

## Worksheet – 6

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**Branch:** CSE

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**Semester:** 6<sup>th</sup>  
**Sub:** IOT Lab

### Aim/Overview of the practical:

Interfacing of Arduino/Raspberry Pi with temperature sensor with real time application

### Components Required:

- Raspberry Pi3 Model B's with installed Raspbian or Arduino Board
- 8 GB microSD cards
- Internet connection (Wired or Wireless) to access Pi Desktop
- VNC client on a wired or wireless device
- Breadboard
- Jumper Wires
- USB or 5V Power Supply
- DHT11 - Temperature and Humidity Sensor Module

### Code:

```
#include <OneWire.h>

#include <DallasTemperature.h>

const int SENSOR_PIN = 7; // Arduino pin connected to DS18B20 sensor's DQ pin

OneWire oneWire(SENSOR_PIN);    // setup a oneWire instance

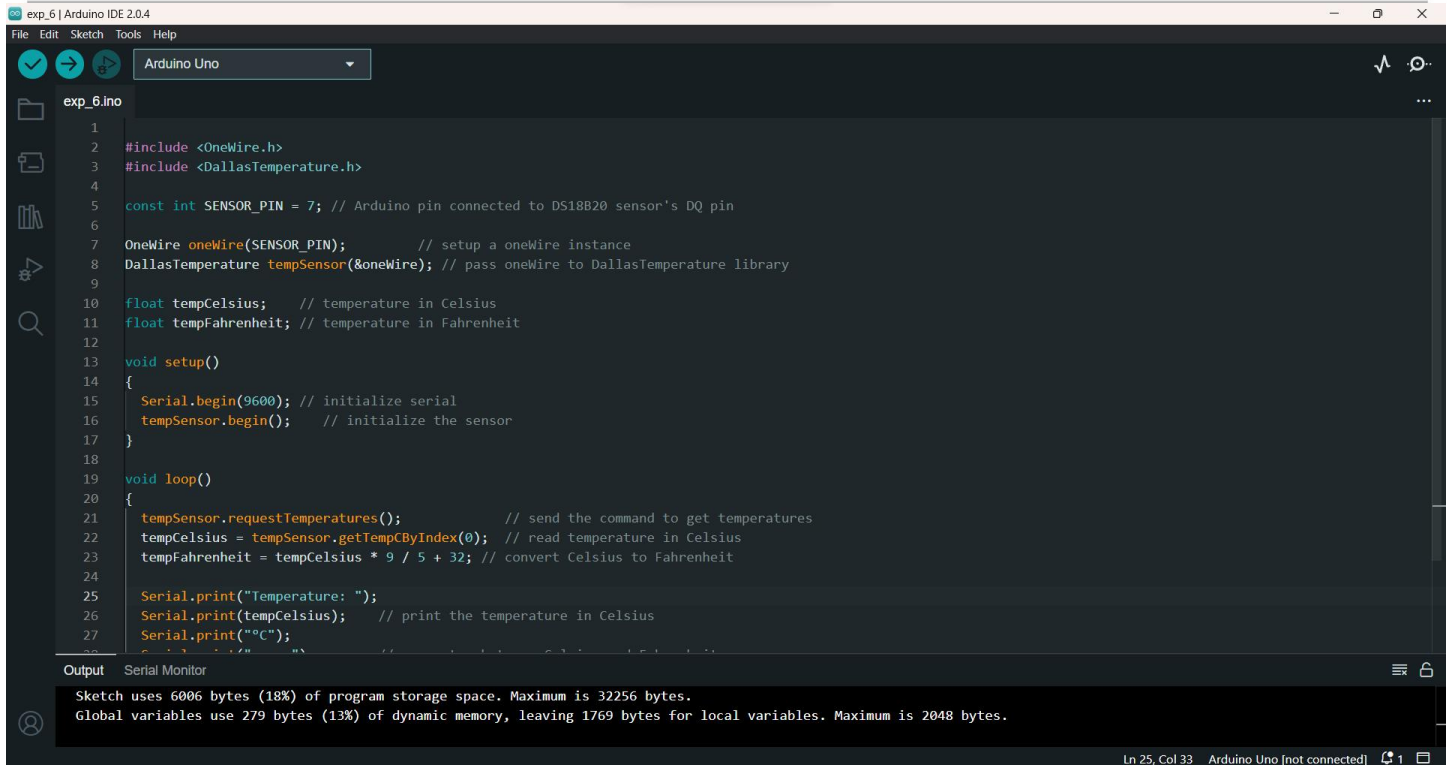
DallasTemperature tempSensor(&oneWire); // pass oneWire to DallasTemperature library

float tempCelsius;    // temperature in Celsius

float tempFahrenheit; // temperature in Fahrenheit

void setup()
```

```
{  
  
  Serial.begin(9600); // initialize serial  
  
  tempSensor.begin(); // initialize the sensor  
  
}  
  
void loop()  
{  
  
  tempSensor.requestTemperatures(); // send the command to get temperatures  
  
  tempCelsius = tempSensor.getTempCByIndex(0); // read temperature in Celsius  
  
  tempFahrenheit = tempCelsius * 9 / 5 + 32; // convert Celsius to Fahrenheit  
  
  
  Serial.print("Temperature: ");  
  
  Serial.print(tempCelsius); // print the temperature in Celsius  
  
  Serial.print("°C");  
  
  Serial.print(" ~ "); // separator between Celsius and Fahrenheit  
  
  Serial.print(tempFahrenheit); // print the temperature in Fahrenheit  
  
