

### Select IoT Devices and Sensors:

Choose appropriate IoT devices and sensors for monitoring environmental conditions like temperature, humidity, air quality, and more. Some common choices include Arduino, Raspberry Pi, ESP8266/ESP32, and specific environmental sensors.

### Assemble the Hardware:

Set up the IoT devices with the selected sensors. Connect the sensors to the IoT devices as per the manufacturer's guidelines.

### Install the IoT Devices:

Deploy the IoT devices with sensors in various strategic locations within the public parks. Ensure they are protected from environmental elements, theft, and vandalism.

### Write Python Script for Data Collection:

Develop a Python script that runs on each IoT device to collect environmental data from the sensors. Here's a simplified example using a Raspberry Pi and a DHT22 temperature and humidity sensor:

## PROGRAM:

```
import Adafruit_DHT # Import the DHT sensor library

# Define the sensor type and GPIO pin
sensor = Adafruit_DHT.DHT22
pin = 4

while True:
    humidity, temperature = Adafruit_DHT.read_retry(sensor,
pin)

    if humidity is not None and temperature is not None:
        # Send the data to the monitoring platform (next step)
        print(f"Temperature: {temperature:.2f}°C, Humidity:
{humidity:.2f}%")
    else:
        print("Failed to retrieve data from the sensor")

# Define a suitable interval (e.g., every 15 minutes) for data
collection
```

### **Set Up Data Transmission:**

**You need a way to transmit the collected data to the monitoring platform. Depending on your resources and requirements, you can choose various communication methods such as Wi-Fi, LoRa, or cellular networks.**

### **Secure Data Transmission:**

**Implement encryption and authentication mechanisms to secure the data transmission between the IoT devices and the monitoring platform. This is crucial to protect sensitive environmental data.**

### **Develop the Monitoring Platform:**

**Create a monitoring platform or server to receive and process data from the IoT devices. This platform should be capable of storing, analyzing, and visualizing the data. You can use cloud services like AWS, Azure, or Google Cloud, or build a custom solution.**

### **Receive and Store Data:**

**In your monitoring platform, set up endpoints or services to receive data from the IoT devices. Store the received data in a database or time-series data store for further analysis.**

### **Analyze and Visualize Data:**

**Implement data analysis and visualization tools to make the environmental data accessible and understandable. Dashboards, graphs, and alerts can help in real-time monitoring.**

### **Implement Alerts and Notifications:**

**Set up alerting mechanisms to notify relevant authorities or personnel when specific environmental conditions fall outside acceptable limits. This could be for conditions like extreme temperatures or poor air quality.**

### **Maintenance and Monitoring:**

**Regularly maintain and monitor the IoT devices and the monitoring platform. Replace batteries, update software, and address any issues that arise.**

### **Compliance and Privacy:**

**Ensure that your project complies with data privacy regulations and park regulations. Respect user privacy and data ownership.**