**Flood Monitoring System**

//Prateek

//https://justdoelectronics.com

//https://www.youtube.com/c/JustDoElectronics/videos

#include <Wire.h>

#include <LiquidCrystal\_I2C.h>

#include <NewPing.h>

#include <SoftwareSerial.h>

// LCD Display

LiquidCrystal\_I2C lcd(0x27, 16, 2);

// Ultrasonic Sensor

#define TRIGGER\_PIN 12

#define ECHO\_PIN 11

#define MAX\_DISTANCE 200

NewPing sonar(TRIGGER\_PIN, ECHO\_PIN, MAX\_DISTANCE);

// Float Sensor

#define FLOAT\_SENSOR\_PIN 10

// GSM Module

SoftwareSerial gsmSerial(8, 9); // RX, TX

#define GSM\_BAUDRATE 9600

// Thresholds

#define FLOOD\_THRESHOLD 50 // Example threshold in cm

// Phone Numbers

String phoneNumbers[] = { "+9188305848xx", "+9188305848xx" }; // Example phone numbers

void setup() {

// Initialize LCD Display

lcd.begin(16, 2);

lcd.backlight();

// Initialize GSM Module

gsmSerial.begin(GSM\_BAUDRATE);

delay(2000); // Give GSM module time to initialize

sendCommand("AT"); // Check communication

sendCommand("AT+CMGF=1"); // Set SMS text mode

// Display Initialization Message

lcd.clear();

lcd.setCursor(0, 0);

lcd.print("Flood Monitoring");

lcd.setCursor(0, 1);

lcd.print("System");

delay(3000); // Display initialization message for 3 seconds

}

void loop() {

// Read Ultrasonic Sensor

unsigned int distance = sonar.ping\_cm();

// Read Float Sensor

int floatSensorValue = digitalRead(FLOAT\_SENSOR\_PIN);

// Calculate Flood Level

int floodLevel = distance;

// Update LCD Display

lcd.clear();

lcd.setCursor(0, 0);

lcd.print("Water Level: ");

lcd.print(floodLevel);

lcd.print("cm");

// Check Flood Threshold

if (floodLevel > FLOOD\_THRESHOLD && floatSensorValue == HIGH) {

// Send Alert SMS

sendAlertSMS(floodLevel);

}

delay(500); // Delay for stability

}

void sendAlertSMS(int floodLevel) {

String message = "Flood Alert! Water level is ";

message += floodLevel;

message += "cm. Take necessary actions.";

for (int i = 0; i < sizeof(phoneNumbers) / sizeof(phoneNumbers[0]); i++) {

sendCommand("AT+CMGS=\"" + phoneNumbers[i] + "\"");

delay(1000);

sendCommand(message);

delay(100);

sendCommand((String) char(26));

delay(1000);

}

}

void sendCommand(String command) {

gsmSerial.println(command);

delay(1000);

while (gsmSerial.available()) {

gsmSerial.read();

}

}

Circuit diagram:

