

Flood detector and warning tool

This location of my house which is prone to flooding during monsoon season. First the flood fills the drain, if the drain is clogged, then it overflows into the backyard and starts flooding the house. Figure 1 below shows the wiring of the system.

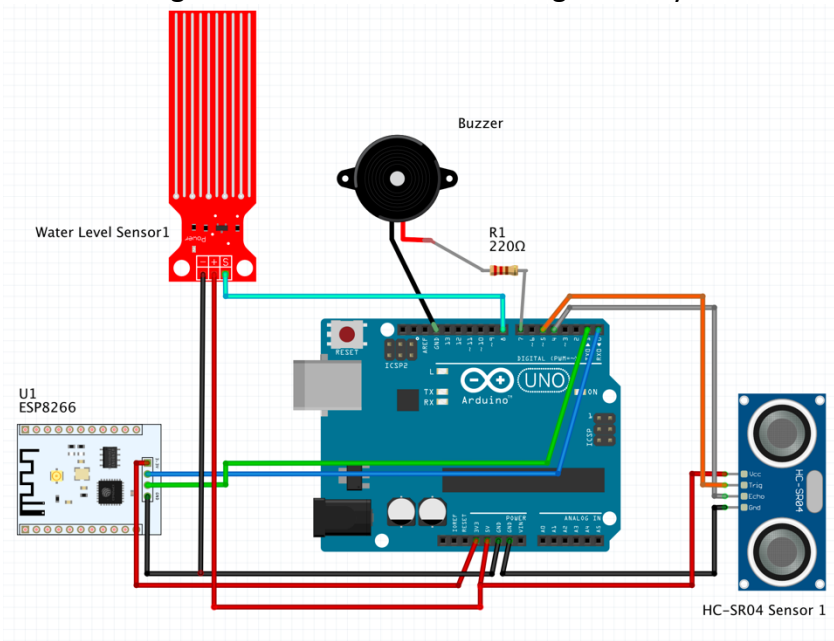


Figure 1: Flood detector and warning tool (see the details of GPIO pin connections, ground and power source)

Hardware used:

1. Arduino Uno
2. ESP8266 as Wi-Fi module (connected to 3.3V power supply, TX, RX and Ground)
3. Buzzer as output (connected to pin 7)

4. Resistor (for Buzzer, routing as shown in the figure)
5. Water Sensor (5V input, Ground and connected to pin 8)
6. Ultrasonic Sensor: HC-SR04 (5V input, Ground, Trigger pin connected to pin 5 and Echo pin connected to pin 4)

There are two input sensors:

- Ultrasonic sensor which will be used to identify water height in the drain.
- Water level sensor which will be used to identify the entry of water in the backyard.

The simplified codes for the **two sensors** to be used in this system has uploaded in my Github as follows:

- Water level:
<https://github.com/gob1thaasan/Arduino/tree/master/WaterSensor>
- Ultrasonic:
<https://github.com/gob1thaasan/Arduino/tree/master/UltrasonicSensor>

There are **two actuators** roleplay as outputs for this system:

- ESP8266 Wi-Fi module will be used to get connected to Blynk server for real-time monitoring via smartphone. Two information will be updated in real-time; drain water height (in cm) and water entry (Boolean : True or False).

- Buzzer will be routed to my bedroom where I sleep, thus, I will be warned of water entry from water sensor once flooding occurs in my backyard.

Figure 2 Below show the flowchart of the system:

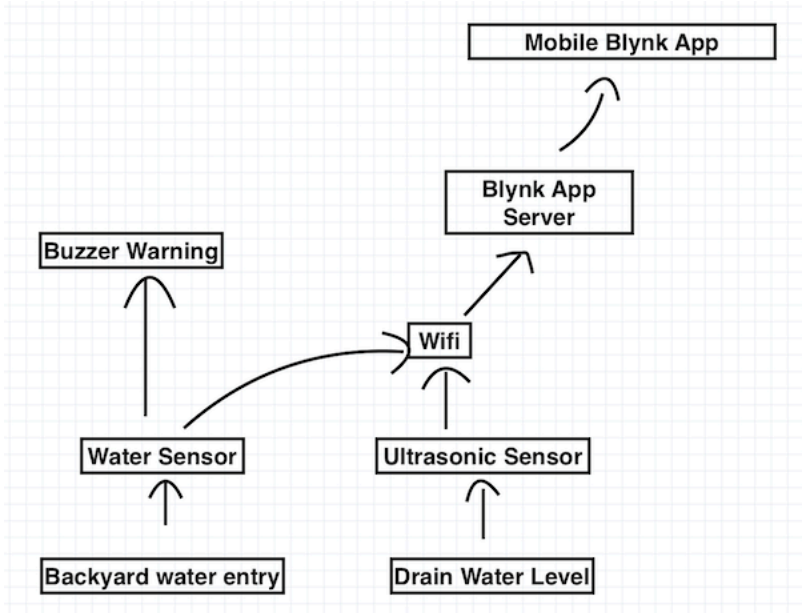


Figure 2: Flowchart of the system

The WiFi module alone cannot be used to check outside of Local Area Network (LAN) due to the DHCP local IP address. In case if I have a fixed IP address, then it is possible to access the data (water height and water entry) from outside of LAN. Since I do not have a fixed IP address, I will be using Blynk Server to access these data. The details can be found in the documentation available in Blynk website.

Conclusion:

Two types warning are equally important. The Wi-Fi module is essential to get connected to Blynk for real-time detection. This service enables me to monitor the condition of my house wherever I am. The buzzer is an important warning tool when I am sleeping at night in the room.

References:

1. Ardunio Documentation:
<https://www.arduino.cc/reference/en>
2. Blynk: <https://blynk.io/en/getting-started>
3. ESP8266: <https://github.com/esp8266/Arduino>