

# Microprocessor and Computer Architecture Laboratory

UE19CS256

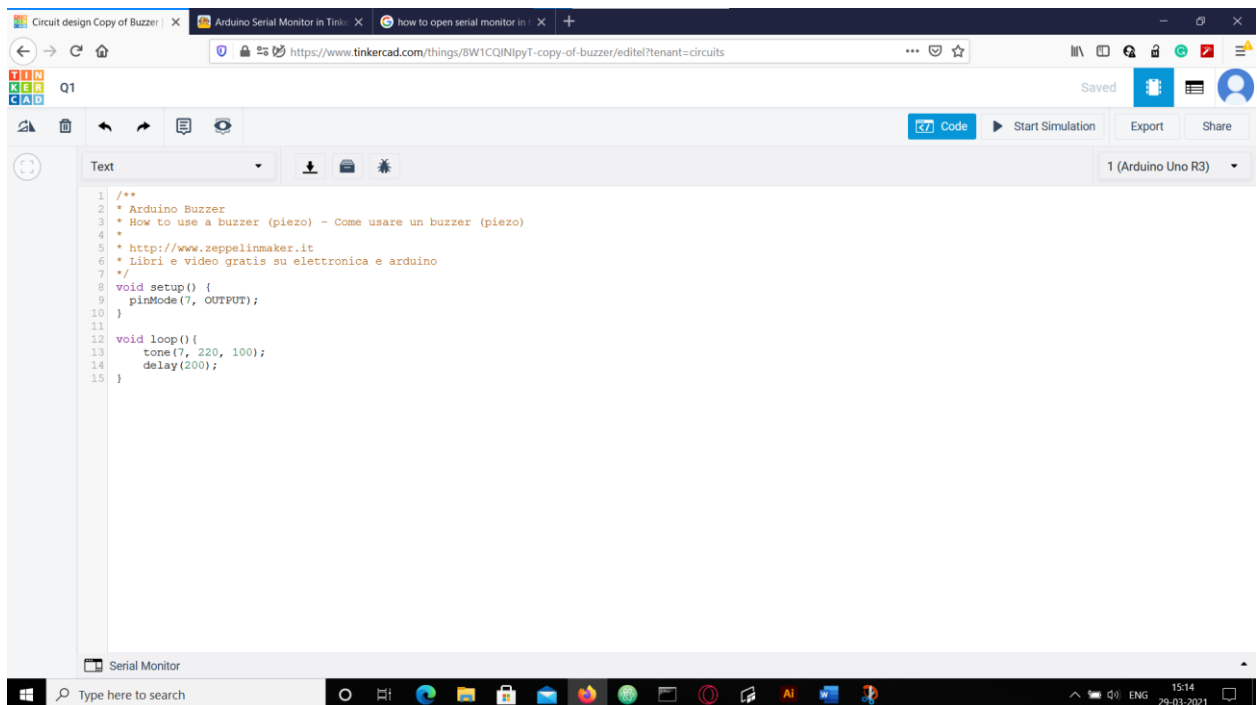
4th Semester, Academic Year 2020-21

Date:29/03/2021

Name: OP JOY JEFFERSON	SRN:PES2UG19CS270	Section:E
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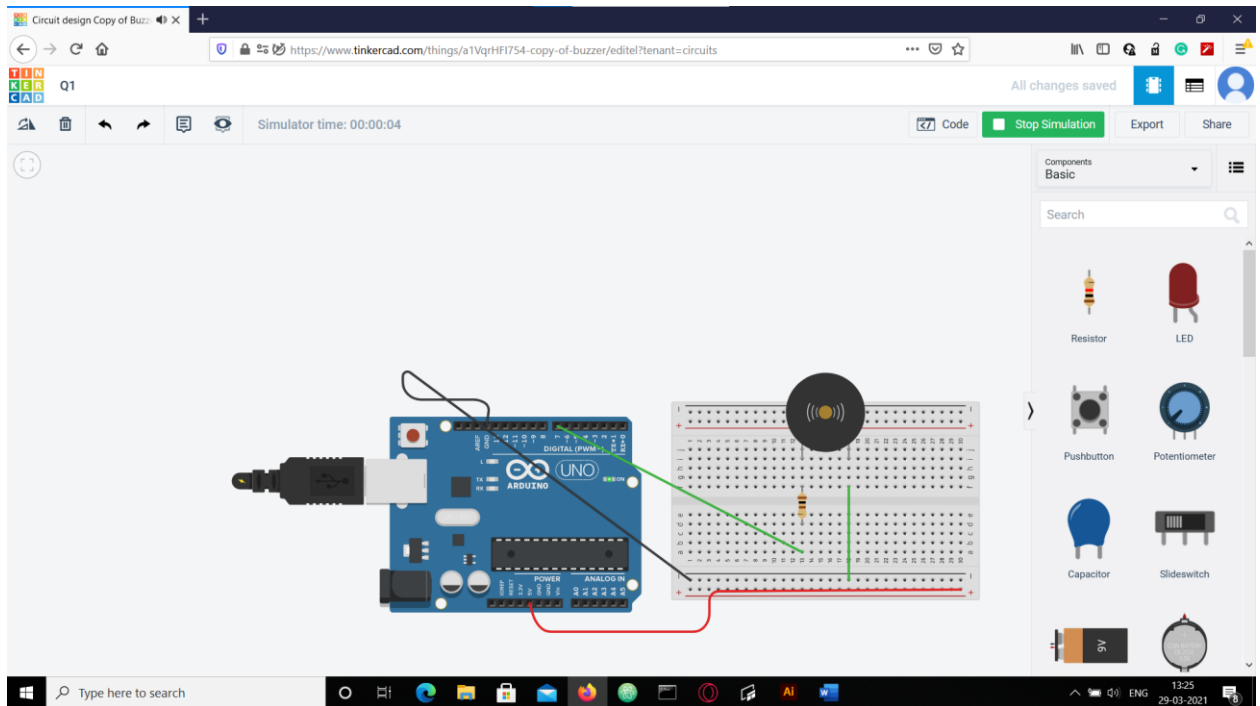
Week# \_\_\_\_8\_\_\_\_ Program Number: \_\_\_\_1\_\_\_\_

## 1. Implement a Buzzer with Arduino Simulation in Tinkercad Arduino Code (1).



```
1 /**
2 * Arduino Buzzer
3 * How to use a buzzer (piezo) - Come usare un buzzer (piezo)
4 *
5 * http://www.zeppelinmaker.it
6 * Libri e video gratis su elettronica e arduino
7 */
8 void setup() {
9   pinMode(7, OUTPUT);
10 }
11
12 void loop() {
13   tone(7, 220, 100);
14   delay(200);
15 }
```

