ARDUINO SESSION 4

Topics:

Hands-on with

a. Temperature Sensor
b. Smoke / Gas MQ-2 Sensor
c. Ultrasonic Sensor

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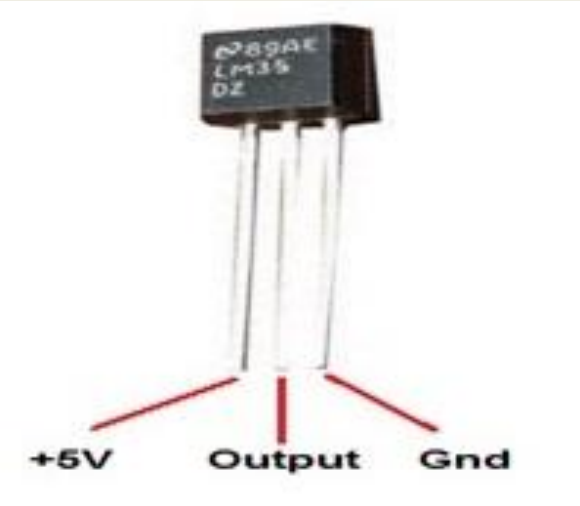
Ultrasonic Sensor

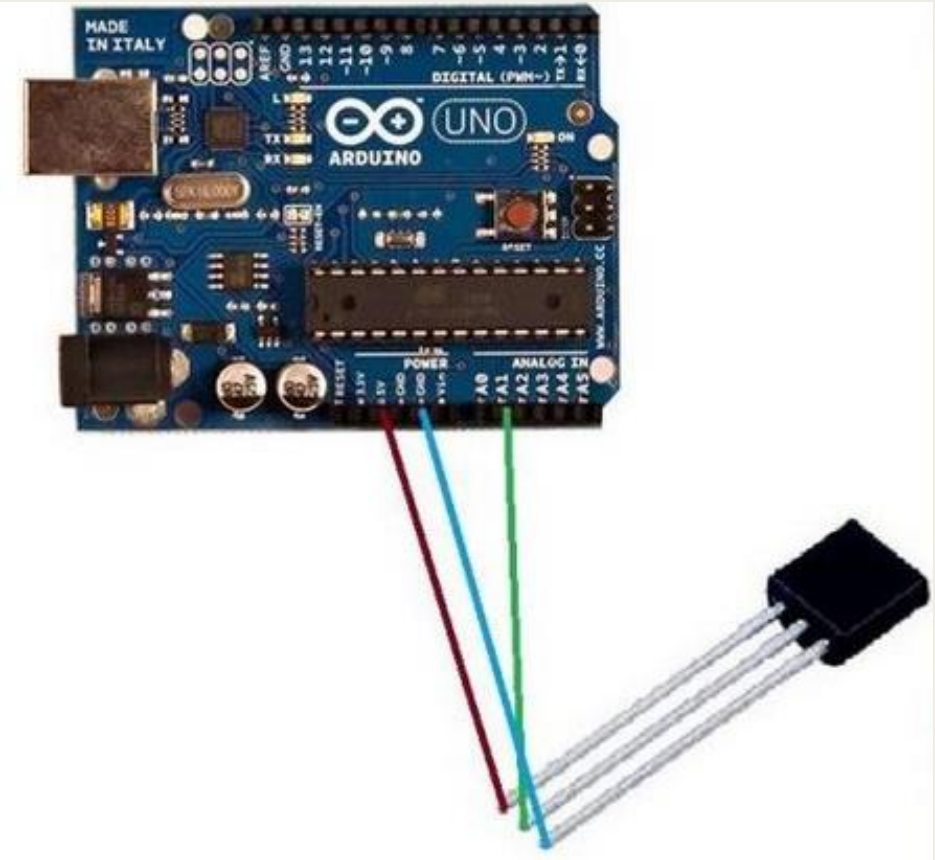

```
const int trigPin = 10;
const int echoPin = 9;

void setup() {
  // initialize serial communication:
  Serial.begin(9600);
   pinMode(trigPin, OUTPUT);
    pinMode(echoPin, INPUT);
}
```

```
void loop()
{
  long duration, inches, cm;
   digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
   duration = pulseIn(echoPin, HIGH);

// convert the time into a distance
  inches = microsecondsToInches(duration);
  cm = microsecondsToCentimeters(duration);

  Serial.print(inches);
  Serial.print("in, ");
  Serial.print(cm);
  Serial.print("cm");
  Serial.println();

  delay(100);
 }
```

```
long microsecondsToInches(long microseconds)
{
  return microseconds / 74 / 2;
}

long microsecondsToCentimeters(long microseconds)
{
  return microseconds / 29 / 2;
}
```

