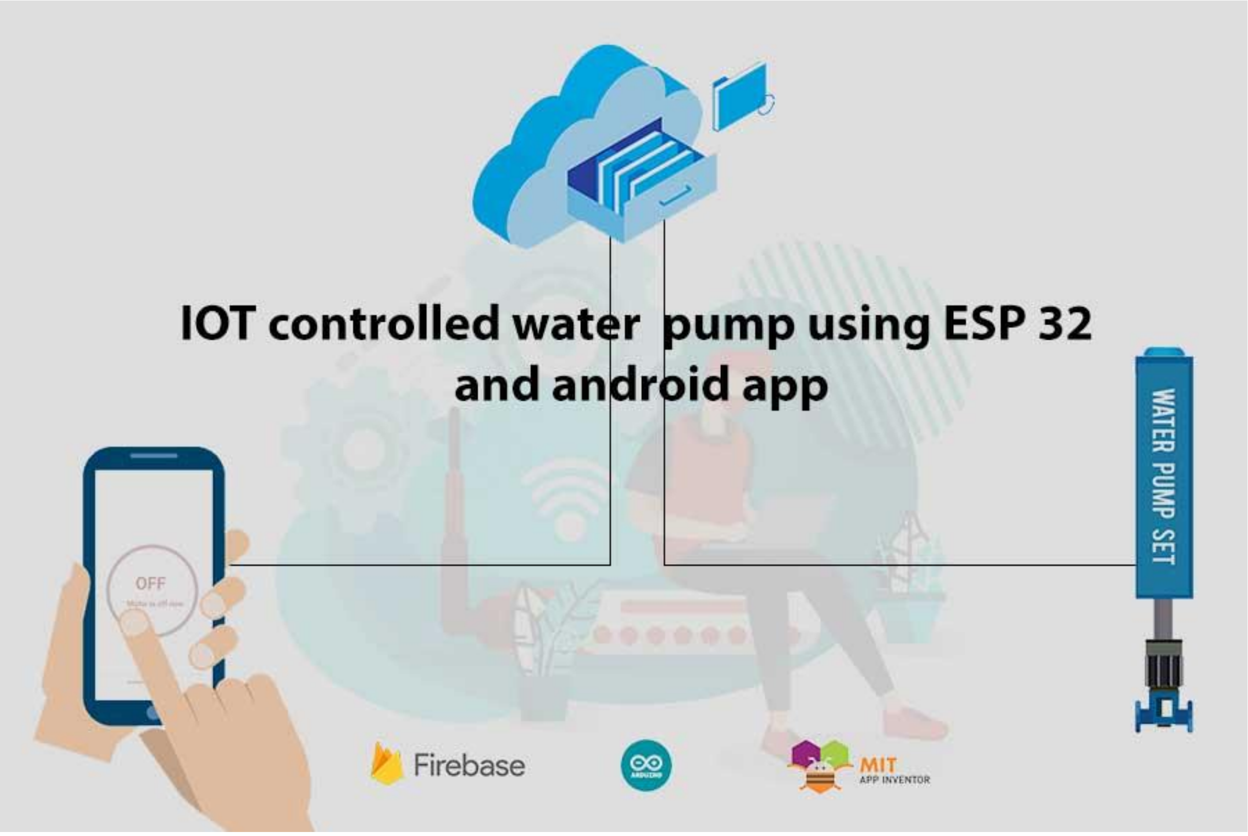
SMART WATER FOUNTAIN

PHASE 4

Abstract:

This project introduces a Smart Water Fountain system that leverages the power of the Internet of Things (IoT) to provide an innovative and efficient solution for managing water resources. The system incorporates an ESP32 microcontroller, a temperature and humidity sensor, a relay module, and a reliable power supply.



