FLOOD MONITORING SYSTEM

Objective:-

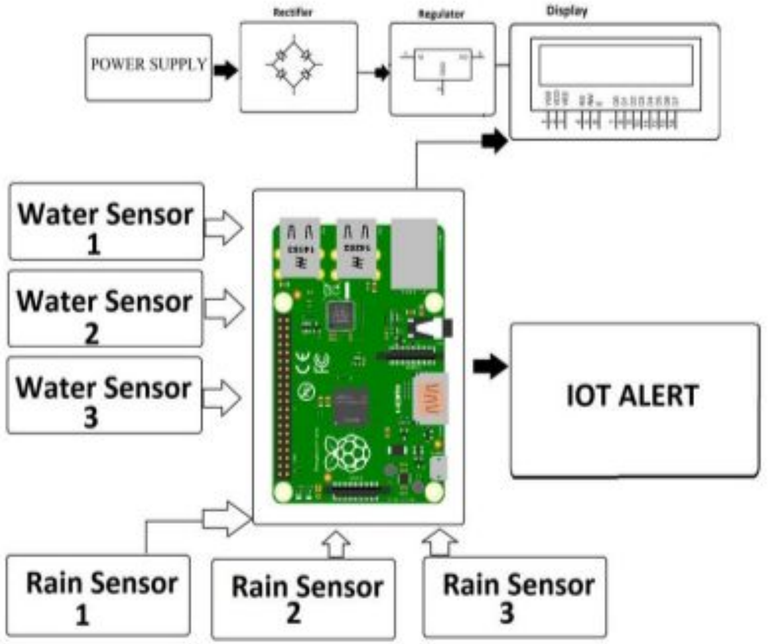
Flood monitoring system is to provide real-time data and early warnings to help mitigate the impact of floods which includes , Early warning system,risk assessment,real time monitoring,data collection, emergency response .

Project objectives:-

➡The project involves deploying lot sensors near waterbodies and flood-prone areas to monitor waterlevels and provide early flood warning through a public platforms.

➡This project includes defining objectives, designing the loT sensor network, developing the warning platform, and integrating them using iot technology and python.

