

# Water Leak and Humidity Detection System

Team 16's Flow Stoppers

## Project Overview

This water leak and humidity detection system helps prevent moisture damage under sinks by identifying problems early and taking action. It includes two devices powered by a 12V source:

- **Device 1** constantly checks for water leaks and high humidity, sending alerts to the homeowner when issues are detected.

- **Device 2** responds to leaks by shutting off the water supply and sends notifications.

The system has been tested to ensure sensors, communication, and the shutoff valve all work correctly. The two devices communicate wirelessly to coordinate detection and response, and alerts can be sent through the internet. The system is built in stages, starting with individual parts and leading to full integration for reliable operation.

## Key Specifications

- Ability to detect high humidity and water
- Inform the homeowner of the water and or humidity
- Shut off the water where the leak exists to prevent damage
- Input Power 5VDC
- Bluetooth Connection between Devices
- Wifi Module to send email notifications

## Team Flow Stopper



David Khames  
Electrical Engineer



Anthonie Scott  
Computer Engineer



Jacob Weslager  
Electrical Engineer

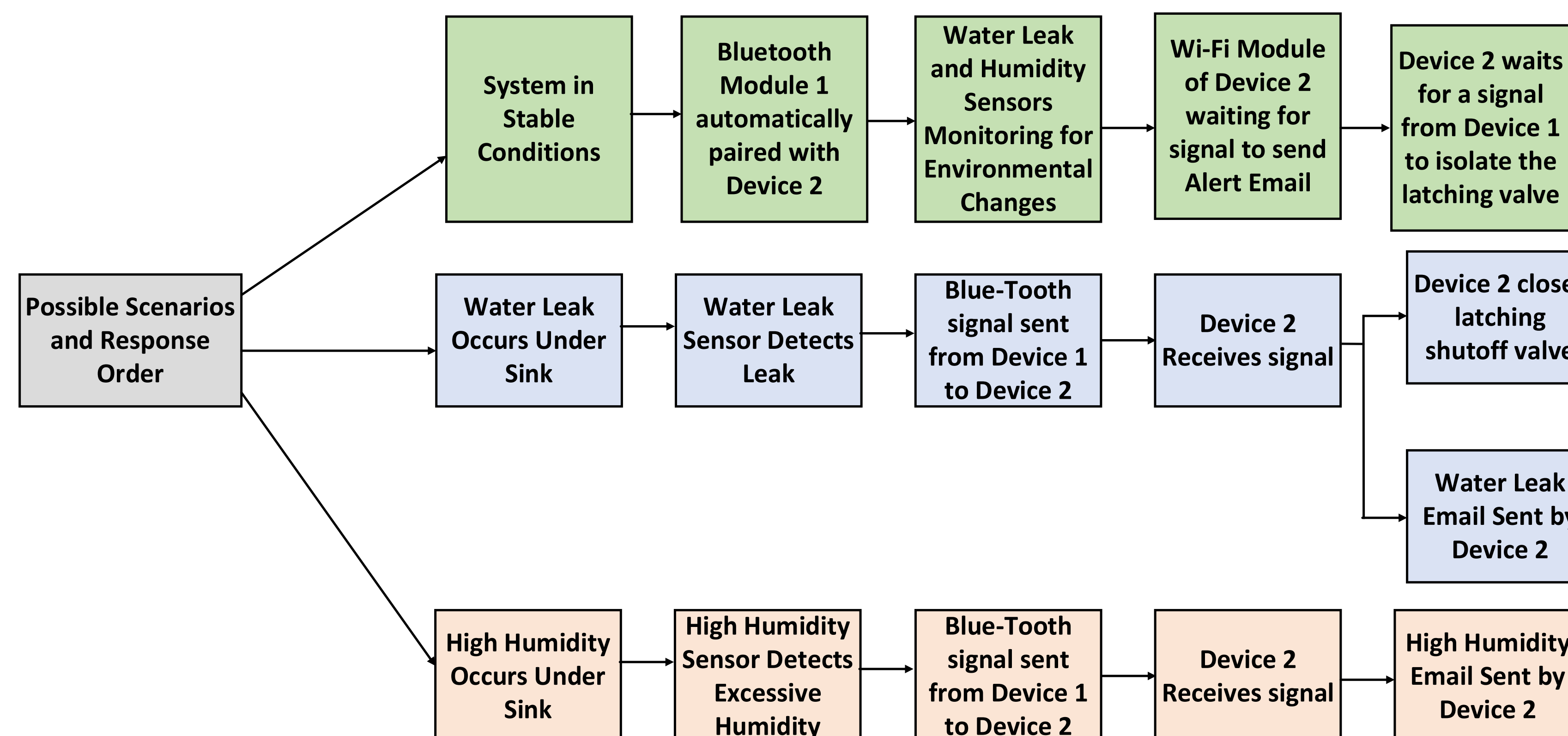


Malak Abdelhamid  
Computer Engineer



Rudy Gonzales  
Computer Engineer

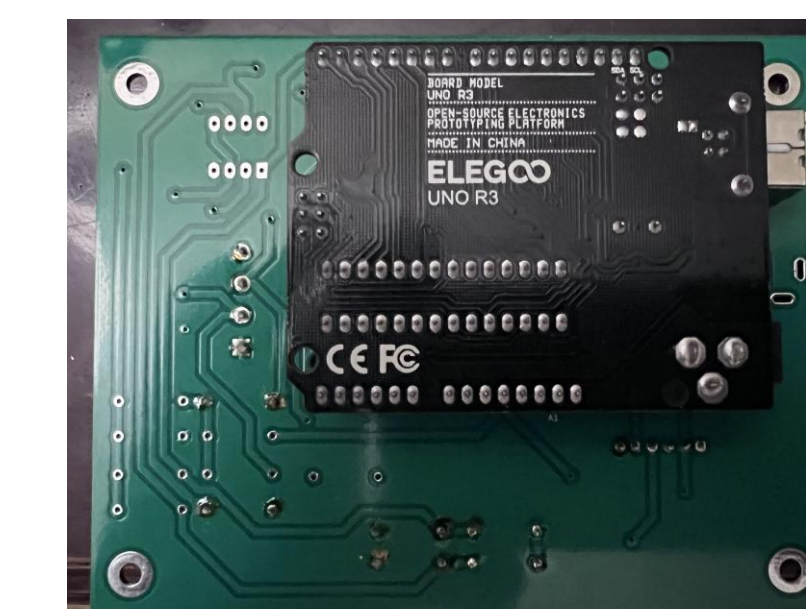
## System Order of Operations



## Hardware

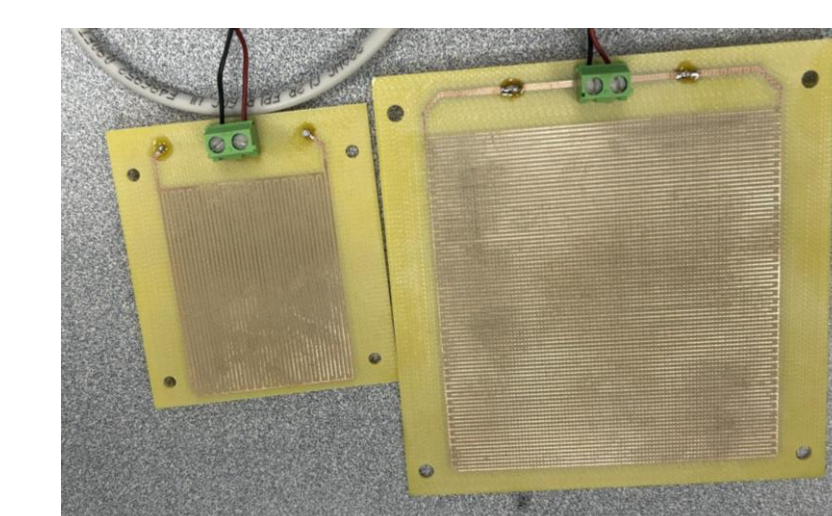


Front



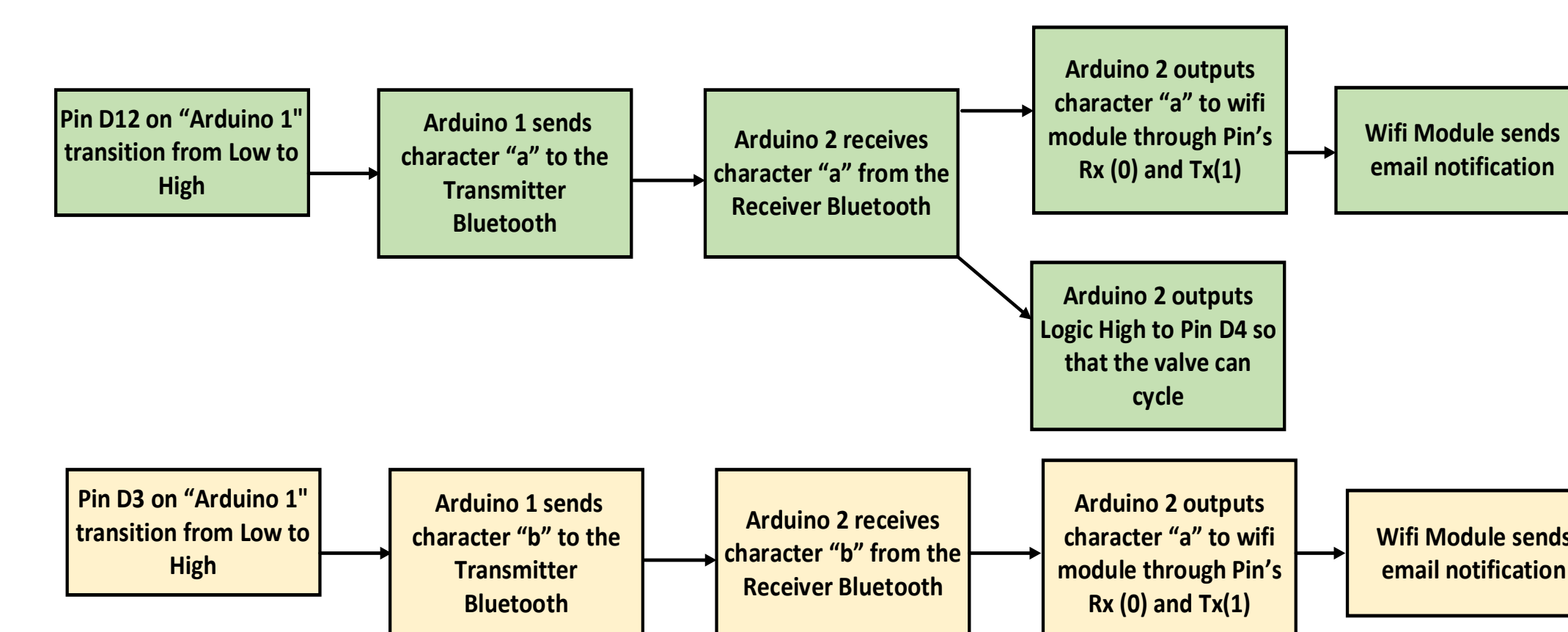
Back

The custom PCB board

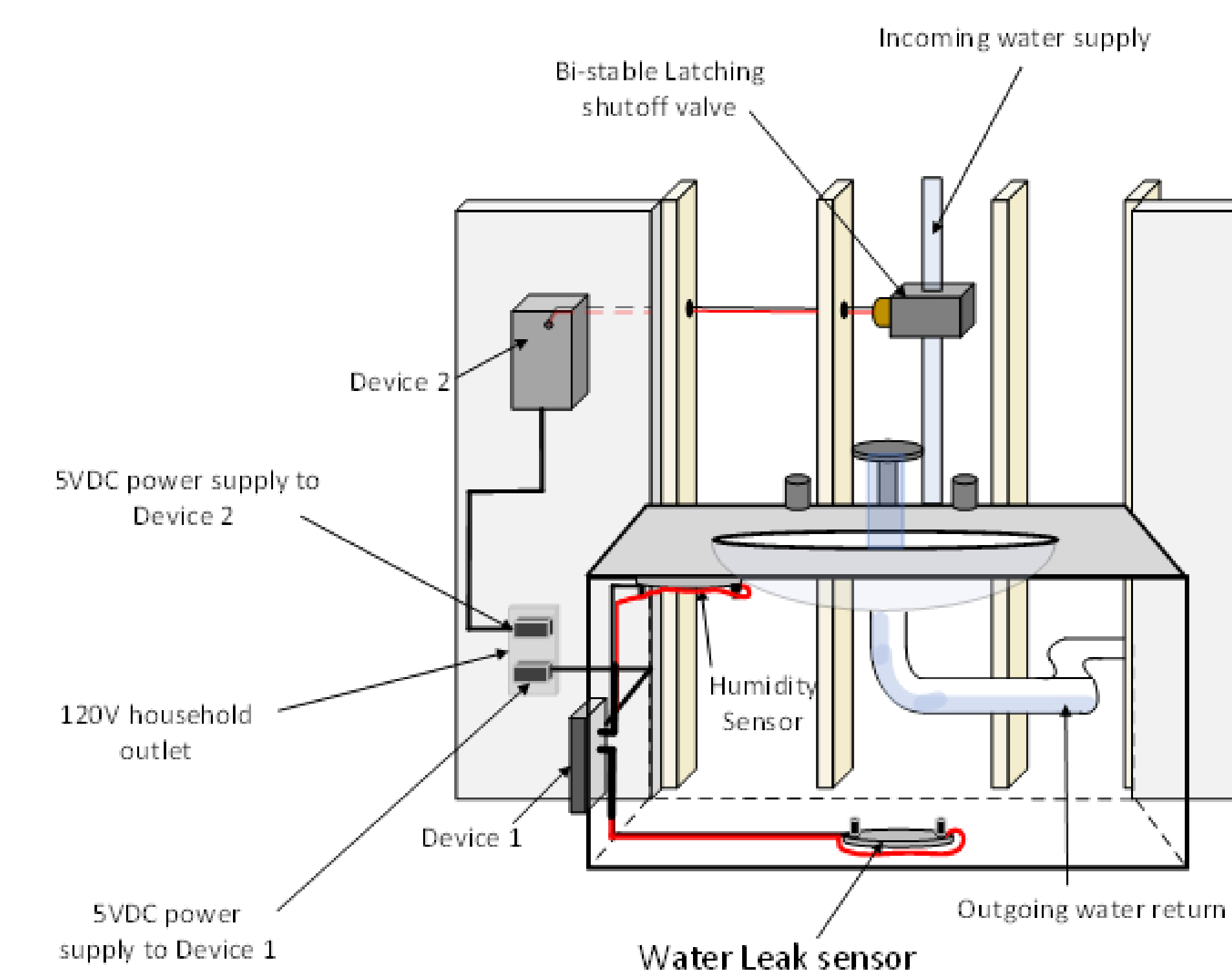


The Humidity (Left) and Water (Right) Sensor

## Software Order of Operations



## Final Design



## Key Technologies

### Developed:

- Water leak sensor – Detects the presence of water
- Humidity sensor – Monitors humidity levels
- Custom PCBs and wiring layouts – For organizing and connecting components

### Procured:

- Arduino Uno – Microcontroller for both devices
- SH-HC-05-US Bluetooth module – Wireless communication between devices
- ESP8266 Wi-Fi module – Sends notifications over the internet
- Latching shutoff valve – Cuts off the water supply during a leak
- Power control relay – Activates the shutoff valve
- 120VAC to 5 VDC power supply – Powers each device