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| **Course Name:** | **Sensors in Augmented and Virtual Reality** | **Semester:** | **IV** |
| **Date of Performance:** |  | **Batch No:** |  |
| **Faculty Name:** | **Megha Sharma** | **Roll No:** |  |
| **Faculty Sign & Date:** |  | **Grade/Marks:** |  |

**Experiment No: 4**

**Title: Interfacing of Humidity sensor with Arduino**

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| **Aim and Objective of the Experiment:** |
| **To learn how to interface Humidity sensor with Arduino** |

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| **COs to be achieved:** |
| **CO1: Study basic sensors used in Augmented reality systems**  **CO2: Gain basic knowledge sensors in Virtual reality headsets** |

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| **Theory:** |
| The DHT11 humidity and temperature sensor makes it really easy to add humidity and temperature data to your DIY electronics projects. It’s perfect for remote weather stations, home environmental control systems, and farm or garden monitoring systems.  The DHT11 detects water vapor by measuring the electrical resistance between two electrodes. The humidity sensing component is a moisture holding substrate with electrodes applied to the surface. When water vapor is absorbed by the substrate, ions are released by the substrate which increases the conductivity between the electrodes. The change in resistance between the two electrodes is proportional to the relative humidity. Higher relative humidity decreases the resistance between the electrodes, while lower relative humidity increases the resistance between the electrodes. |

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| **Stepwise-Procedure:** |
| Wiring the DHT11 to the Arduino is really easy, but the connections are different depending on which type you have. CONNECTING A THREE PIN DHT11: [Arduino DHT11 Tutorial - 3 Pin DHT11 Wiring Diagram](https://www.circuitbasics.com/wp-content/uploads/2015/10/Arduino-DHT11-Tutorial-3-Pin-DHT11-Wiring-Diagram.png) CONNECTING A FOUR PIN DHT11: [Arduino DHT11 Tutorial - 4 Pin DHT11 Wiring Diagram](https://www.circuitbasics.com/wp-content/uploads/2015/10/Arduino-DHT11-Tutorial-4-Pin-DHT11-Wiring-Diagram.png)   * R1: 10K Ohm pull up resistor  DISPLAY HUMIDITY AND TEMPERATURE ON THE SERIAL MONITOR Before you can use the DHT11 on the Arduino, you’ll need to install the [DHTLib library](http://playground.arduino.cc/Main/DHTLib" \o "DHTLib Library" \t "_blank). It has all the functions needed to get the humidity and temperature readings from the sensor. It’s easy to install, just download the DHTLib.zip file below and open up the Arduino IDE. Then go to Sketch>Include Library>Add .ZIP Library and select the DHTLib.zip fil  After it’s installed, upload this example program to the Arduino and open the serial monitor:  #include <dht.h>  dht DHT;  #define DHT11\_PIN 7  void setup(){  Serial.begin(9600);  }  void loop(){  int chk = DHT.read11(DHT11\_PIN);  Serial.print("Temperature = ");  Serial.println(DHT.temperature);  Serial.print("Humidity = ");  Serial.println(DHT.humidity);  delay(1000);  } DISPLAY HUMIDITY AND TEMPERATURE ON AN LCD #include <dht.h>  #include <LiquidCrystal.h>  LiquidCrystal lcd(12, 11, 5, 4, 3, 2);  dht DHT;  #define DHT11\_PIN 7  void setup(){  lcd.begin(16, 2);  }  void loop(){  int chk = DHT.read11(DHT11\_PIN);  lcd.setCursor(0,0);  lcd.print("Temp: ");  lcd.print(DHT.temperature);  lcd.print((char)223);  lcd.print("C");  lcd.setCursor(0,1);  lcd.print("Humidity: ");  lcd.print(DHT.humidity);  lcd.print("%");  delay(1000);  } |

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| **Output Screen shots:** |
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| **Results:** |
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| **Post Lab Subjective/Objective type Questions:** |
| 1. Explain working of DHT11 |

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| **Conclusion:** |
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| **Signature of faculty in-charge with Date:** |