

Phase 2 : Innovation

Innovative solution to solve the below problem, here we explained about the sensors, tasks and protocols used here...

Problem Statement:

The project involves setting up IoT devices in parks for people to make come to parks conveniently and encourage a healthy lifestyle. The primary objective is to encourage outdoor activities for long time by monitoring climatic conditions like temperature and humidity and providing enough facilities in the parks like automatic street lights.

Micro controllers used:

- ESP32 :

It detects information from the sensors like ultrasonic sensor. It can be connected with cloud to store data. It used wifi or Bluetooth for data transmission.

- Arduino Uno:

Arduino UNO is a microcontroller. It can communicate information to a central controller or a web server.

SENSORS USED :

1. Digital Temperature And Humidity Sensor:

DHT22 or DHT11 is used for measuring temperature and humidity.

2. Light Sensor:

Light-dependent resistors (LDRs) is used for light intensity measurements.

ENVIRONMENTAL MONITORING TASKS:

- Data Acquisition:

Use the appropriate sensor libraries to read data from the environmental sensors connected to the Arduino board.

- Data Processing:

Process the data needed. We can calculate the various environmental metrics or apply filtering to the raw sensor data.

- Display and Visualization:

Display the data on an LCD, OLED, or a computer screen. We can also create visualizations and plots to monitor trends and anomalies.

- Communication:

Implement communication methods like Wi-Fi or Bluetooth to send data to the cloud or other devices for remote monitoring and control.

- Calibration:

Depending on the sensors used, we need to calibrate them periodically to ensure accurate measurements.

PROTOCOLS:

1. Wi-Fi:

Sensors equipped with Wi-Fi modules can connect to local networks and transmit data to remote servers.

2. Bluetooth:

Bluetooth Low Energy (BLE) is suitable for short-range wireless communication between sensors and nearby devices like smartphones.

3. Zigbee:

Zigbee is a low-power, low-data-rate wireless protocol often used for creating sensor networks in smart homes and industrial environments.

4. LoRa (Long-Range):

LoRa is designed for long-range communication and is ideal for transmitting environmental data over significant distances.