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Task   :   (Analog temperature sensor)

Introduction :

What is analog temperature sensor?

What is an Analog Temperature Sensor? An analog (or voltage output) temperature sensor **provides a voltage level that is directly proportional to the measured temperature**. In simple words, these devices convert temperature to voltage.

The tip of the sensor has a spring that is attached to a rod, leading up to the gauge needle. The spring sits inside the stems sensing end. **When heat is applied to the sensing coil, movement in the coil is created which causes the needle in the gauge to move – thus displaying the temperature**.
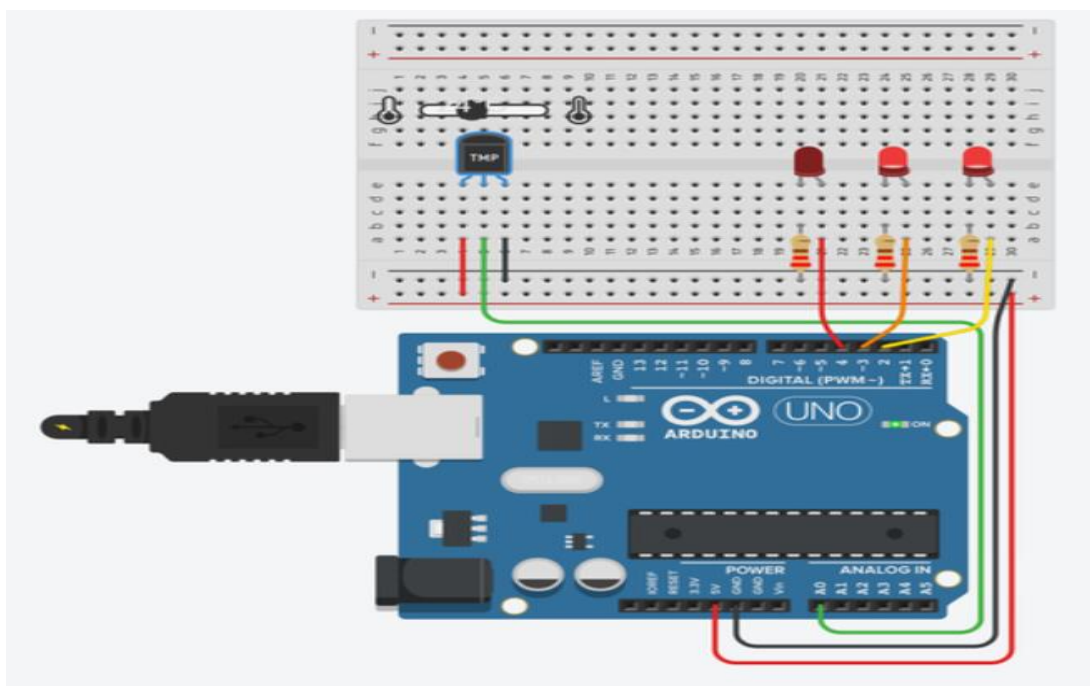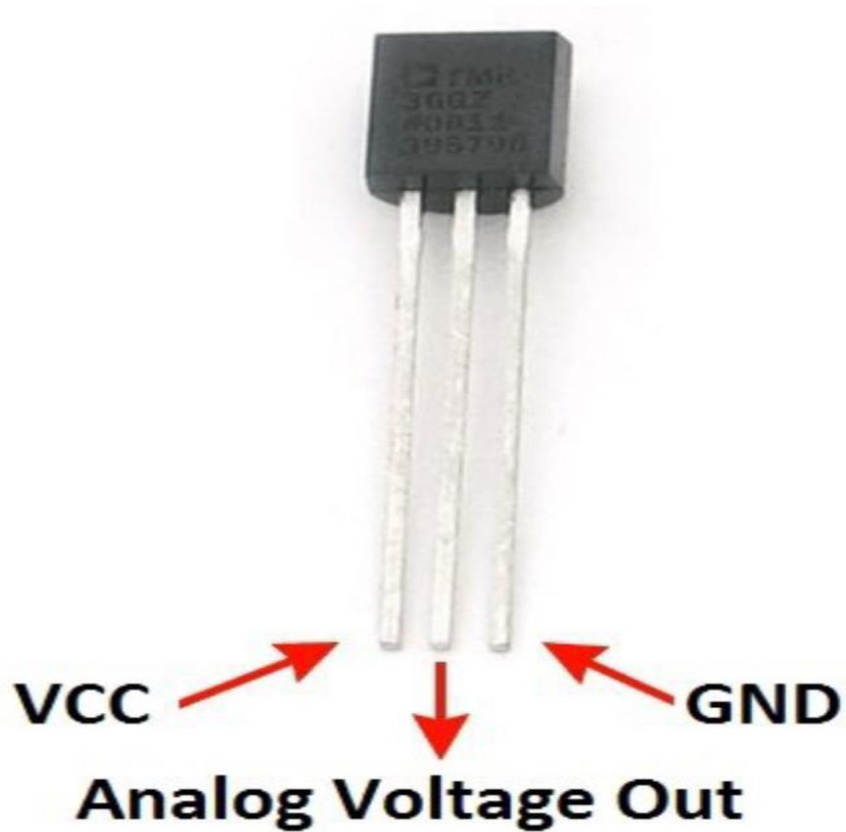
The circuit diagram :

Figure : 1 (I used this circuit Design with Tinkercad)

The components :

- LED
- Arduino UNO
- BOARD
- Resistors
- Temperature sensor

VCC → ← GND

↓

Analog Voltage Out

The code used :

```
int baselineTemp = 0;
int celsius = 0;
int fahrenheit = 0;
```

```
void setup()
{
  pinMode(A0, INPUT);
  Serial.begin(9600);
```

```
    pinMode(2, OUTPUT);
    pinMode(3, OUTPUT);
    pinMode(4, OUTPUT);
}
```

```
void loop()
{
  // set threshold temperature to activate LEDs
  baselineTemp = 40;
  // measure temperature in Celsius
  celsius = map(((analogRead(A0) - 20) * 3.04), 0, 1023, -40, 125);
```

```
  // convert to Fahrenheit
  fahrenheit = ((celsius * 9) / 5 + 32);
  Serial.print(celsius);
  Serial.print(" C, ");
  Serial.print(fahrenheit);
  Serial.println(" F");
```

```
  if (celsius < baselineTemp) {
    digitalWrite(2, LOW);
    digitalWrite(3, LOW);
    digitalWrite(4, LOW);
  }
  if (celsius >= baselineTemp && celsius < baselineTemp + 10) {
    digitalWrite(2, HIGH);
    digitalWrite(3, LOW);
    digitalWrite(4, LOW);
  }
  if (celsius >= baselineTemp + 10 && celsius < baselineTemp + 20) {
    digitalWrite(2, HIGH);
    digitalWrite(3, HIGH);
    digitalWrite(4, LOW);
  }
  if (celsius >= baselineTemp + 20 && celsius < baselineTemp + 30) {
    digitalWrite(2, HIGH);
    digitalWrite(3, HIGH);
    digitalWrite(4, HIGH);
```

```
  }
  if (celsius >= baselineTemp + 30) {
    digitalWrite(2, HIGH);
    digitalWrite(3, HIGH);
    digitalWrite(4, HIGH);
  }
  delay(1000); // Wait for 1000 millisecond(s)
}
```