Block Diagram:-



Specifications:-

➡Raspberry Pi 3

➡Wifi Module

➡LCD Display

➡Water Sensor

➡Rain Drop Sensor

➡Resistors

➡Capacitors

➡Transistors

➡Cables and Connectors

➡ diodes

➡ IC

➡IC Sockets

➡switch

➡push buttons

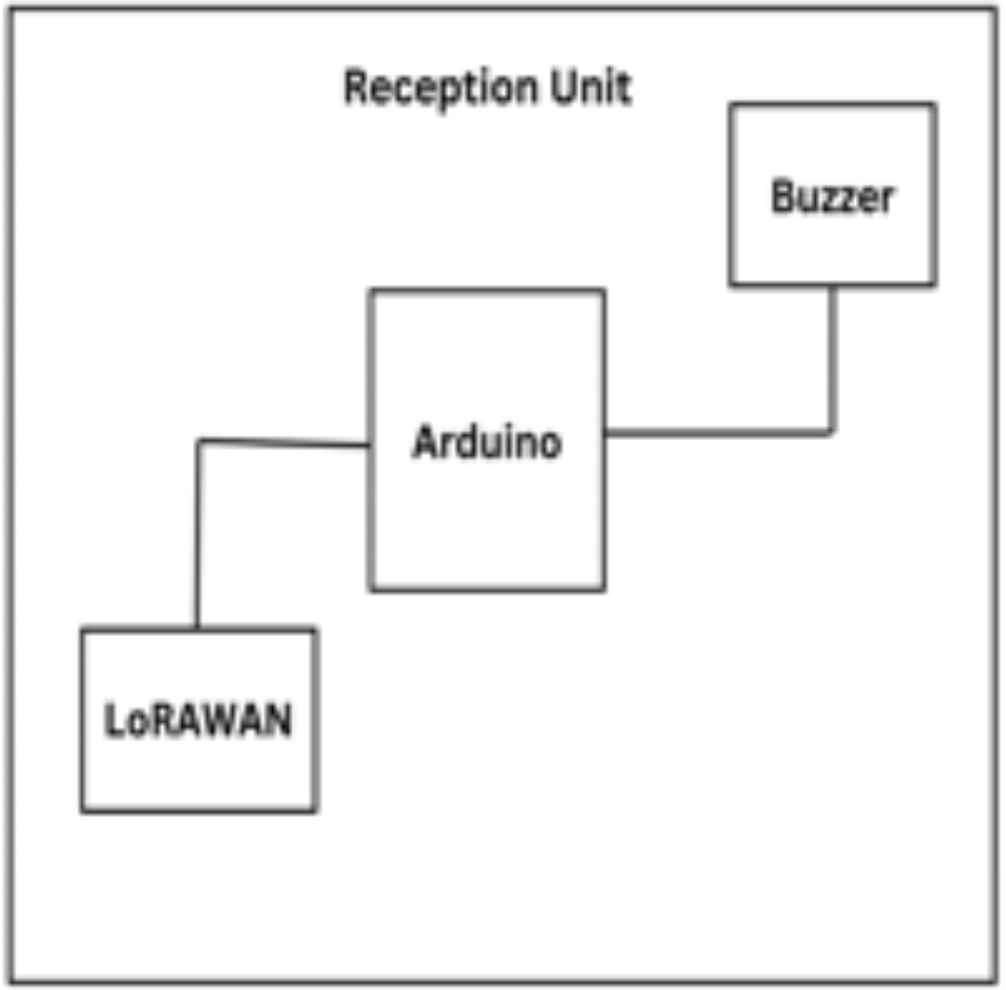
➡ LED

➡adapter/transformer

Software specifications:-

- ➡ IOT
- ➡ python
- ➡ IOT GECKO

Structural diagram:-



Python code:-

```
import time
import random

def simulate_sensor_data():
    # Simulate sensor data (Replace with actual sensor data)
    water_level = random.uniform(0, 10)
    return water_level

def check_flood_condition(water_level_threshold):
    water_level = simulate_sensor_data()
    if water_level > water_level_threshold:
        return True
    else:
        return False

def main():
    water_level_threshold = 7.0  # Adjust this threshold as needed
    while True:
        if check_flood_condition(water_level_threshold):
            print("Flood Alert: Flooding detected!")
            # Send alerts or take necessary actions here
        else:
            print("No Flood Alert")
        time.sleep(30)  # Check the condition every 30 seconds

if __name__ == "__main":
    main()
```

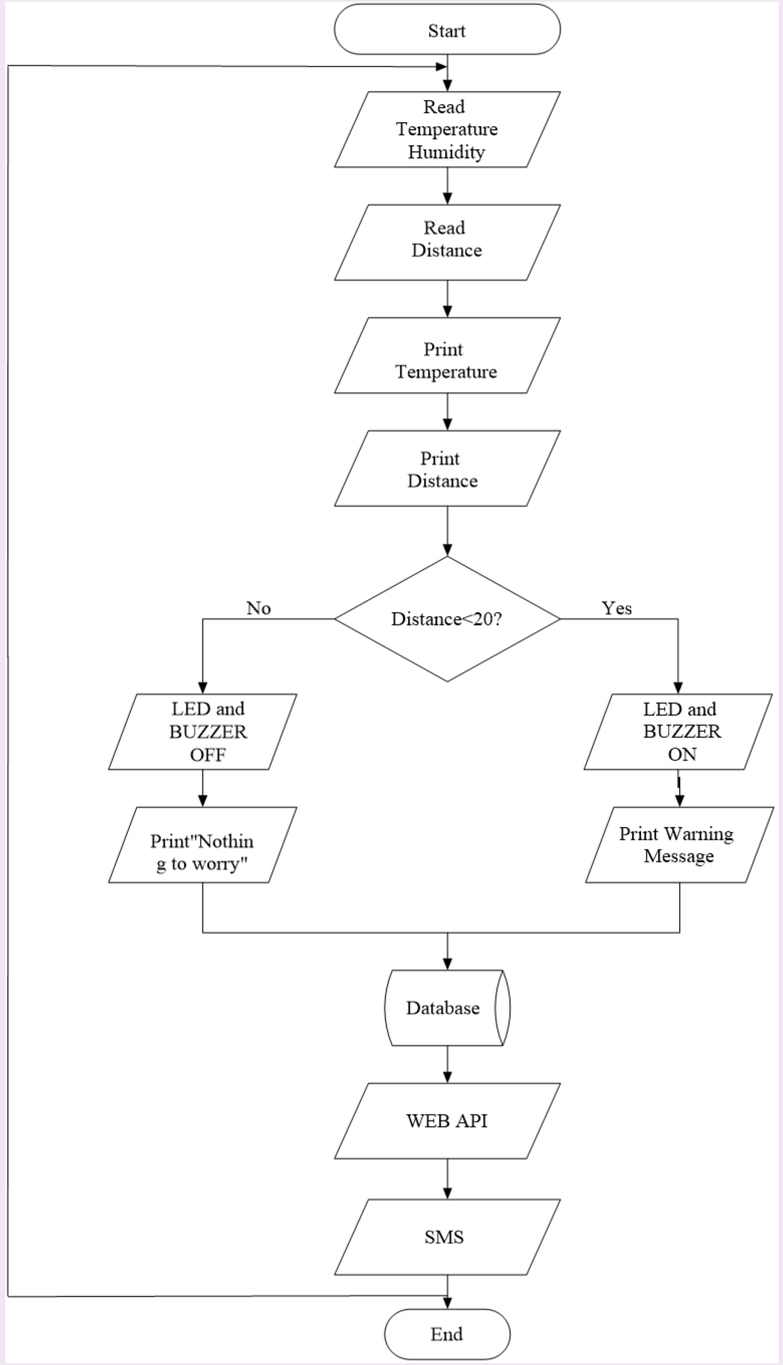
Modules used:-

Random

Time

Twilio. Cent. Client

Flowchart:-


Start
Read Temperature Humidity
Read Distance
Print Temperature
Print Distance
Distance<20?
No
Yes
LED and BUZZER OFF
LED and BUZZER ON
Print"Nothing to worry"
Print Warning Message
Database
WEB API
SMS
End

Frameworks:-

➡ Frameworks like Django, Ruby on Rails, or Express.js are often used to build the web application that users interact with. These provide a structured way to develop the frontend and backend components.

➡ In addition to web applications, mobile apps for iOS and Android can be developed using technologies like React Native or Flutter to provide users with on-the-go access to flood information.

➡ Technologies such as OAuth, JWT, and SSL/TLS are crucial for user authentication and securing data transmission.

Sensors used:-

➡Water Level Sensors: These sensors measure the depth of water at specific locations, such as rivers, lakes, or flood-prone areas. They can be ultrasonic sensors, pressure sensors, or radar sensors.

➡Rainfall Sensors: Rain gauges equipped with IoT capabilities can monitor precipitation levels in real-time. This data is essential for predicting floods.

➡River and Stream Flow Sensors: These sensors measure the flow rate of water in rivers and streams, helping to track changes in water volume.