**Assignment -1**

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| Maximum Marks | 2 Marks |

**Question 1: Build a smart home in Thinkercad with 2 sensors, an Led, buzzer and submit it.**

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|  | // include the library code: |
|  | #include <LiquidCrystal.h> |
|  | // initialize the library with the numbers of the interface pins |
|  | LiquidCrystal lcd(12, 11, 5, 4, 3, 2); |
|  | //For ultrasound sensor |
|  | int distanceThreshold = 0; |
|  | int cm = 0; |
|  | int inches = 0; |
|  | //for Relay Control |
|  | int releNO = 13; |
|  | int inputPir = 8; |
|  | int val = 0; |
|  | int resuldoSensorLDR; |
|  | int sensorLDR = A0; |
|  | //For Gas sensor |
|  | int const PINO\_SGAS = A1; |
|  | long readUltrasonicDistance(int triggerPin, int echoPin) |
|  | { |
|  | pinMode(triggerPin, OUTPUT); // Clear the trigger |
|  | digitalWrite(triggerPin, LOW); |
|  | delayMicroseconds(2); |
|  | // Sets the trigger pin to HIGH state for 10 microseconds |
|  | digitalWrite(triggerPin, HIGH); |
|  | delayMicroseconds(10); |
|  | digitalWrite(triggerPin, LOW); |
|  | pinMode(echoPin, INPUT); |
|  | // Reads the echo pin, and returns the sound wave travel time in microseconds |
|  | return pulseIn(echoPin, HIGH); |
|  | } |
|  | void setup() { |
|  | // set up the LCD's number of columns and rows: |
|  | lcd.begin(16, 2); |
|  | pinMode(releNO, OUTPUT); |
|  | pinMode(inputPir, INPUT); |
|  | pinMode(sensorLDR, INPUT); |
|  | Serial.begin(9600); |
|  | } |
|  | void loop() { |
|  | // set threshold distance to activate LEDs |
|  | distanceThreshold = 350; |
|  | // measure the ping time in cm |
|  | cm = 0.01723 \* readUltrasonicDistance(7, 6); |
|  | // convert to inches by dividing by 2.54 |
|  | inches = (cm / 2.54); |
|  | lcd.setCursor(0,0); // Sets the location at which subsequent text written to the LCD |
|  | will be displayed |
|  | lcd.print("D:"); // Prints string "Distance" on the LCD |
|  | lcd.print(cm); // Prints the distance value from the sensor |
|  | lcd.print("cm"); |
|  | delay(10); |
|  | val = digitalRead(inputPir); |
|  | resuldoSensorLDR = analogRead(sensorLDR); |
|  | if(resuldoSensorLDR<600) |
|  | { |
|  | if(val == HIGH) |
|  | { |
|  | digitalWrite(releNO, HIGH); |
|  | lcd.setCursor(0,1); |
|  | lcd.print("L: On "); |
|  | delay(5000); |
|  | } |
|  | else{ |
|  | digitalWrite(releNO, LOW);lcd.setCursor(0,1); |
|  | lcd.print("L: Off"); |
|  | delay(300); |
|  | } |
|  | } |
|  | else{ digitalWrite (releNO, LOW); |
|  | Serial.println(resuldoSensorLDR); |
|  | delay(500); |
|  | } |
|  | int color = analogRead(PINO\_SGAS); |
|  | lcd.setCursor(8,0); |
|  | //lcd.print(""); |
|  | if(color <= 85){ |
|  | lcd.print("G:Low "); |
|  | } else if(color <= 120){ |
|  | lcd.print("G:Med "); |
|  | } else if(color <= 200){ |
|  | lcd.print("G:High"); |
|  | } else if(color <= 300){ |
|  | lcd.print("G:Ext "); |
|  | } |
|  | delay(250); |
|  | } |

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