# PHASE 3

# THE FLOOD MONITORING SYSTEM

## PHASE 3: DEVELPOMENT PART 1

## Loading & Preprocessing Datasets

## HARDWARE COMPONENTS -

- Bolt-IoT Wi-Fi module
- Arduino uno
- Breadboard- 400 tie points
- 5mm LED:(Green, Red, Orange) and Buzzer
- 16×2 LCD Display
- LM35 Temperature Sensor
- HC-SR04 Ultrasonic Sensor
- Some Jumper Wires
  - o Male to Female Jumper Wires- 15 pcs
  - o Male to Male Jumper Wires- 10 pcs
  - o Female to Female Jumper Wires- 5 pcs
- 9v Battery and Snap Connector
- USB Cable Type B

## SOFTWARE COMPONENTS -

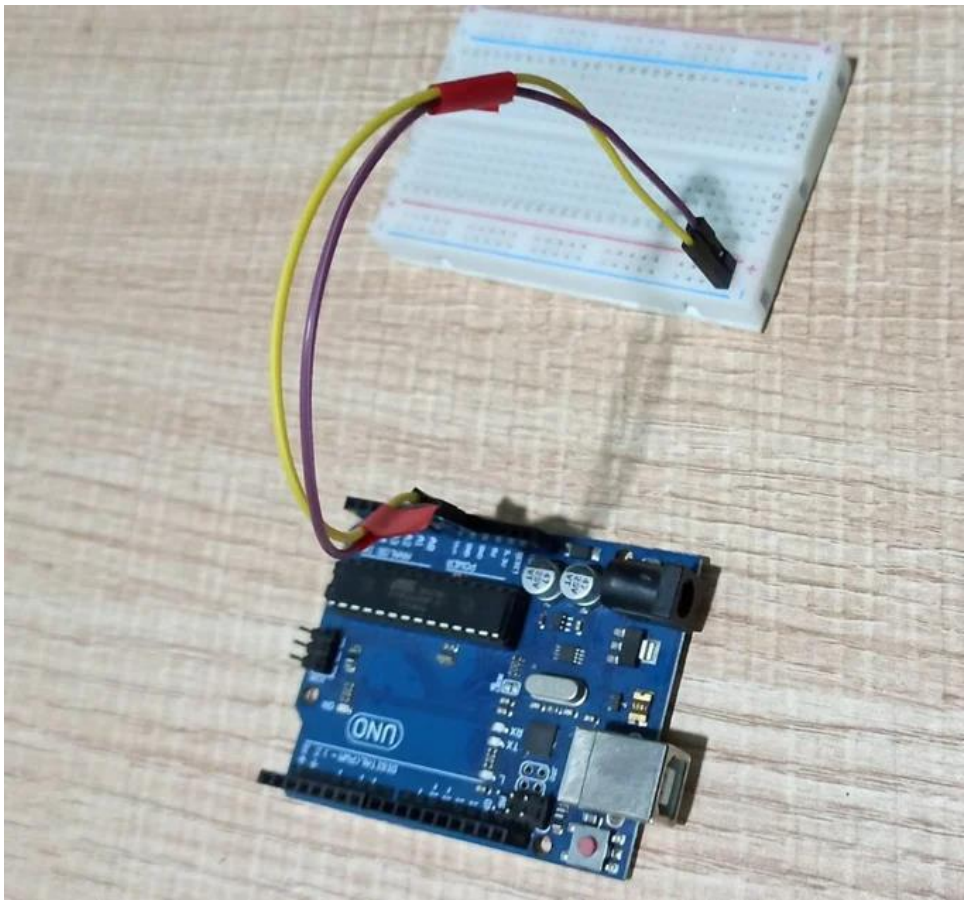
- Arduino IDE
- Python 3.7 IDLE

- Bolt IoT Cloud
- Bolt IoT Android App
- Twillo SMS Messaging API
- Mail gun EMAIL Messaging API Software component

**HARDWARE SETUP:**

For Building this project we first configure the hardware connections. Then later on moving to the software part.

