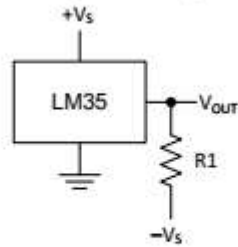


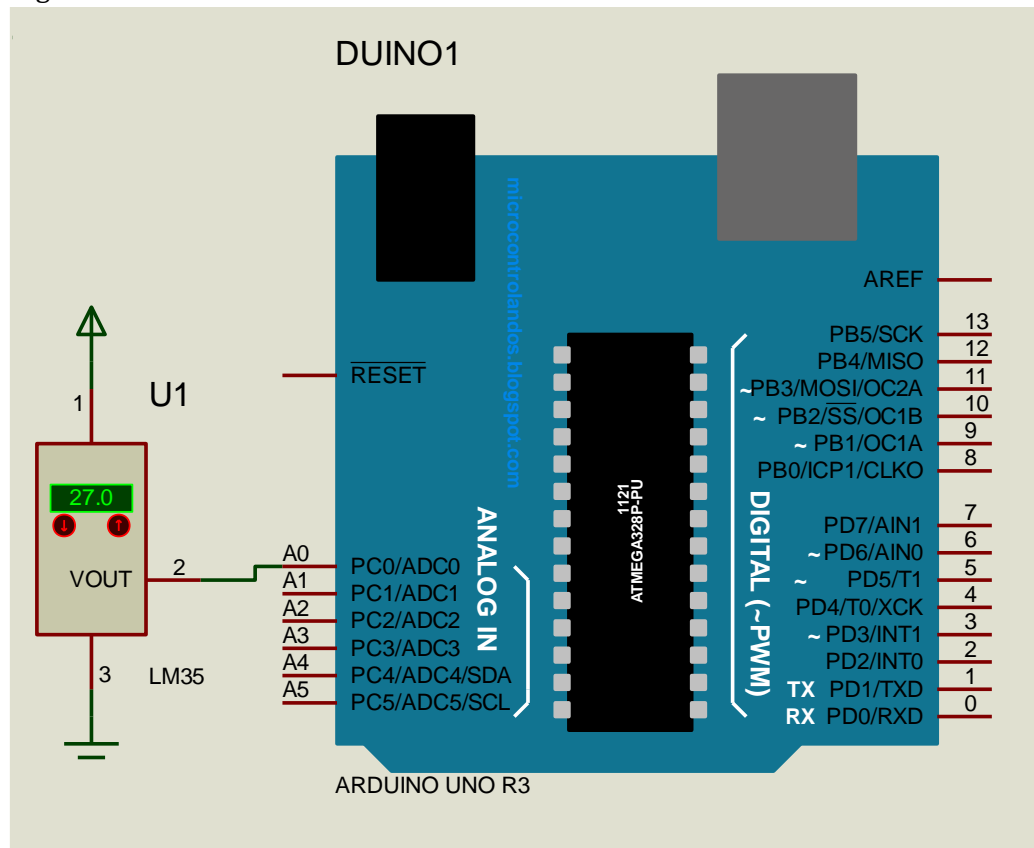
Full-Range Centigrade Temperature Sensor



Choose $R_1 = -V_S / 50 \mu A$
 $V_{OUT} = 1500 \text{ mV at } 150^\circ C$
 $V_{OUT} = 250 \text{ mV at } 25^\circ C$
 $V_{OUT} = -550 \text{ mV at } -55^\circ C$

PRAKTIKUM

1. Buat rangkaian LM35 berdasarkan schematic berikut.



Untuk simulator LM35 dapat diperoleh dengan **Pick Devices** → **keywords: LM35** → pilih device **LM35** dengan deskripsi **Precision Centigrade Temperature Sensor**.

Buat program Arduino untuk LM35 berikut ini.

```
/* Simple Temperature uses the lm35 in the basic centigrade temperature configuration
*/
float temp;
int tempPin = 2; // analog input pin
int sampleTime = 1000; // 1 second default

void setup()
{
  Serial.begin(9600);
}

void loop()
{
  //gets and prints the raw data from the lm35
  temp = analogRead(tempPin);
  Serial.print("RAW DATA: ");
  Serial.print (temp);
  Serial.println(" ");
  //converts raw data into degrees celsius and prints it out
  // 500mV/1024=.48828125
  temp = temp * 0.48828125;
  Serial.print("CELSIUS: ");
  Serial.print(temp);
  Serial.println("*C ");
  //converts celsius into fahrenheit
  temp = temp * 9 / 5;
  temp = temp + 32;
  Serial.print("FAHRENHEIT: ");
  Serial.print(temp);
  Serial.println("*F");
  delay(sampleTime);
}
```

2. Buat program Arduino untuk LM35 berikut ini.

```
//-----
// Sensor SUHU Teg. Referensi 5 Volt
//-----

const int pSuhu = A1;
float suhu, data;

void setup() {
  Serial.begin(9600);
  pinMode(pSuhu, INPUT);
}

void loop() {
  data = analogRead(pSuhu);
```

```

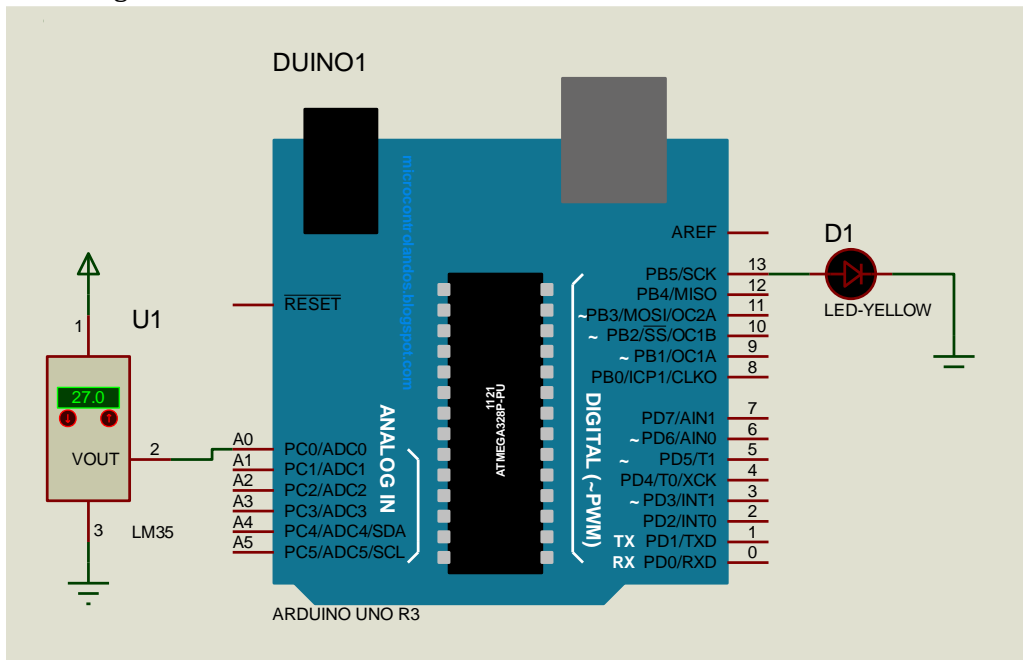
suhu = data / 2.0479;

Serial.print("data: ");
Serial.print(data);
Serial.print(", suhu: ");
Serial.print(suhu);
Serial.println();
delay(1000);
}

```

Bandingkan dengan program pada no. 1. Tentukan perbedaannya!

3. Buat rangkaian LM35 berdasarkan schematic berikut.



Buat program Arduino untuk LM35 berikut ini.

```

const int pinSuhu = A1;
float suhu, data;

void setup() {
  Serial.begin(9600);
  pinMode(pinSuhu, INPUT);
  pinMode(13, OUTPUT)
}

void loop() {
  data = analogRead(pinSuhu);
  suhu = (data*500/1023);

  Serial.print("data: ");
  Serial.print(data);
  Serial.print(", suhu: ");
  Serial.print(suhu);
}

```

```
Serial.println();  
delay(1000);  
  
if (suhu >= 40)  
{  
    digitalWrite(13, HIGH);  
} else  
{  
    digitalWrite(13, LOW);  
}  
}
```

Program di atas menunjukkan bahwa apabila suhu mencapai 40 °C, maka LED akan menyala.