CORD:

```
#include <DHT.h>

#include <WiFi.h>

#include <FirebaseESP32.h>

#define FIREBASE_HOST "your-firebase-project-id.firebaseio.com"

#define FIREBASE_AUTH "your-firebase-auth-token"

#define WIFI_SSID "your-wifi-ssid"

#define WIFI_PASSWORD "your-wifi-password"

#define DHTPIN 2 // Replace with the GPIO pin where the DHT sensor is connected

#define DHTTYPE DHT22 // Change to DHT11 if you're using that sensor

DHT dht(DHTPIN, DHTTYPE);

FirebaseData firebaseData;

void setup() {

  Serial.begin(115200);

  delay(1000);

  WiFi.begin(WIFI_SSID, WIFI_PASSWORD);
  while (WiFi.status() != WL_CONNECTED) {
    delay(1000);
    Serial.println("Connecting to WiFi...");
  }
  Firebase.begin(FIREBASE_HOST, FIREBASE_AUTH);
  dht.begin();
}
void loop() {
  float humidity = dht.readHumidity();
  float temperature = dht.readTemperature();
  if (isnan(humidity) || isnan(temperature)) {
    Serial.println("Failed to read from DHT sensor!");
    return;
  }
  Firebase.setString(firebaseData, "temperature", String(temperature));
  Firebase.setString(firebaseData, "humidity", String(humidity));
  if (Firebase.updateNode(firebaseData, "/")) {
    Serial.println("Data sent to Firebase!");
  } else {
    Serial.println("Failed to send data to Firebase.");
  }
  delay(30000); // Send data every 30 seconds
}
```

WORKING OF MY PROJECT:

ESP32:

The ESP32 microcontroller serves as the central processing unit, responsible for monitoring and controlling the water fountain. The temperature and humidity sensor is integrated to collect environmental data, ensuring optimal water usage and maintenance. By connecting to the cloud, users can access real-time information on the water fountain's status through a dedicated mobile application or web interface.

RELAY MODULE:

The relay module is utilized to control the water pump, allowing users to remotely start or stop the fountain as needed. Furthermore, the power supply system is designed to ensure uninterrupted operation, even in the event of power outages.

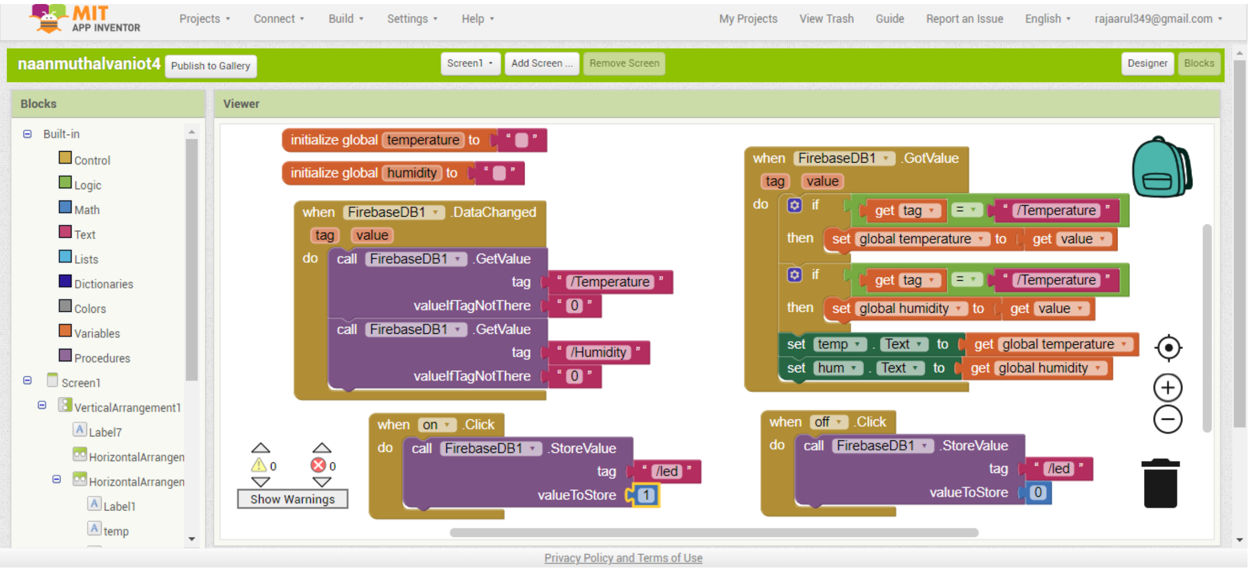
Temperature and Humidity sensor (DHT22):

In this project we are using dht22 sensor for sending temperature and humidity data to Firebase real time database using esp32 and arduino. Here arduino reads the current temperature and humidity data from dht22 and send to firebase real time database for live monitoring from anywhere in the world.