**Step 1**: Connecting 5v and GND of Arduino to the Breadboard for power connection to other components.



**Step 2**: Connecting LED's

**For Green LED:**

• VCC of Green Color LED to Digital Pin '10' of the Arduino.

• GND of Green Color LED to the GND of Arduino.

**For Orange LED:**

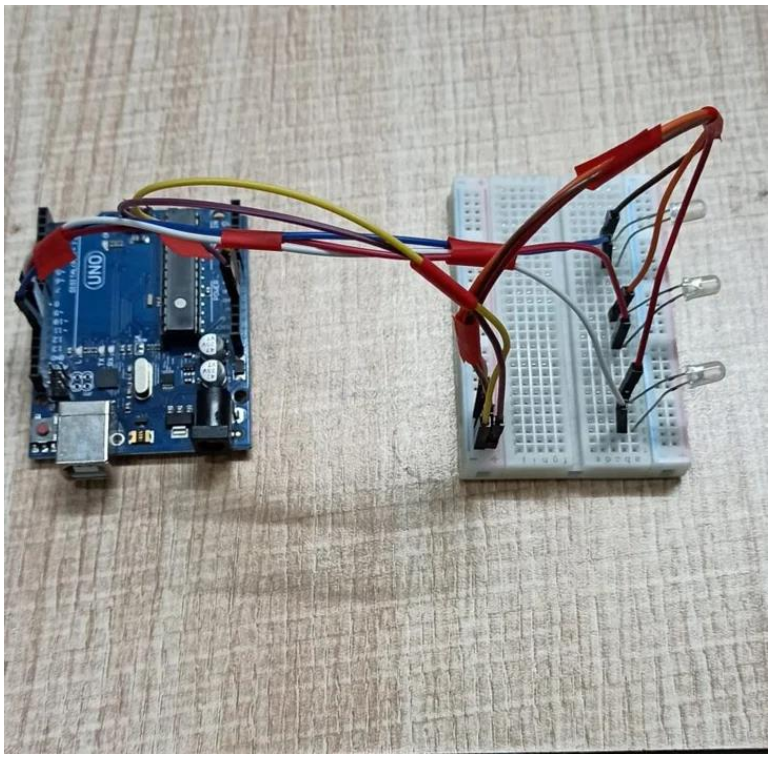
• VCC of Orange Color LED to Digital Pin '11' of the Arduino.

• GND of Orange Color LED to the GND of Arduino.

**For Red LED:**

• VCC of Red Color LED to Digital Pin '12' of the Arduino.

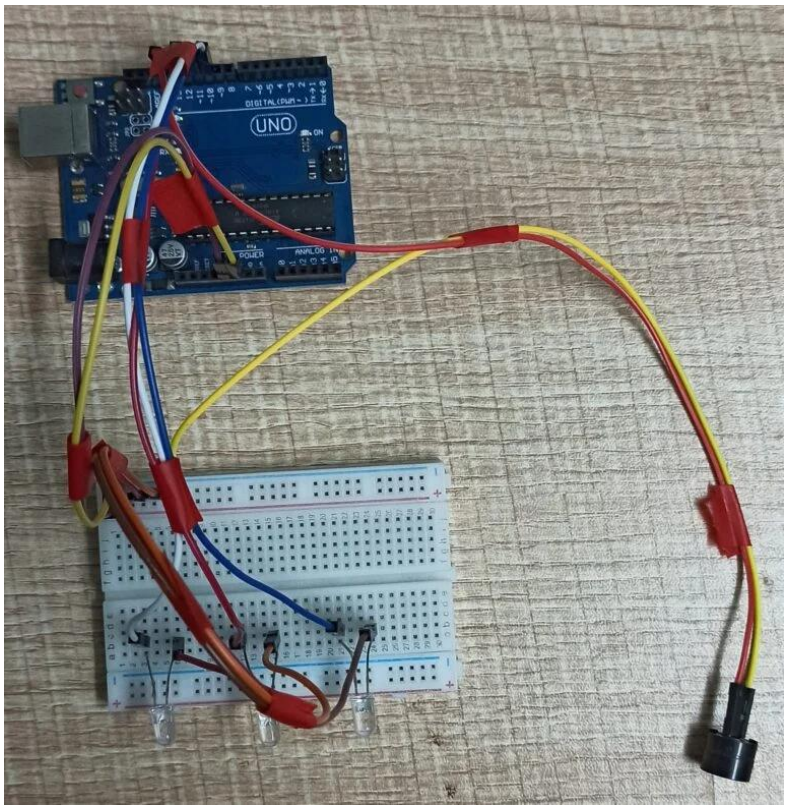
• GND of Red Color LED to the GND of Arduino.



