

## **Practical 6**

### **Q7. To write a program to get temperature notification using**

#### **Arduino.**

Below is a simple Arduino program that uses a temperature sensor (like the DHT11 or DHT22) to monitor the temperature and send notifications via the Serial Monitor when the temperature exceeds a specified threshold.

#### **Components Needed:**

- Arduino (e.g., Arduino Uno)
- DHT11 or DHT22 temperature and humidity sensor

#### **Circuit Connections :**

##### **1. DHT Sensor:**

- Connect the VCC pin of the DHT sensor to the 5V pin on the Arduino.
- Connect the GND pin of the DHT sensor to the GND pin on the Arduino.
- Connect the DATA pin of the DHT sensor to a digital pin IO2 on the Arduino.

##### **2. Add buzzer and connect one end to pin IO3 and other end to ground**

3. Add a virtual terminal to the schematic capture and connect the RX of virtual terminal to the TXD of Arduino component and TX of virtual terminal to RXD of Arduino component.

#### **STEP 1: Write this code in main.py**

```
#include <DHT.h>

// Define the pins

#define DHTPIN 2    // Pin where the DHT11 is connected
#define BUZZER_PIN 3 // Pin where the buzzer is connected

// Initialize DHT sensor
DHT dht(DHTPIN, DHT11);
```

```

void setup() {
    Serial.begin(9600);
    dht.begin();
    pinMode(BUZZER_PIN, OUTPUT);
}

void loop() {
    // Wait a few seconds between measurements
    delay(2000);

    // Read temperature as Celsius
    float temperature = dht.readTemperature();

    // Check if the reading failed
    if (isnan(temperature)) {
        Serial.println("Failed to read from DHT sensor!");
        return;
    }

    // Print the temperature to the Serial Monitor
    Serial.print("Temperature: ");
    Serial.print(temperature);
    Serial.println(" °C");

    // Temperature threshold for notification
    if (temperature > 30) { // Change this threshold as needed
        Serial.println("Temperature is high! Activating buzzer...");
        digitalWrite(BUZZER_PIN, HIGH); // Activate buzzer
    } else {
        digitalWrite(BUZZER_PIN, LOW); // Deactivate buzzer
    }
}

```

**STEP 2:** Copy the same code in Arduino ide.

**STEP 3:** Make sure the dht library is installed.

**STEP 4:** Save the sketch and compile it.

**STEP 5:** Then, go to Sketch > Export Compiled Binary to save the compiled .hex file.

**STEP 6:** Go to proteus and double click on the Arduino component.

**STEP 7:** Find the field for the program file or hex file, and browse to select the .hex file you exported from the Arduino IDE.

**STEP 9:** Run the simulation.

**Explanation:**

1. Library Inclusion: The code includes the DHT library to interface with the DHT sensor.

2. Pin Configuration: You define the pin connected to the DHT sensor and specify its type (DHT11 or DHT22).

3. Setup: Initializes serial communication and the DHT sensor.

4. Loop:

- Reads the temperature every 2 seconds.
- Checks if the reading is valid.
- Compares the temperature against a predefined threshold.
- Sends a notification to the Serial Monitor if the temperature exceeds the threshold.

## Connections:

