
3. Interrupt with button
  - a. All alerts will stop
4. Remove moisture collector
  - a. All alerts will stop