

## **ABOUT OUR INNOVATIVE IDEA:**

We are solving the problem of Flood monitoring and early warning detection by using the component Arduino Uno, ultrasonic sensor, Raindrop sensor, buzzer, LED, ESP8266, wokwi platform.

## **Components Needed:**

Arduino Uno

Ultrasonic Distance Sensor (HC-SR04)

Raindrop Sensor

Buzzer

LED

Wi-Fi Module (ESP8266 or ESP32)

Wokwi Platform for simulation

## **Step 1: Setup the Hardware**

Connect the Ultrasonic Distance Sensor to the Arduino Uno. This sensor will measure water levels in a designated area.

Connect the Raindrop Sensor to detect rain or water droplets.

Attach a Buzzer and an LED for audible and visual alerts.

## **Step 2: Code Implementation**

Write Arduino code to read data from the Ultrasonic Sensor to measure the water level in the monitoring area.

Use the Raindrop Sensor to detect rain or water droplets.

Implement logic that triggers the Buzzer and LED when water levels rise or when rain is detected.

Combine these sensors' data to determine if there's a potential flood risk.

## **Step 3: Connect to Wi-Fi**

Integrate a Wi-Fi module (e.g., ESP8266 or ESP32) into the system.

Configure the module to connect to your local Wi-Fi network.

Modify the code to send real-time data and alerts to a cloud platform or a local server.

## **Step 4: Early Warning System**

Set threshold values for water level and rain intensity to trigger early warning alerts.

When the system detects rising water levels or heavy rain, send alerts via email, SMS, or push notifications using Wi-Fi.

#### **Step 5: Simulation on Wokwi Platform**

Create a virtual simulation of your Arduino project on the Wokwi platform.

Test the project in a virtual environment to ensure that the sensors and alerts work as expected.

#### **Step 6: Data Logging and Visualization**

Implement data logging to record water level and rain data over time.

Use a cloud-based service or software to visualize the data in real-time graphs and charts.

#### **Step 7: Enhancements**

You can further enhance the project by adding a mobile app or a web dashboard for remote monitoring and control.

Consider integrating a GPS module to track the location of the flood risk area.

This project will help monitor water levels and rain intensity, providing early warning alerts when flood risks are detected. It's a valuable application of Arduino and IoT technology for flood prevention and safety.