**FLOOD MONITORING AND EARLY WARNING SYSTEM [PHASE-3] DEVELOPMENT PART**



Creating a flood monitoring and early warning system is a complex and specialized project that typically involves a combination of hardware and software components, including sensors, data processing, and communication infrastructure. Below is a simplified Python script that demonstrates a basic flood monitoring system using a simulated sensor and email notifications. This script is for educational purposes and does not cover all the aspects of a real-world flood monitoring system, which would require more extensive resources, including hardware and real-time data sources.

**Required components:**

**Water level sensor:**

* Water level sensors, also known as liquid level sensors, are electronic devices designed to measure the depth or height of a liquid in a container. They come in various forms, with different technologies used to sense the water level.



**Float Switch:**

* Float switches are mechanical devices that use the buoyancy of a float to control the water level. A typical float switch consists of two main components:
* switch housing via a flexible or rigid rod or cable. The float rests on the surface of the liquid.

  
**Buzer:**

* A buzzer is an electromechanical or electronic device that produces a buzzing or beeping sound when an electrical current passes through it.
* Buzzers are often used in various applications to provide audio alerts or warnings. Here are some key features:



**Algorithm:**

**Step 1:** We define a WaterLevelSensor class to represent a water level sensor. It has a name and a level.

**Step 2**: We create a list of sensors with random initial levels.

**Step 3:** The generate\_random\_data method simulates random water level readings.

**Step 4:** The check\_water\_levels function checks the water levels and prints alerts if the water level is above a threshold (in this case, 8 feet).

**Step 5:**The main loop continuously updates sensor data, checks the water levels, and sleeps for 5 seconds between readings.

**Program For Python Script:**

#define WATER\_SENSOR\_PIN A0

#define BUZZER\_PIN 2

#define WATER\_THRESHOLD 500 **// Adjust this threshold as needed**

void setup()

{

pinMode(WATER\_SENSOR\_PIN, INPUT);

pinMode(BUZZER\_PIN, OUTPUT);

}

void loop()

{

int waterLevel = analogRead(WATER\_SENSOR\_PIN);

if (waterLevel > WATER\_THRESHOLD)

{

**// Water level is above the threshold, trigger the alarm**

digitalWrite(BUZZER\_PIN, HIGH);

delay(1000); **// Alarm on for 1 second**

digitalWrite(BUZZER\_PIN, LOW);

delay(1000); **// Delay to prevent constant alarms**

}

**// Add more code here for sending warnings to a server or other actions.**

}

**Model Output:**



**Flood Diagram:**



A real-world system, you would need to interface with actual water level sensors, use a database to store historical data, implement communication mechanisms (e.g., email, SMS, or a web service) for sending alerts, and possibly use geographic data for specific flood zone monitoring. This example is a starting point, and building a complete flood monitoring and early warning system would be a more extensive and complex project.