

SMART WATER FOUNTAINS

Introduction

A well-designed fountain adds freshness to any public space, boosting it both socially and economically by attracting more tourists and also local residents. In this way, people from near and far will have a place for fun, or just simple relaxation.

Objectives:

Water Efficiency: Ensure water fountains are operational and minimizing the water wastage.

Public Awareness: Raise awareness about water conservation through real-time data and a mobile app.

Data Collection: Collecting data from IoT sensors for analysis and reporting.

User-Friendly Interface: Develop a user-friendly mobile app to display fountain status.

Program

```
#include <Servo.h>

const int pumpPin = 9; // Pin for controlling the water pump

const int triggerPin = 10; // Ultrasonic sensor trigger pin

const int echoPin = 11; // Ultrasonic sensor echo pin

const int redPin = 5; // Red LED pin

const int greenPin = 6; // Green LED pin

const int bluePin = 3; // Blue LED pin

Servo myservo;

void setup() {

    pinMode(pumpPin, OUTPUT);

    pinMode(triggerPin, OUTPUT);

    pinMode(echoPin, INPUT);

    pinMode(redPin, OUTPUT);
```

```
pinMode(greenPin, OUTPUT);

pinMode(bluePin, OUTPUT);

myservo.attach(12);

myservo.write(90); // Adjust servo position for water flow control

Serial.begin(9600);

}
```

```
void loop() {

    long duration, distance;

    digitalWrite(triggerPin, LOW);

    delayMicroseconds(2);

    digitalWrite(triggerPin, HIGH);

    delayMicroseconds(10);

    digitalWrite(triggerPin, LOW);

    duration = pulseIn(echoPin, HIGH);

    distance = duration / 58.2;

    if (distance < 10) { // If water level is low

        digitalWrite(pumpPin, HIGH); // Turn on the water pump

        analogWrite(redPin, 255); // Red LED on

        analogWrite(greenPin, 0); // Green LED off

        analogWrite(bluePin, 0); // Blue LED off

    } else {

        digitalWrite(pumpPin, LOW); // Turn off the water pump

        analogWrite(redPin, 0); // Red LED off

    }

}
```

```

    analogWrite(greenPin, 255); // Green LED on

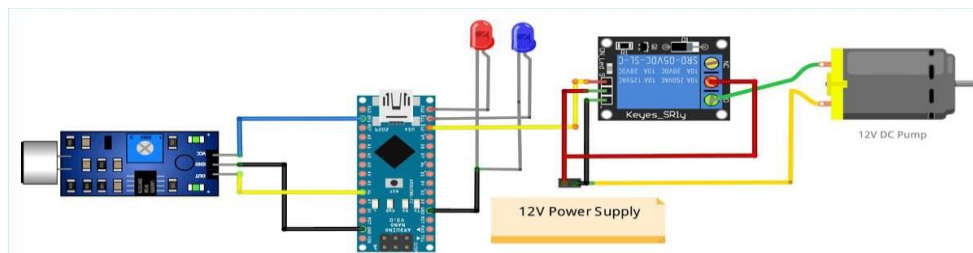
    analogWrite(bluePin, 0); // Blue LED off

}

delay(1000); // Check water level every second
}

```

Schematic diagram



GLIMPSE

The project aims to create a real-time water fountain status system that promotes water efficiency and public awareness. It will monitor water fountain usage and provide real-time information through a mobile app. This system will help users find available fountains, reduce water waste, and raise awareness about water conservation.

IoT Sensor Setup:

The IoT sensors is deployed to monitor the water fountains.

Water Flow Sensor: Measures water flow in real-time.

Ultrasonic Sensor: Detects user presence.

Microcontroller : Collects and processes sensor data.

Wi-Fi Module: Transmits data to the central server.

Power Supply (e.g., battery or solar panel).

These sensors are strategically placed near water fountains and connected to a central server.

Raspberry Pi Integration:

A Raspberry Pi is employed as the central server to collect and process data from the IoT sensors.

