UNIVERSITY OF MISSOURI
KANSAS CITY

Mini-project #1: Basic Environmental Monitoring System

Objective

- Create an environmental monitoring system using an ESP32 board and a DHT11 sensor.

- The system should read temperature and humidity data and use LEDs to indicate specific environmental conditions.

Project Requirements (1/3)

1. Sensor Data Collection

   - Connect the DHT11 sensor to the ESP32 board and write a program to read the current temperature and humidity.

   - Display the temperature and humidity data on the serial monitor of the ESP32.

Project Requirements (2/3)

2. LED Indicator

- Use a single LED (data LED) to indicate both temperature and humidity status:
  - If the temperature exceeds 30°C or humidity exceeds 70%, the LED should turn on.
  - If the temperature is below 15°C or humidity is below 30%, the LED should blink every second.
  - For temperature between 15°C and 30°C and humidity between 30% and 70%, the LED should remain off.

Project Requirements (3/3)

3. User Interface

- Use the serial monitor to display real-time temperature and humidity readings.

- Implement a menu in the serial monitor to allow users to:
  - Start/stop monitoring.
  - Set custom thresholds for temperature and humidity to control the LED indicator.

Submissions

- Source Code: Provide well-documented code with comments explaining each part of the code. **(Deadline: 11: 59 PM on February 16, 2025)**

- Project Report: A concise report describing the project's implementation, the logic used for LED indication, and any challenges faced. **(Deadline: 11: 59 PM on February 16, 2025)**

- In-class Demo: Showcase the working project in real-time. **(Deadline: 5:30 PM – 6:45 PM on February 17, 2025)**

Evaluation Criteria

- Correct and efficient implementation of sensor data collection and LED indication logic.
- Proper use of the serial monitor for real-time data display and user interaction.
- Code quality (readability, comments, and structure).
- Clarity and thoroughness of the project report and demonstration.