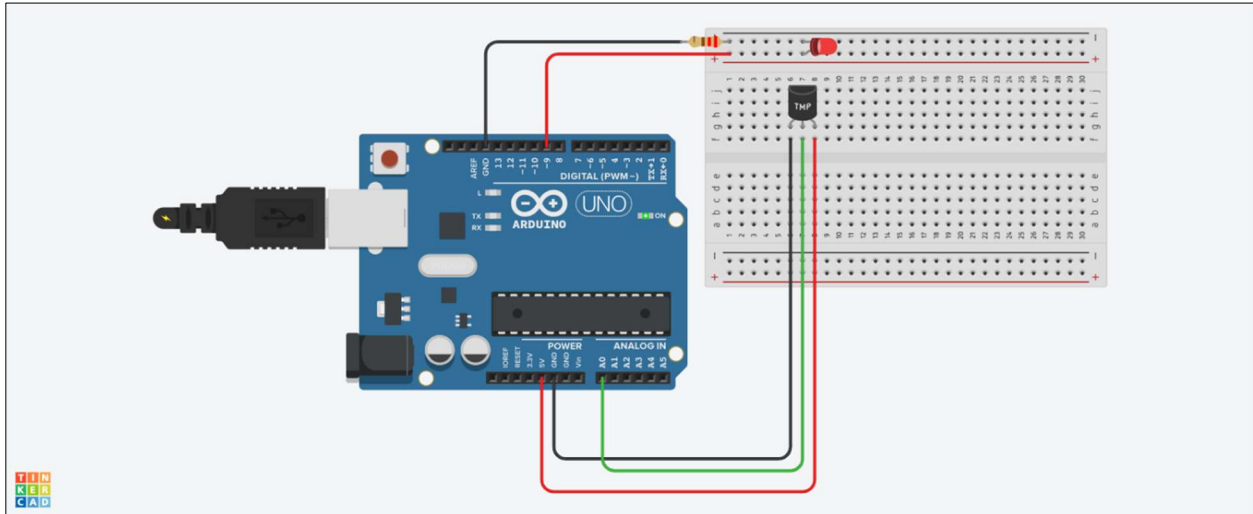


Experiment-1 Temperature Sensing with LM35

Aim:- Measure room temperature using an LM35 temperature sensor and display it on serial monitor.

Apparatus:-



Software Code:-

```
void setup() {
  pinMode(A0,INPUT);
  pinMode(9,OUTPUT);
  Serial.begin(9600);
}
void loop() {
  int sensorValue = analogRead(A0);
  float temperatureC = map(sensorValue, -40, 225, 0, 100);
  //Analog Code for 30'C is 77.0
  if (temperatureC > 77.0) {
    digitalWrite(9, HIGH);
  } else {
    digitalWrite(9, LOW);
  }
  delay(1000);
}
```

New Commands Used:-

- i. **void setup()** : This function is called once when the program starts. It is used to initialize settings, such as pin modes and serial communication.
- ii. **pinMode()** : This command configures the specified pin to behave either as an input or an output.
- iii. **Serial.begin(baudrate)** : This command initializes serial communication at the specified baud rate (in this case, 9600 bits per second). It allows you to send and receive data between the Arduino and a computer or other devices.
- iv. **void loop()** : This function runs continuously after the setup() function. It contains the main logic of the program.
- v. **analogRead()** : This command reads the value from the specified analog pin (A0 in this case) and returns a value between 0 and 1023, corresponding to the voltage level (0V to 5V).
- vi. **map(value,fromLow,fromHigh,toLow,toHigh)** : This function maps a number from one range to another. However, in this case, using map() directly for temperature conversion is not appropriate for the LM35 sensor, as it outputs 10 mV per degree Celsius. The mapping should be based on the actual voltage output of the sensor.
- vii. **digitalWrite()** : This command sets the specified digital pin to either HIGH (turns on the LED) or LOW (turns off the LED).
- viii. **delay()** : This command pauses the program for the specified number of milliseconds (1000 ms = 1 second). It is used to create a delay between readings.

Conclusion:-

In this project, we explored how to use an Arduino to read temperature data from a temperature sensor (like the LM35) and control an LED based on the temperature readings.