Project Definition: The project involves setting up IoT devices

- To monitor environmental conditions in public parks, including temperature and

- Humidity. The primary objective is to provide real-time environmental data to park

- Visitors through a public platform, enabling them to plan their outdoor activities

- Accordingly. This project includes defining objectives, designing the IoT sensor system,

- Developing the environmental monitoring platform, and integrating them using IoT
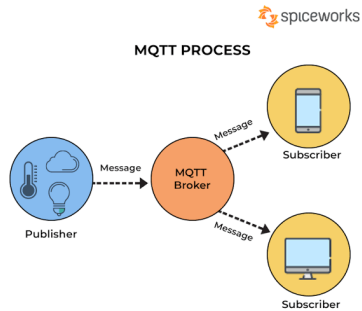
Iot environmental monitoring:

❖ process that uses Internet of Things (IoT) technology to collect data about the

environment, such as air quality, temperature, and humidity levels.

IOT DEVICE USED IN ENVIRONMENTAL MONITORING:

❖ IoT devices, such as sensors and cameras, gather data on the environment, including

air quality, water quality and soil moisture. This data is then transmitted wirelessly

to a central database or cloud platform for analysis.

IOT SENSORS SIMULATORS USED IN PYTHON

• MQTT protocol for the IoT in Python enables highspeed data exchange with low payload communication

between the devices. User-friendly requests of MQTT are made directly in Python. Data is collected in realtime and easily analyzed in mathematical computation

spiceworks

MQTT PROCESS

Message
Subscriber

MQTT
Broker

Message
Publisher

Message
Subscriber

libraries like matplotlib.

steps used for the data flow:

Data logging using MQTT (install using pip install paho-mqtt) Python is

displayed below:

import paho. Mqtt.client as mqtt

#Callback

For received data from server

Def on_connect(data_iot, user, events):

 Print("connected with code" + str(events))

Data = mqtt.Client()

Data.on_connect = on connect

Data.on_message = on_message

Data. Loop forever ()

1)Arduino UNO –

 Arduino is an opensource physical programmable microcontroller board, it is also referred as a software , or IDE i.e.

Integrated Development Environment which is connected through B type USB and it runs on the specific connected PC
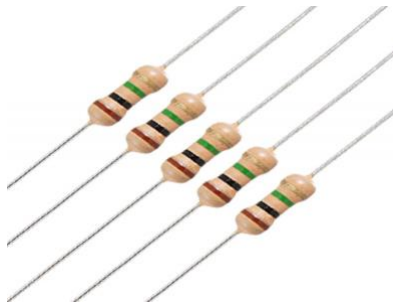
And also it allows to write and upload the code to that circuit, it has sets of computerized I/O sticks which is interfaced

To some sheets called as development sheets or safeguards, this sheets had 14 I/O pins, it has working voltage of 5V

2. 10 WATT 1K – RESISTOR

Resistors in circuit are the passive two-terminal electrical components, here are 1 * 1K ohm 10 Watt wire wound

3. L293D

It is a popular 16 pin Motoar Driver IC, i.e. simultaneously drives two DC motors in direction and it receives Signals from microprocessor and then transmits the relative signals to motor driver and it has two voltage pins like h .Bridge circuit with two channels with voltage range 4.5V to 36V.

4.LDR

It is a variable resistor which varies according to the intensity of light falling on it.

IoT-based monitoring

First, let's talk about an environmental monitoring system definition and how IoT supports these processes. IoT-based environmental monitoring is the consistent collection of measurements and data from our physical environment, using sensors and connected devices. Sensors embedded in irrigation systems, pipelines, tanks, weather stations, oceanic applications, and industrial equipment — anywhere on the planet — can detect temperature, moisture, water levels, leaks, and other physical properties.

Intelligent, connected devices with embedded communications modules can then process that information using edge computing technology, and rapidly send critical data to the cloud or a data center for further action or analysis.

Power plant cooling tower

These monitoring systems can be programmed to detect abnormalities or specific conditions, then trigger alerts via email or text, as well as automated processes. These can include anything from launching service tickets to shutting systems down to thwart a disaster. In other words, an environmental monitoring system using IoT acts as the eyes, ears, and mouthpiece for an application — watching, listening, and reporting on a vast range of processes — and even taking action to thwart damage.