FLOOD MONITORING AND SYSTEM

PHASE 3 DEVELOPMENT PART 1

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Exam Number:210521106059

Domain: IOT

**Definition:**

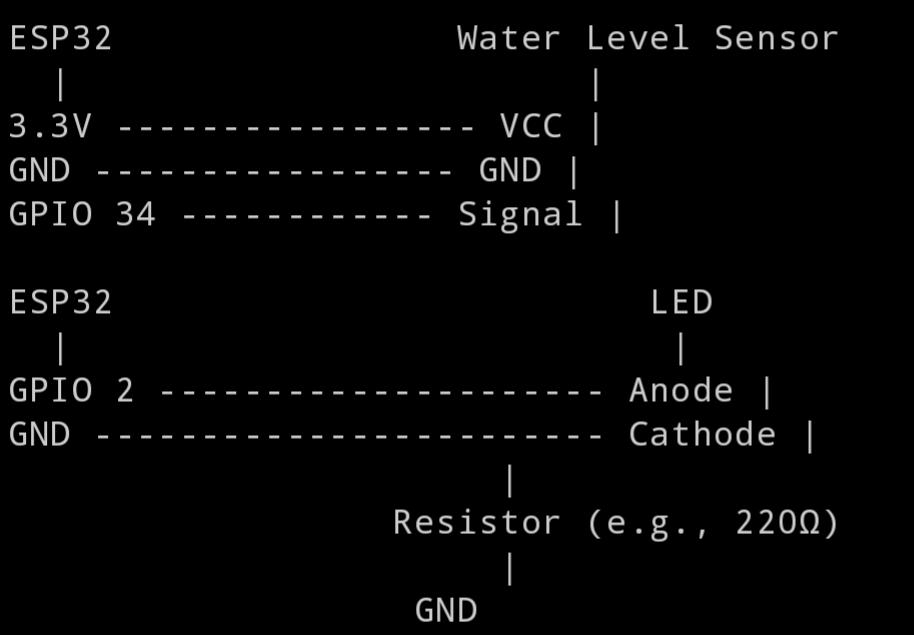
Natural disasters such as floods and heavy rains pose threats to Lives and property around the world. Without a proper flood monitoring system, These natural events often lead to disasters, severely affecting economic losses, Social chaos, and urban environmental damage. Although IoT solutions cannot Prevent flooding, real-time monitoring of data can help minimize potential Damage by building proactive solutions for the community.