  Serial.println("°F");  
  
  
  delay(1000);  
  
}
```



```

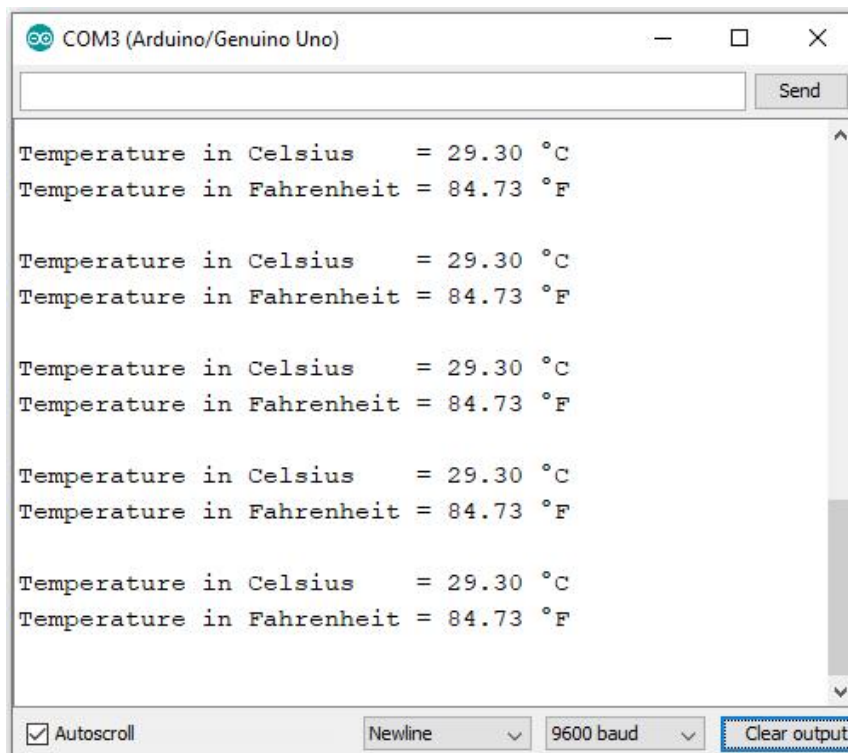
exp_6.ino
1
2 #include <OneWire.h>
3 #include <DallasTemperature.h>
4
5 const int SENSOR_PIN = 7; // Arduino pin connected to DS18B20 sensor's DQ pin
6
7 OneWire oneWire(SENSOR_PIN); // setup a oneWire instance
8 DallasTemperature tempSensor(&oneWire); // pass oneWire to DallasTemperature library
9
10 float tempCelsius; // temperature in Celsius
11 float tempFahrenheit; // temperature in Fahrenheit
12
13 void setup()
14 {
15   Serial.begin(9600); // initialize serial
16   tempSensor.begin(); // initialize the sensor
17 }
18
19 void loop()
20 {
21   tempSensor.requestTemperatures(); // send the command to get temperatures
22   tempCelsius = tempSensor.getTempCByIndex(0); // read temperature in Celsius
23   tempFahrenheit = tempCelsius * 9 / 5 + 32; // convert Celsius to Fahrenheit
24
25   Serial.print("Temperature: ");
26   Serial.print(tempCelsius); // print the temperature in Celsius
27   Serial.print("°C");
28 }
  
```

Output Serial Monitor

Sketch uses 6006 bytes (18%) of program storage space. Maximum is 32256 bytes.  
Global variables use 279 bytes (13%) of dynamic memory, leaving 1769 bytes for local variables. Maximum is 2048 bytes.

Ln 25, Col 33 Arduino Uno [not connected]

## Output:



COM3 (Arduino/Genuino Uno)

Send

```

Temperature in Celsius    = 29.30 °C
Temperature in Fahrenheit = 84.73 °F

Temperature in Celsius    = 29.30 °C
Temperature in Fahrenheit = 84.73 °F

Temperature in Celsius    = 29.30 °C
Temperature in Fahrenheit = 84.73 °F

Temperature in Celsius    = 29.30 °C
Temperature in Fahrenheit = 84.73 °F

Temperature in Celsius    = 29.30 °C
Temperature in Fahrenheit = 84.73 °F
  
```

☒ Autoscroll    Newline    9600 baud    Clear output