ULTRASONIC SENSOR:

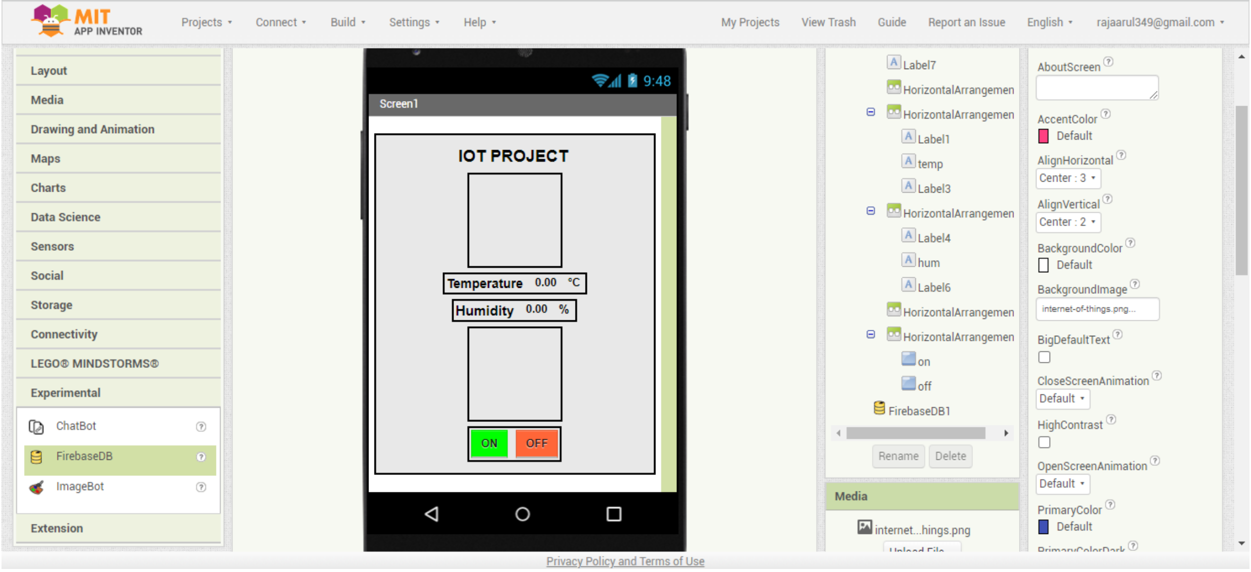
Ultrasonic sensors can measure the water level in a tank or reservoir. This data can be sent to a central system to ensure efficient water management and to prevent overflow or shortages.Leak Detection: Ultrasonic sensors can detect leaks in water infrastructure by listening for the distinct sound of escaping water.

APP DESIGN:(USING MIT APP INVENTER)



```
initialize global temperature to " "
initialize global humidity to " "

when FirebaseDB1 .DataChanged
  tag  value
do  call FirebaseDB1 .GetValue
        tag "/Temperature"
        valueIfTagNotThere "0"
    call FirebaseDB1 .GetValue
        tag "/Humidity"
        valueIfTagNotThere "0"

when FirebaseDB1 .GotValue
  tag  value
do  if   get tag = "/Temperature"
    then set global temperature to get value
    if   get tag = "/Temperature"
    then set global humidity to get value
    set temp . Text to get global temperature
    set hum . Text to get global humidity

when on .Click
do  call FirebaseDB1 .StoreValue
        tag "/led"
        valueToStore 1

when off .Click
do  call FirebaseDB1 .StoreValue
        tag "/led"
        valueToStore 0
```

Design of application



IOT PROJECT

Temperature 0.00 °C

Humidity 0.00 %

ON OFF

AboutScreen

AccentColor: Default

AlignHorizontal: Center : 3

AlignVertical: Center : 2

BackgroundColor: Default

BackgroundImage: internet-of-things.png...

BigDefaultText ☐

CloseScreenAnimation: Default

HighContrast ☐

OpenScreenAnimation: Default

PrimaryColor: Default

PrimaryColorDark

Model of application

In this application (using MIT app inventer software) we can control the circuit while wireless communication by mobile phone in any where in the world. This monitors the Temperature and humidity and also monitor the level of the water in a fountain.

CONCLUSION:

This IoT-enabled Smart Water Fountain aims to provide an efficient and sustainable solution for managing water resources while offering users convenient control and real-time monitoring capabilities. It has the potential to find applications in public spaces, parks, gardens, and residential settings, contributing to water conservation efforts and enhancing user experience.