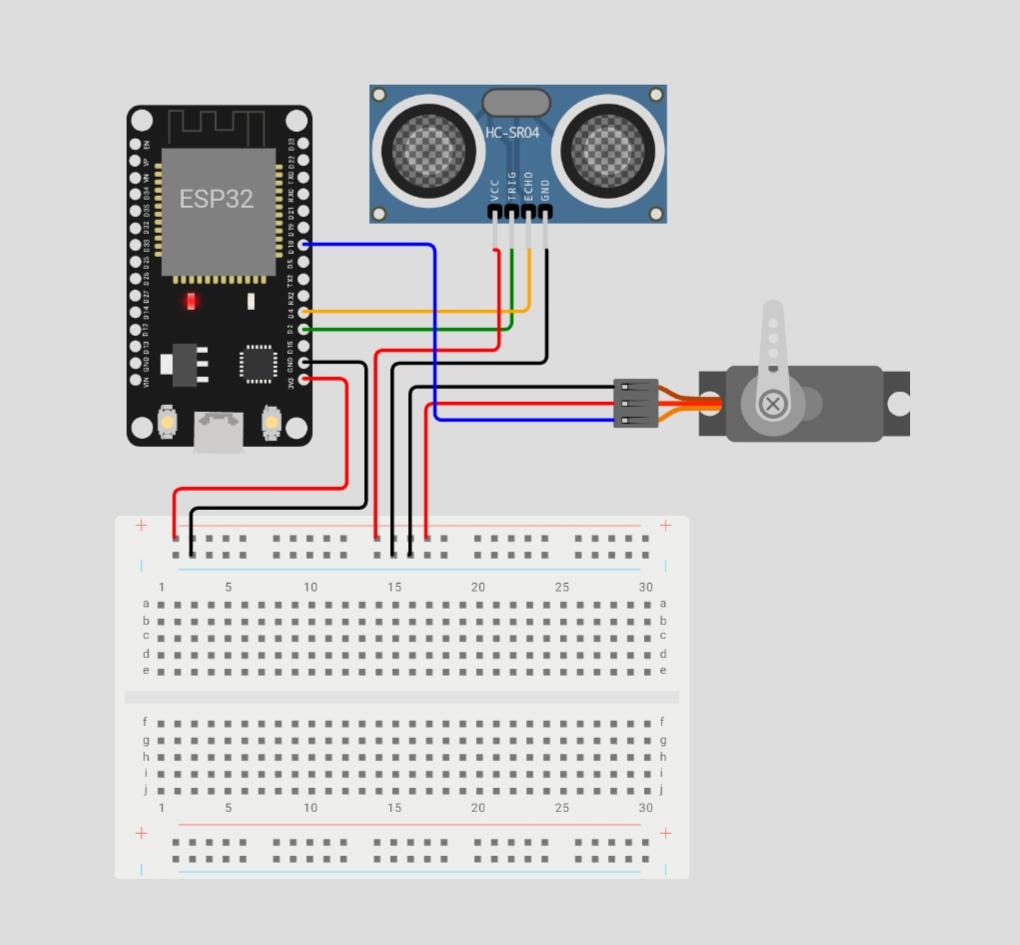
**Components**:

1.ESP32 Development Board

2.Water Level SensorLED (for warning)

3.Resistors, jumper wires, and a breadboard

**Ciruit** **diagram(word Representation) :**

**Picture:**

**Python code:**

**Import network**

**Import machine**

**Import time**

**From umqtt.simple import MQTTClient**

**# WiFi credentials**

**Ssid = “YourWiFiSSID”**

**Password = “YourWiFiPassword”**

**# MQTT broker details**

**Mqtt\_broker = “mqtt.eclipse.org”**

**Mqtt\_port = 1883**

**Mqtt\_topic = b”esp32/flood”**

**# Pin configuration**

**Water\_level\_pin = 34 # GPIO pin for water level sensor**

**Led\_pin = 2 # GPIO pin for warning LED**

**# Threshold for flood warning**

**Threshold = 500**

**Def connect\_to\_wifi():**

**Sta\_if = network.WLAN(network.STA\_IF)**

**Sta\_if.active(True)**

**Sta\_if.connect(ssid, password)**

**While not sta\_if.isconnected():**

**Pass**

**Def send\_mqtt\_message(message):**

**Client = MQTTClient(“esp32”, mqtt\_broker, port=mqtt\_port)**

**Client.connect()**

**Client.publish(mqtt\_topic, message)**

**Client.disconnect()**

**Def check\_flood():**

**Water\_level = adc.read()**

**If water\_level > threshold:**

**Print(“Flood warning!”)**

**Machine.Pin(led\_pin, machine.Pin.OUT).on() # Turn on LED**

**Send\_mqtt\_message(“Flood Warning!”)**

**Else:**

**Machine.Pin(led\_pin, machine.Pin.OUT).off() # Turn off LED**

**Def main():**

**Connect\_to\_wifi()**

**# Set up ADC for water level sensor**

**Adc = machine.ADC(machine.Pin(water\_level\_pin))**

**Adc.atten(machine.ADC.ATTN\_11DB)**

**# Set up LED pin**

**Machine.Pin(led\_pin, machine.Pin.OUT).off()**

**While True:**

**Check\_flood()**

**Time.sleep(300) # Sleep for 5 minutes before the next reading**

**If \_\_name\_\_ == “\_\_main\_\_”:**

**Main()**