The Raspberry Pi:

Receives data from the sensors and stores data in a database. Runs a web server to provide data to the mobile app and communicates with the mobile app using Web.

Mobile App Development:

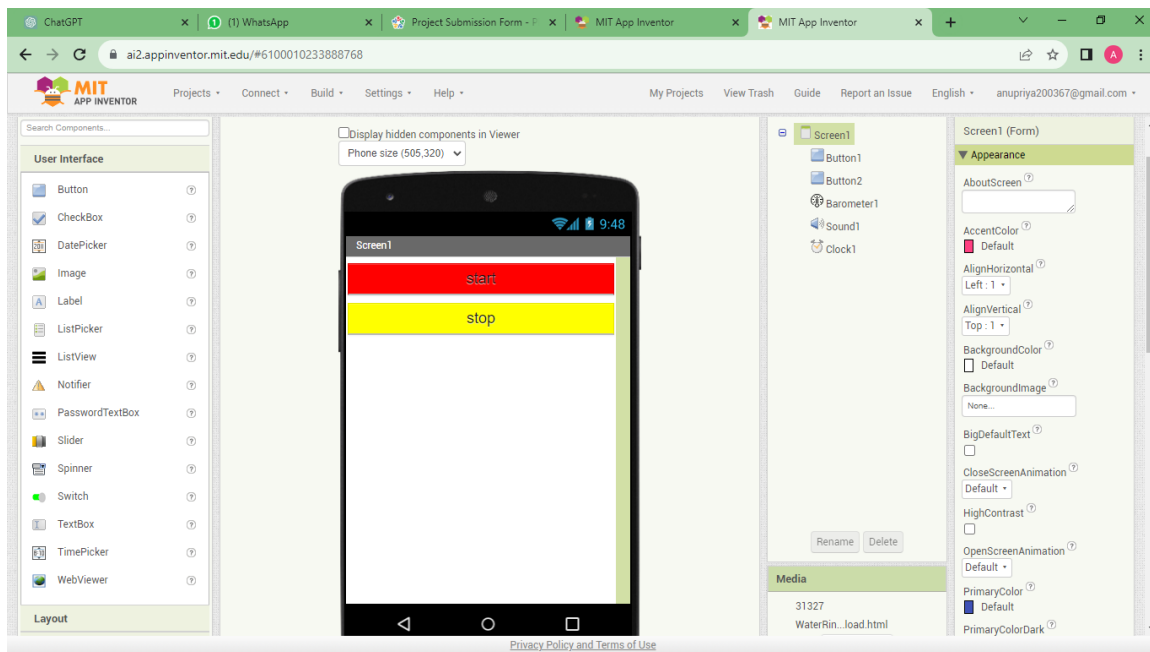
The mobile app is a crucial component for user interaction. It is developed for both Android and iOS platforms. Key features include:

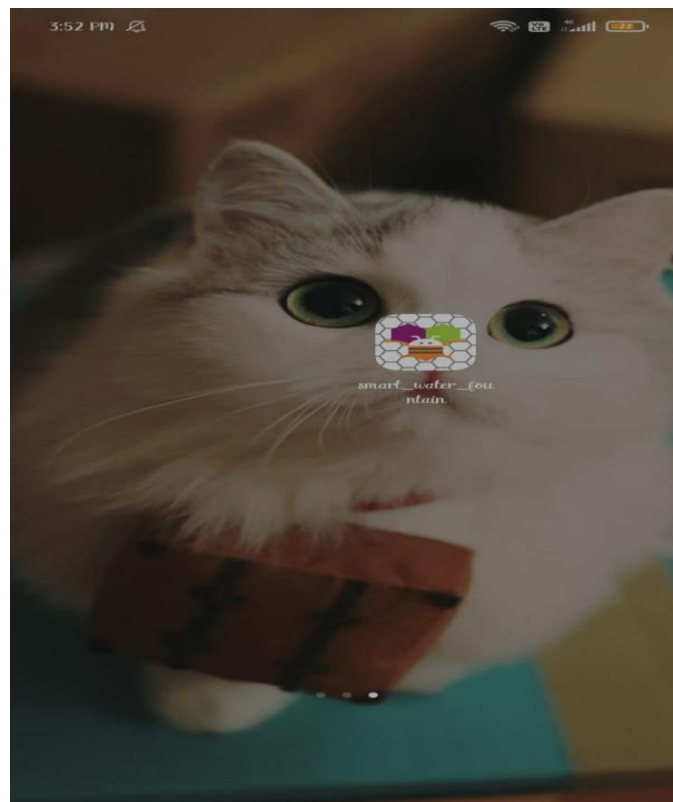
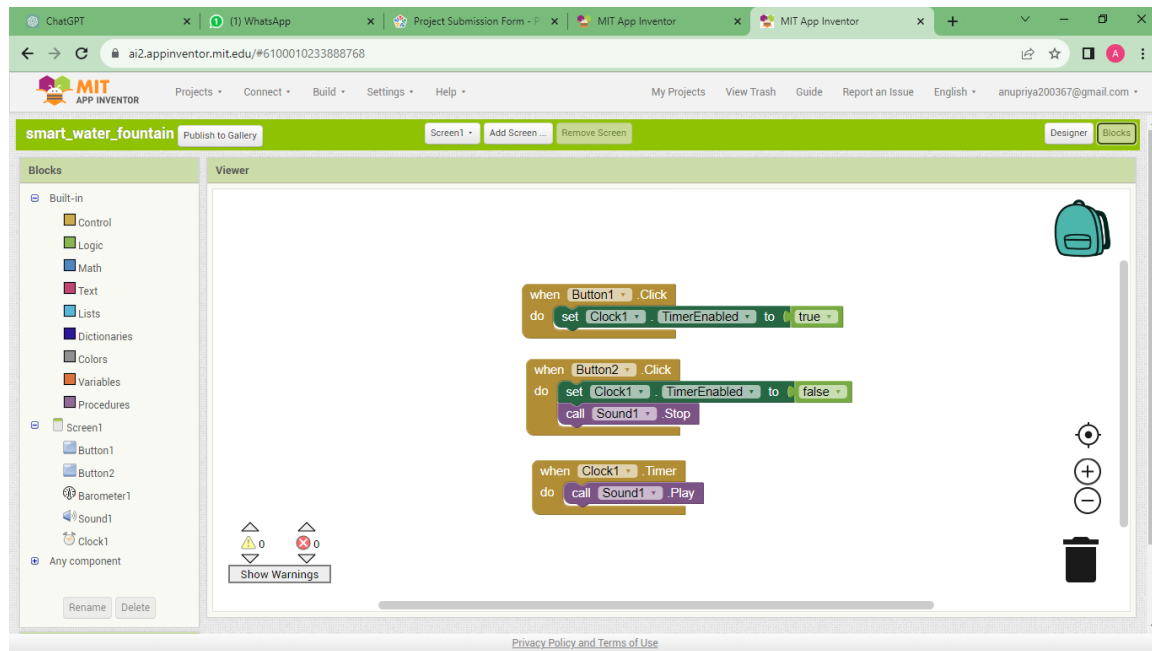
Fountain Map: Displays the locations of nearby fountains.

Fountain Status: Shows real-time fountain status.

Historical Data: Offers water usage statistics and trends.

User Accounts: Allows users to create accounts and personalize their experience.





Reference

9] Liquid Level Sensor by Sparkfun. (n.d.). Retrieved February 16, 2021, from <https://www.sparkfun.com/products/10221>

Conclusion

The real-time water fountain status system promotes water efficiency and public awareness in several ways. Users can quickly locate functioning fountains and real-time status updates remind users to conserve water by using only operational fountains. The app can include water conservation tips and information, raising awareness about the importance of responsible water usage.