**INTERNET OF THINGS LAB RECORD**

**Subject code : BTCS-AMDS-009T**

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***Experiment No.:1 Date: 9-8-2024***

***Description:***

The internal LED on the Arduino (usually connected to pin 13) is a useful component for testing basic programming concepts. In this experiment, we will write a program that makes the internal LED blink on and off with a delay.

***Code:***

// Pin number for the internal LED on most Arduino boards

int ledPin = 13;

void setup() {

// Initialize the internal LED as an output

pinMode(ledPin, OUTPUT);

}

void loop() {

// Turn the LED on (HIGH is the voltage level)

digitalWrite(ledPin, HIGH);

// Wait for 1 second

delay(1000);

// Turn the LED off by making the voltage LOW

digitalWrite(ledPin, LOW);

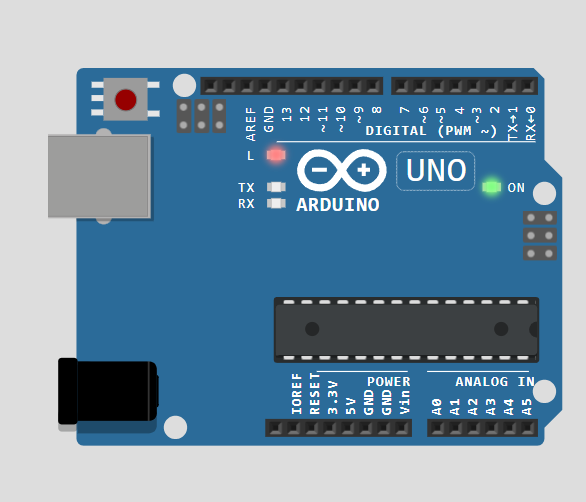
// Wait for 1 second

delay(1000);

}

***Conclusion:***

This experiment demonstrates the basic use of the digitalWrite() and delay() functions in Arduino programming to control the internal LED. It provides a good starting point for understanding how to control outputs and introduces the structure of an Arduino sketch.

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***Experiment No.:2 Date: 9-8-2024*Description:**

In this experiment, an external LED is connected to a digital pin of the Arduino, and the program will make the LED blink at regular intervals. This shows how external components can be controlled using Arduino*.*

***Circuit:***

* *Connect the longer leg (anode) of the LED to pin 8 on the Arduino.*
* *Connect the shorter leg (cathode to the ground (GND) of the Arduino.*

***Code:***

// Pin number for the external LED

int ledPin = 8;

void setup() {

// Initialize the external LED as an output

pinMode(ledPin, OUTPUT);

}

void loop() {

// Turn the LED on

digitalWrite(ledPin, HIGH);

// Wait for 1 second

delay(1000);

// Turn the LED off

digitalWrite(ledPin, LOW);

// Wait for 1 second

delay(1000);

}

***Conclusion:***

This experiment reinforces the concepts of controlling external components with the Arduino. By blinking an external LED, we learned how to work with basic electronic components and establish simple connections using resistors and LEDs.



***Experiment No.:3 Date: 9-8-2024***

**Description:**

The DHT22 sensor is used to measure both temperature and humidity. This experiment will read these values from the sensor and display them in the serial monitor of the Arduino IDE.

**Circuit:**

* Connect the VCC pin of the DHT22 sensor to the 5V pin on the Arduino.
* Connect the GND pin to the ground (GND) of the Arduino.
* Connect the data pin to pin 2 on the Arduino.

**Code:**

#include "DHT.h"

// Pin to which the DHT22 sensor is connected

#define DHTPIN 2

// Define the type of DHT sensor

#define DHTTYPE DHT22

DHT dht(DHTPIN, DHTTYPE);

void setup() {

// Start the serial monitor at 9600 baud rate

Serial.begin(9600);

// Initialize the DHT sensor

dht.begin();

}

void loop() {

// Wait a few seconds between measurements

delay(2000);

// Read humidity

float humidity = dht.readHumidity();

// Read temperature in Celsius

float temperature = dht.readTemperature();

// Check if any reads failed and exit early (to try again)

if (isnan(humidity) || isnan(temperature)) {

Serial.println("Failed to read from DHT sensor!");

return;

}

// Print the results to the Serial Monitor

Serial.print("Humidity: ");

Serial.print(humidity);

Serial.print(" %\t");

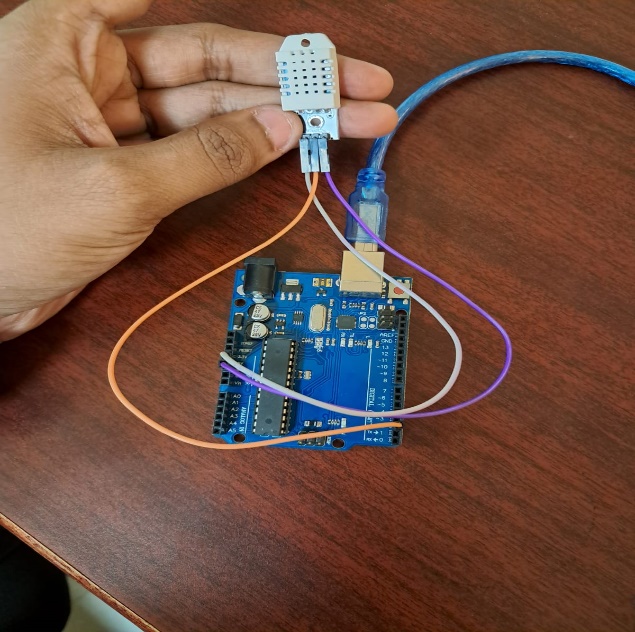
Serial.print("Temperature: ");

Serial.print(temperature);

Serial.println(" °C");

}

**Conclusion:**

In this experiment, we successfully interfaced the DHT22 sensor with the Arduino to measure humidity and temperature. This data was displayed on the serial monitor. The DHT library simplifies sensor interaction, allowing us to focus on gathering and displaying environmental data. This experiment is useful for weather-related projects or environmental monitoring systems.

***Experiment No.:4 Date: 9-8-2024***