**Phase :02**

**Requirement tools for the project title: Environmental monitoring [temperature as the parameter]**

**1.Temperature Sensors:**

**Digital temperature sensors (e.g., DHT22, DS18B20) for indoor monitoring.**

**Thermistors or resistance temperature detectors (RTDs) for more precise measurements.**

**Infrared thermometers or thermal cameras for non-contact outdoor monitoring.**

**Weather-resistant and ruggedized sensors for outdoor use.**

**2.Calibration:**

**Calibrate temperature sensors regularly to ensure accurate readings. This is crucial for maintaining data integrity over time.**

**3.Data Accuracy:**

**Ensure that the sensors have a high level of accuracy, typically specified in degrees Celsius or Fahrenheit. The required accuracy may vary depending on the specific monitoring application.**

**4.Resolution:**

**Determine the temperature sensor's resolution, which defines the smallest temperature change it can detect. Higher resolution is beneficial for precise monitoring.**

**5.Data Transmission:**

**Implement a reliable data transmission system for sending temperature data from the sensors to the IoT platform. Options include Wi-Fi, cellular, LoRa, or other IoT communication protocols.**

**6.Power Management:**

**Design an efficient power management system to ensure sensors operate continuously in remote or outdoor environments. This may include battery-powered sensors with low-power modes.**

**7.Environmental Protection:**

**Choose sensors and enclosures that can withstand environmental conditions, such as humidity, extreme temperatures, and exposure to dust, water, or UV radiation. Sealed or weather-resistant enclosures are essential for outdoor applications.**

**8.Data Logging and Storage:**

**Implement a data logging mechanism to store temperature readings for historical analysis. Cloud storage or local storage options can be used.**

**9.Security:**

**Implement robust security measures to protect the collected temperature data from unauthorized access and ensure data integrity.**