**Step 3:** Connecting Buzzer

• VCC of Buzzer to Digital Pin ‘13’ of the Arduino.

• GND of Buzzer to the GND of Arduino.



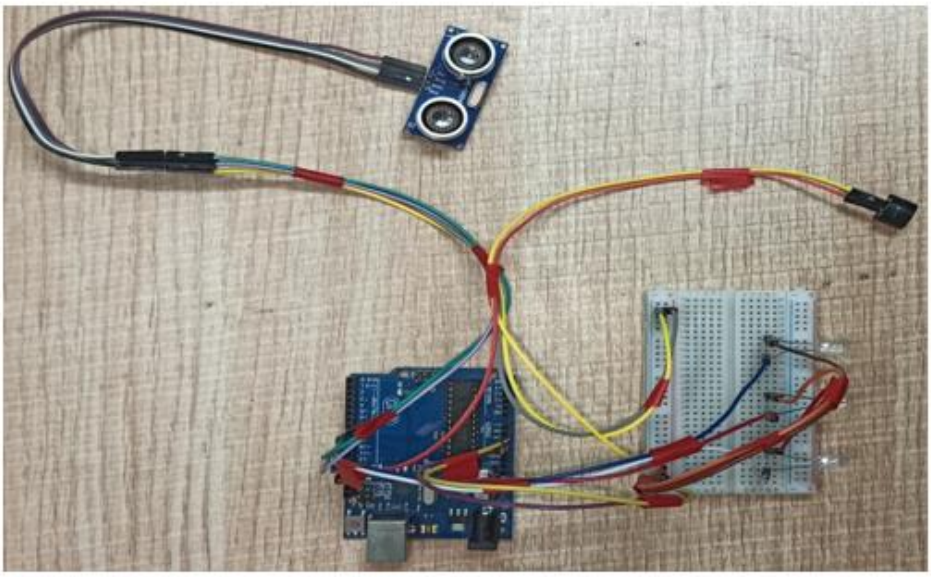

**Step 4**: Connecting HC-SR04 Ultrasonic Sensor

• VCC of Ultrasonic Sensor to 5v of Arduino.

• GND of Ultrasonic Sensor to GND of Arduino.

• Echo of Ultrasonic Sensor to Digital Pin ‘8’ of Arduino.

• Trig of Ultrasonic Sensor to Digital Pin ‘9’ of Arduino.

