LM35 INTERFACING WITH NODEMCU

LM35 is a temperature sensor which can measure temperature in the range of -55°C to 150°C. It is a 3-terminal device that provides analog voltage proportional to the temperature. Higher the temperature, higher is the output voltage. The output analog voltage can be converted to digital form using ADC so that a microcontroller can process it.

In general, an LM35 is a temperature sensor which is designed specifically to measure the hotness or coldness of an object. LM35 is a precision IC temperature sensor with its output proportional to the temperature (in °C).

The analog output voltage from LM35 must first be read from the Vout pin of LM35. This will be the raw value divided by 1024 times 3300. It is divided by 1024 because a span of 1024 occupies 3.3v. Here we get the ratio of the raw value to the full span of 1024 and then multiply it by 3300 to get the millivolt value. Since the output pin can give out a maximum of 3.3 volts (1024), 1024 represents the possible range it can give out.
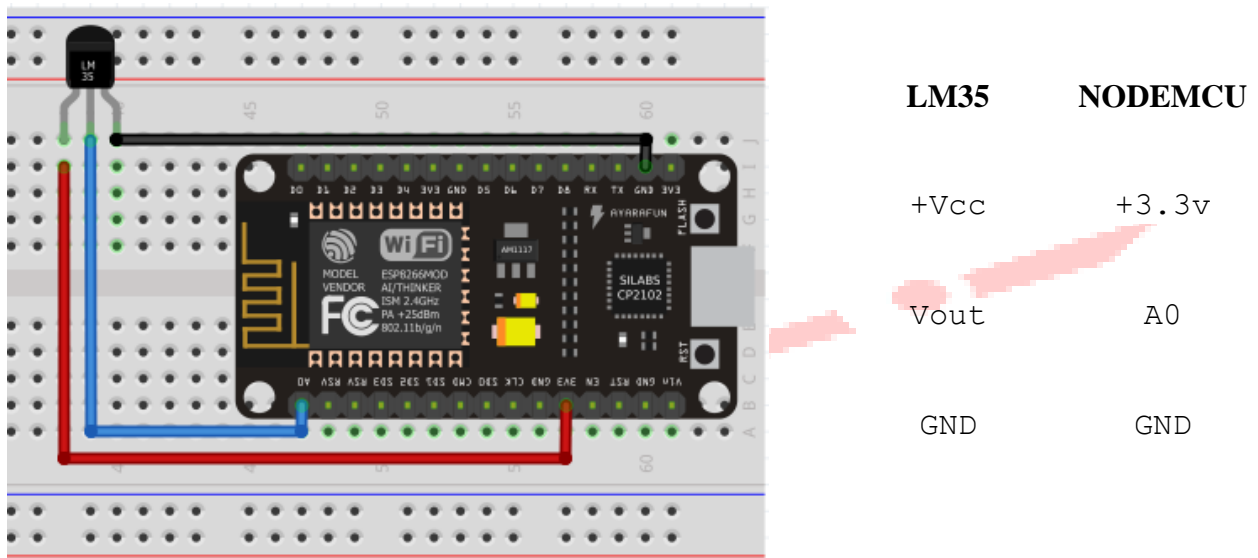
Hardware Components:

- NodeMCU
- LM35 Temperature Sensor
- Bread Board
- Jumper Wires
- Micro USB Cable
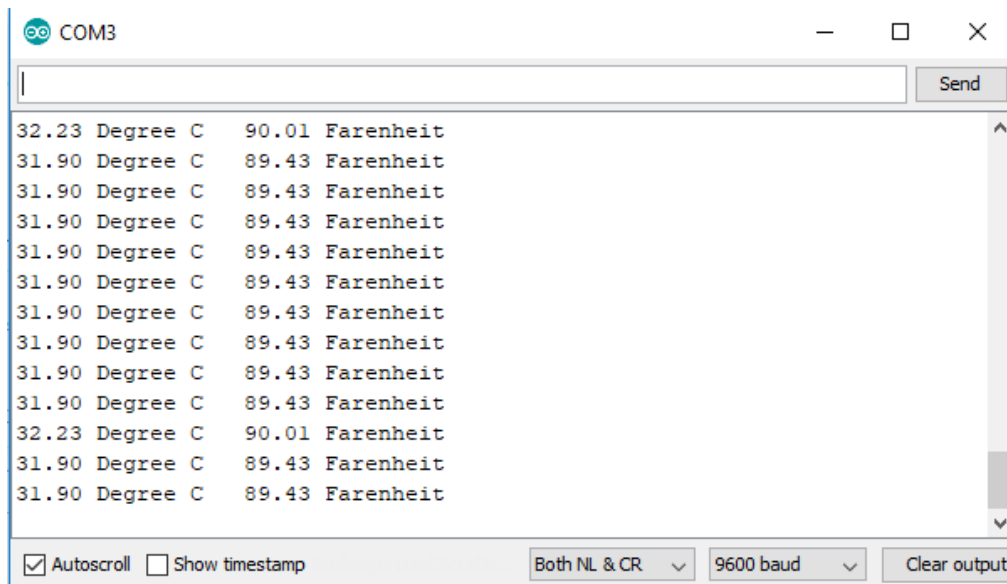
Software Components:

- Arduino IDE

Circuit Diagram:

LM35	NODEMCU
+Vcc	+3.3v
Vout	A0
GND	GND

Code:

```
int outputpin = A0;  //defines the output pin of the LM35
void setup()
{
    Serial.begin(9600);
}
void loop() //main loop
{
    int analogValue = analogRead(outputpin);
    float millivolts = (analogValue/1024.0) * 3300;
//3300 is the voltage provided by NodeMCU
    float celsius = millivolts/10;
    Serial.print(celsius);
    Serial.print(" Degree C     ");
//-------Here is the calculation for Fahrenheit --------//
    float fahrenheit = ((celsius * 9)/5 + 32);
    Serial.print(fahrenheit);
    Serial.println(" Fahrenheit");
    delay(1000);
}
```

Output: