**IOT TASK** (TEMPERATURE MONITORING SYSTEM):

* Temperature monitoring systems are used in a wide variety of applications to ensure the proper management and control of temperature-sensitive environments, processes, and equipment. Here are some key uses of temperature monitoring systems in industrial sector
* **Process Control**: In manufacturing, precise temperature control is crucial for processes such as chemical production, metalworking, and food processing.
* **Equipment Monitoring**: Prevent overheating and ensure optimal operating conditions for machinery and electronic equipment.

**COMPONENTS REQUIRED AND THEIR FUNCTIONALITIES**:

To develop a temperature monitoring system, you will need several key components, ranging from sensors to software.

**Hardware Components**

1. **Temperature Sensor**:
   * Examples: DS18B20, LM35, DHT11/DHT22 (also measures humidity), TMP36
   * Function: Measures the temperature and converts it into an electrical signal.
2. **Microcontroller**:
   * Examples: Arduino, ESP8266/ESP32, Raspberry Pi
   * Function: Processes the signal from the temperature sensor and performs necessary computations.
3. **Power Supply**:
   * Function: Provides the necessary power to the sensor and microcontroller.
4. **Display Unit (Optional)**:
   * Examples: LCD screen, OLED display, 7-segment display
   * Function: Displays the temperature readings.

**Software Components**

1. **Firmware/Software for Microcontroller**:
   * Examples: Arduino IDE, PlatformIO
   * Function: Code that runs on the microcontroller to read the sensor data, process it, and send/display the result.
2. **Monitoring Software**:
   * Examples: ThingSpeak, Blynk, custom web dashboard
   * Function: Collects and visualizes the data, often provides alerts or notifications.
3. **Communication Protocols (for IoT)**:
   * Examples: HTTP, MQTT
   * Function: Ensures reliable communication between the microcontroller and the server or app.