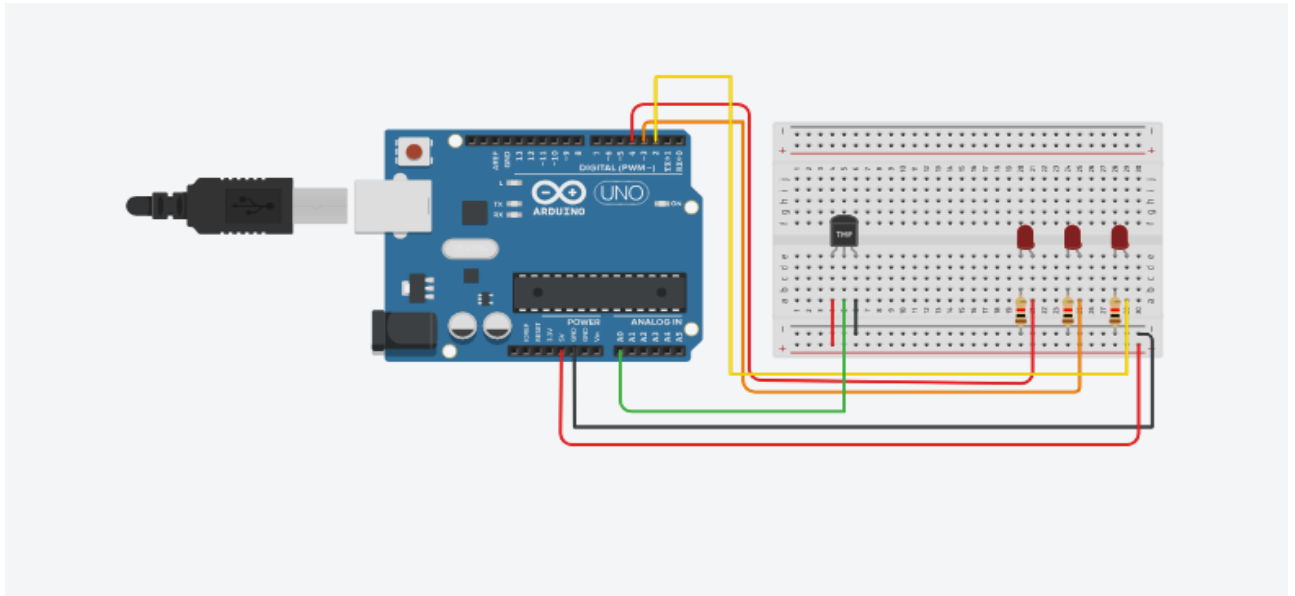


PRACTICAL 7

Simulation Arduino Interfacing with temperature sensor



PROGRAM:

```
// Declare variables
int baselineTemp = 0;
int celsius = 0;
int fahrenheit = 0;

void setup() {
    // Set up the analog pin for temperature sensor and serial monitor
    pinMode(A0, INPUT);
    Serial.begin(9600);

    // Set up LED pins
    pinMode(2, OUTPUT);
    pinMode(3, OUTPUT);
    pinMode(4, OUTPUT);
}
```

```

}

void loop() {
  // Set threshold temperature to activate LEDs
  baselineTemp = 40;

  // Read temperature from analog sensor
  int sensorValue = analogRead(A0);

  // Convert sensor value to Celsius (assuming LM35 or similar sensor)
  celsius = map((sensorValue - 20) * 3.04, 0, 1023, -40, 125);
  fahrenheit = (celsius * 9.0 / 5.0) + 32; // Convert Celsius to Fahrenheit

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

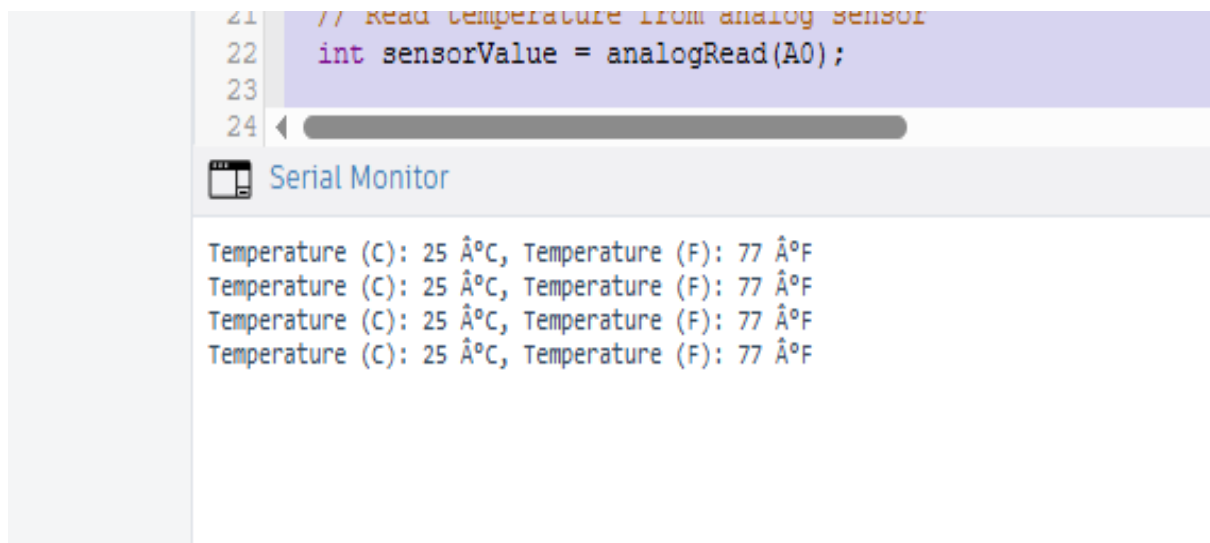
  // Control LEDs based on the temperature thresholds
  if (celsius <= baselineTemp) {
    digitalWrite(2, HIGH); // Turn ON LED on pin 2 if temp is below or equal to baselineTemp
    digitalWrite(3, LOW); // Turn OFF LED on pin 3
    digitalWrite(4, LOW); // Turn OFF LED on pin 4
  }

  else if (celsius > baselineTemp && celsius <= baselineTemp + 10) {
    digitalWrite(2, LOW); // Turn OFF LED on pin 2
    digitalWrite(3, HIGH); // Turn ON LED on pin 3 if temp is between baselineTemp and
baselineTemp + 10

```

```
    digitalWrite(4, LOW); // Turn OFF LED on pin 4
}
else {
    digitalWrite(2, LOW); // Turn OFF LED on pin 2
    digitalWrite(3, LOW); // Turn OFF LED on pin 3
    digitalWrite(4, HIGH); // Turn ON LED on pin 4 if temp is higher than baselineTemp + 10
}
// Wait a moment before the next reading
delay(1000);
}
```

OUTPUT:



The screenshot shows an IDE with a code editor and a Serial Monitor window. The code editor displays lines 21 to 24 of a program. Line 21 is a comment: `// Read temperature from analog sensor`. Line 22 is `int sensorValue = analogRead(A0);`. Lines 23 and 24 are empty. The Serial Monitor window, titled "Serial Monitor", shows four identical lines of output: `Temperature (C): 25 °C, Temperature (F): 77 °F`.

```
21 // Read temperature from analog sensor
22 int sensorValue = analogRead(A0);
23
24
```

Serial Monitor

Temperature (C): 25 °C, Temperature (F): 77 °F
Temperature (C): 25 °C, Temperature (F): 77 °F
Temperature (C): 25 °C, Temperature (F): 77 °F
Temperature (C): 25 °C, Temperature (F): 77 °F