

MIT World Peace University

Internet of Things

Assignment 2

NAMAN SONI ROLL No. 10

Contents

1 Aim

To interface following Sensors such as Temperature or Ultrasonic or IR or any other sensor with Arduino Uno and display the output on the Serial Monitor.

2 Objectives

- To interface Temperature Sensor with Arduino Uno and display the output on the Serial Monitor.
- To learn how to use Arduino Uno.
- To learn about Actuators and Sensors.

3 Components and Equipment

- U1:1
- Arduino Uno R3
- U5:1
- Temperature Sensor [TMP36] PIEZO1: 1
- Piezo
- D1: 1
- Red LED
- MFAN: 1
- DC Motor
- R1: 1
- 1 k Resistor

4 Theory

In this assignment, we will be interfacing a temperature sensor with Arduino Uno and displaying the output on the serial monitor. The temperature sensor used in this project is an analog sensor, which measures temperature by outputting a voltage proportional to the temperature. The TMP36 temperature sensor is a popular choice due to its accuracy and low cost. The Arduino Uno is a microcontroller board that is commonly used for prototyping and educational purposes. It has 14 digital input/output pins and 6 analog input pins, and is powered by a 5V supply. The board is programmed using the Arduino programming language, which is a simplified version of C++. To interface the temperature sensor with the Arduino, we connect the output pin of the sensor to one of the analog input pins on the Arduino, and connect the ground and power pins to the appropriate pins on the Arduino. We then read the analog voltage from the sensor using the `analogRead()` function in the Arduino code. The output of the temperature sensor is displayed on the serial monitor, which is a useful tool for debugging and monitoring the output of the Arduino. The serial monitor allows us to view the output in real-time and make any necessary adjustments to the code or hardware. In the context of the Internet of Things (IoT), this project can be extended to include wireless communication, allowing the temperature readings to be monitored and analyzed remotely. For example, the Arduino could be connected to a Wi-Fi module or a cellular module, and the temperature readings could be sent to a cloud-based platform for analysis and visualization. This could be useful in applications such as environmental monitoring or industrial automation.

5 Platform

Operating System: Mac OS 64-bit

IDEs or Text Editors Used: Arduino IDE, and Thonny on Pi

Compilers: g++ and gcc on linux for C++, Python 3.10 on Pi

6 Diagrams

7 Conclusion

8 FAQ's

8.1 *Arduino Uno R3 (Code: U1)*