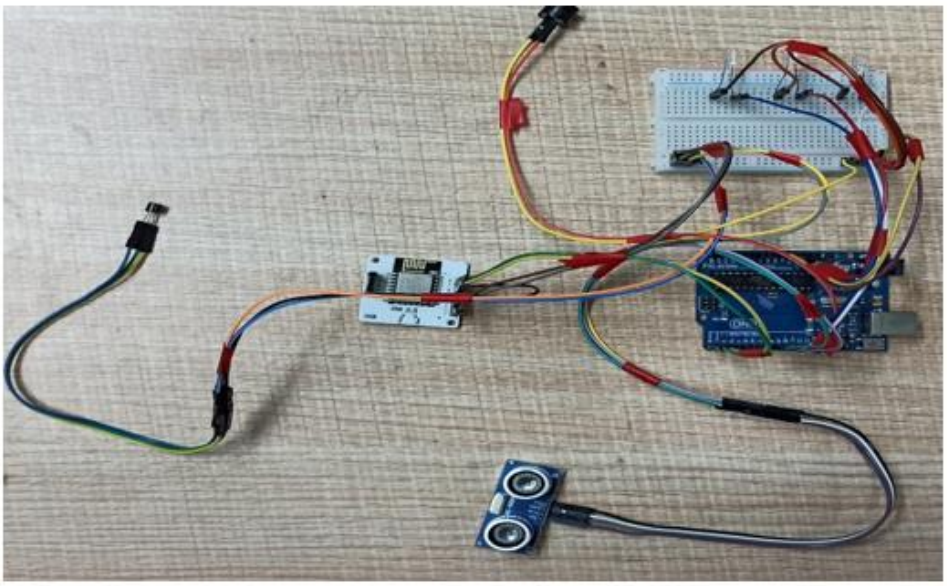


**Step 5:** Connecting Bolt Wi-Fi Module

- 5v of Bolt Wi-Fi Module to 5v of Arduino.
- GND of Bolt Wi-Fi Module to GND of Arduino.
- TX of Bolt Wi-Fi Module to RX of Arduino.
- RX of Bolt Wi-Fi Module to TX of Arduino.

**Step 6:** Connecting LM35 Temperature Sensor

- VCC of LM35 to 5v of Bolt Wi-Fi Module.
- Output Pin of LM35 to Pin ‘A0’ of Bolt Wi-Fi Module.
- GND of LM35 to GND of Bolt Wi-Fi Module.



**Step 7:** Connecting 16×2 LCD Display

• Pin 1,3,5,16 of 16×2 LCD to GND of Arduino.

• Pin 2,15 of 16×2 LCD to 5v of Arduino.

• Pin 4 of 16×2 LCD to Digital Pin ‘2’ of Arduino.

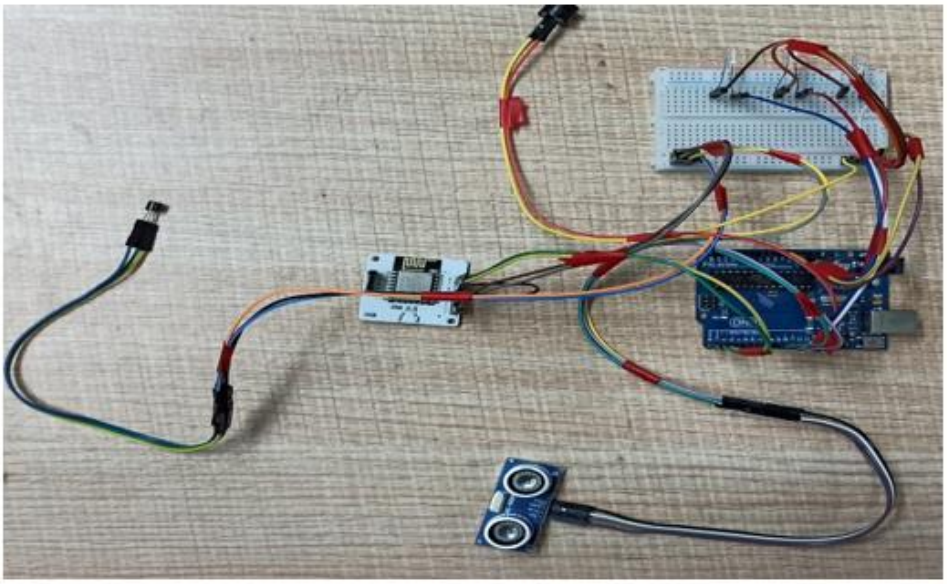
• Pin 6 of 16×2 LCD to Digital Pin ‘3’ of Arduino.

• Pin 11 of 16×2 LCD to Digital Pin ‘4’ of Arduino.

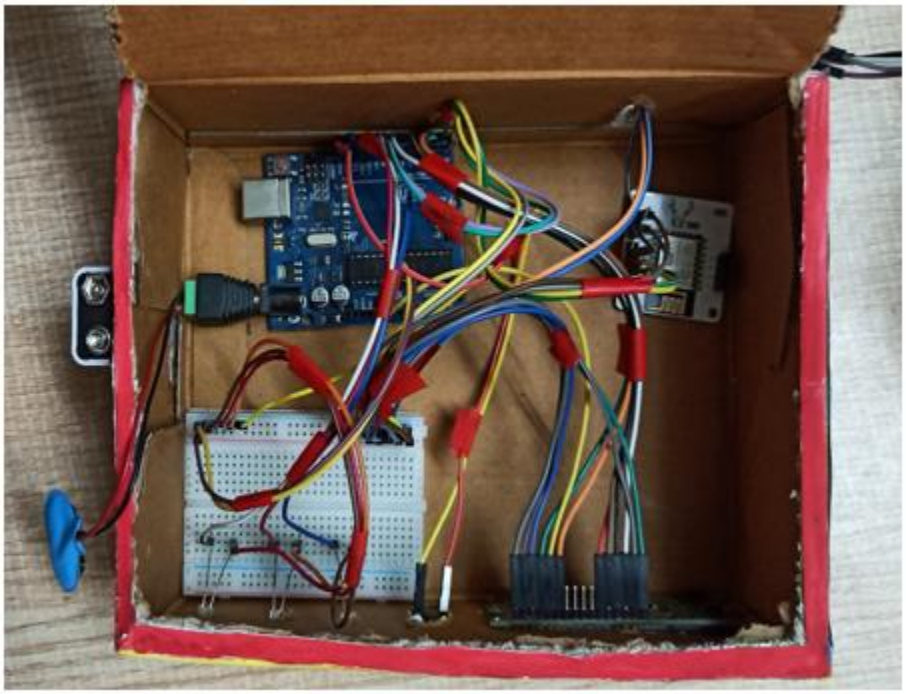
• Pin 12 of 16×2 LCD to Digital Pin ‘5’ of Arduino.

• Pin 13 of 16×2 LCD to Digital Pin ‘6’ of Arduino.

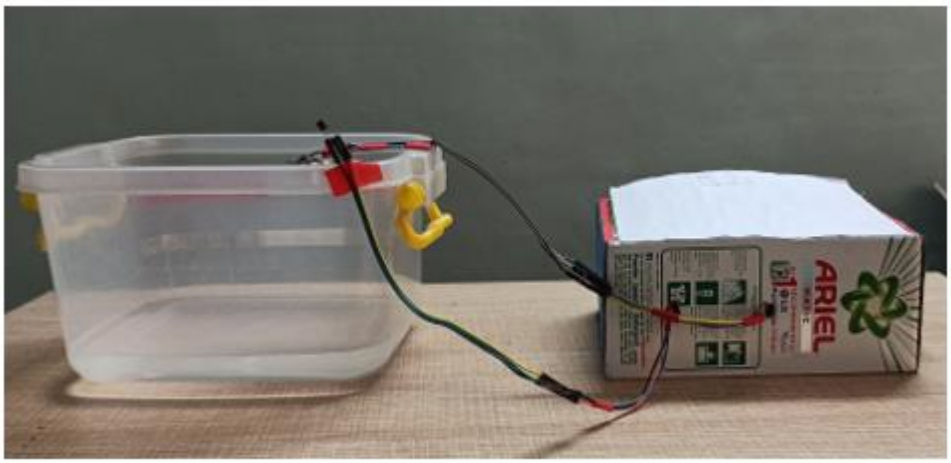
• Pin 14 of 16×2 LCD to Digital Pin ‘7’ of Arduino.



**After making the hardware connection put all the hardware components in one box.**



**Also attach LM35 Temperature Sensor on the side of the container.**




**Also attach Ultrasonic sensor on the top of the container.**