Temperature Sensor

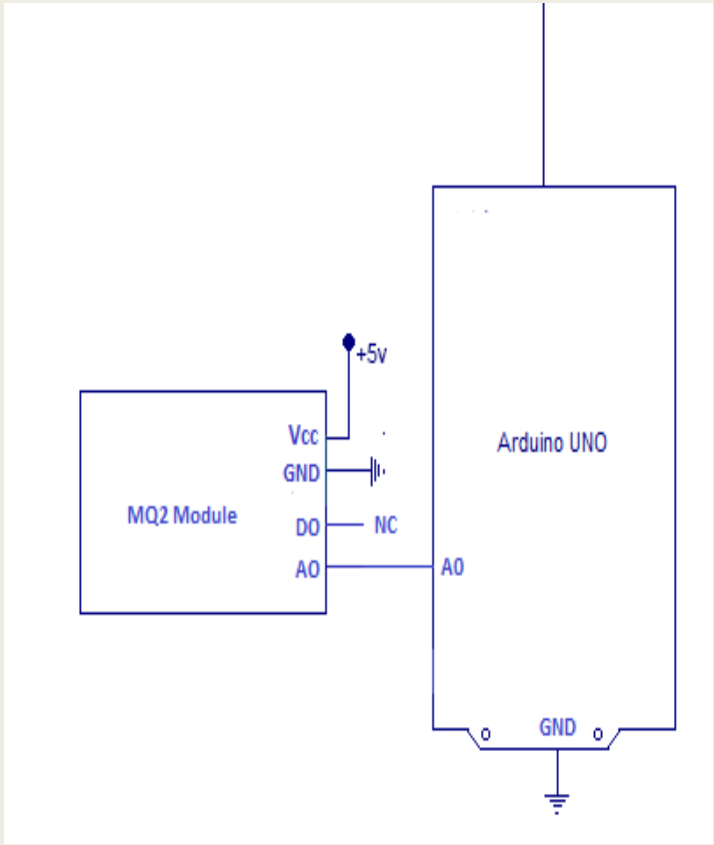





```
float val;
int tempPin = A1;

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

```
void loop()
{
val = analogRead(tempPin);
float mv = (val/1024.0)*5000;
float cel = mv/10;
float farh = (cel*9)/5 + 32;

Serial.print("TEMPRATURE = ");
Serial.print(cel);
Serial.print("*C");
Serial.println();
delay(1000);


Serial.print("TEMPRATURE = ");
Serial.print(farh);
Serial.print("*F");
Serial.println();

}
```

Smoke Sensor




```
#include <SoftwareSerial.h>
int sensorPin = A0;
int sensorValue = 0;
int led = 13;

void setup()
{ // declare the ledPin as an OUTPUT:
pinMode(led, OUTPUT);
Serial.begin(9600);
}
```

```
void loop()
{
Serial.println("Welcome to IoT Class ");
sensorValue = analogRead(sensorPin);
Serial.println(sensorValue);
delay(5000);

if (sensorValue>400)
{
  digitalWrite(led,HIGH);

}
else
{
digitalWrite(led,LOW);
}
}
```

Exercise

- Include a buzzer in the smoke sensor program along with the LED which is already available.

- Include a buzzer in the temperature sensor program to give an alarm if the temperature is greater than 20 degree Celcius.