# Output Screen Shot (1)



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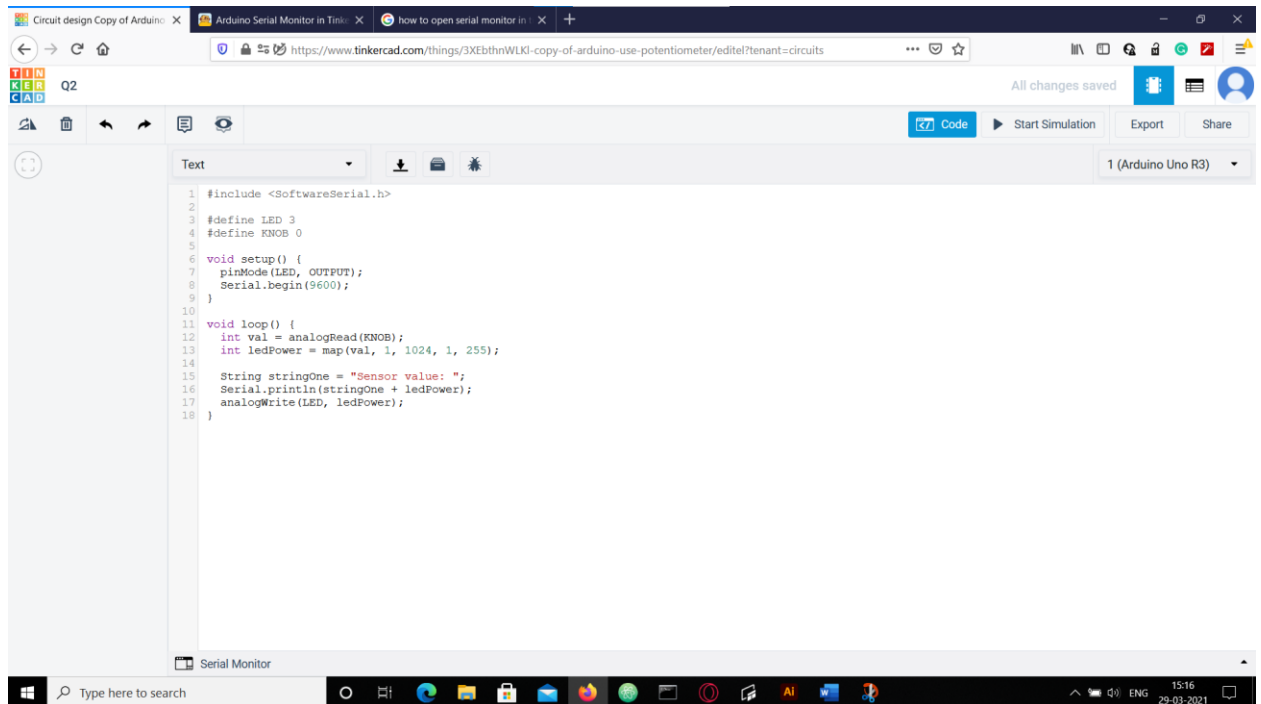
Date:

Name: OP JOY JEFFERSON	SRN: PES2UG19CS270	Section:E
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Week# \_\_\_\_8\_\_\_\_ Program Number: \_\_\_\_2\_\_\_\_

**Implement a Tinkercad simulation that will read the value of a potentiometer and display it in serial monitor.**

**Arduino Code (1).**



```
1 #include <SoftwareSerial.h>
2
3 #define LED 3
4 #define KNOB 0
5
6 void setup() {
7   pinMode(LED, OUTPUT);
8   Serial.begin(9600);
9 }
10
11 void loop() {
12   int val = analogRead(KNOB);
13   int ledPower = map(val, 1, 1024, 1, 255);
14
15   String stringOne = "Sensor value: ";
16   Serial.println(stringOne + ledPower);
17   analogWrite(LED, ledPower);
18 }
```

## Output Screen Shot (1)

The screenshot displays the Tinkercad web interface for a circuit simulation. The top browser tabs include "Circuit design Copy of Arduino", "Arduino Serial Monitor in T...", and "how to open serial monitor in...". The URL bar shows the Tinkercad project link. The interface includes a toolbar with icons for components, a "Code" button, a "Stop Simulation" button, and "Export" and "Share" options. The main workspace shows an Arduino Uno R3 connected to a breadboard with a potentiometer. The potentiometer is connected to the Arduino's 5V, GND, and A0 pins. The "Simulator time: 00:01:26" is displayed. Below the workspace, the "Blocks + Text" panel shows a list of blocks: Output, Input, Math, Variables, Control, and Notation. The "Serial Monitor" panel displays the following sensor values:

Sensor Value
122
111
111
111
54
1
1

The "Code" panel shows the following C++ code for the Arduino Uno R3:

```
1 void setup()
2 {
3   pinMode(13, OUTPUT);
4 }
5
6 void loop()
7 {
8   digitalWrite(13, HIGH);
9   delay(1000); // Wait for 1000 millisecond(s)
10  digitalWrite(13, LOW);
11  delay(1000); // Wait for 1000 millisecond(s)
12 }
```

The bottom of the interface shows the Windows taskbar with the search bar and various application icons. The system clock indicates 14:11 on 29-03-2021.

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Date:

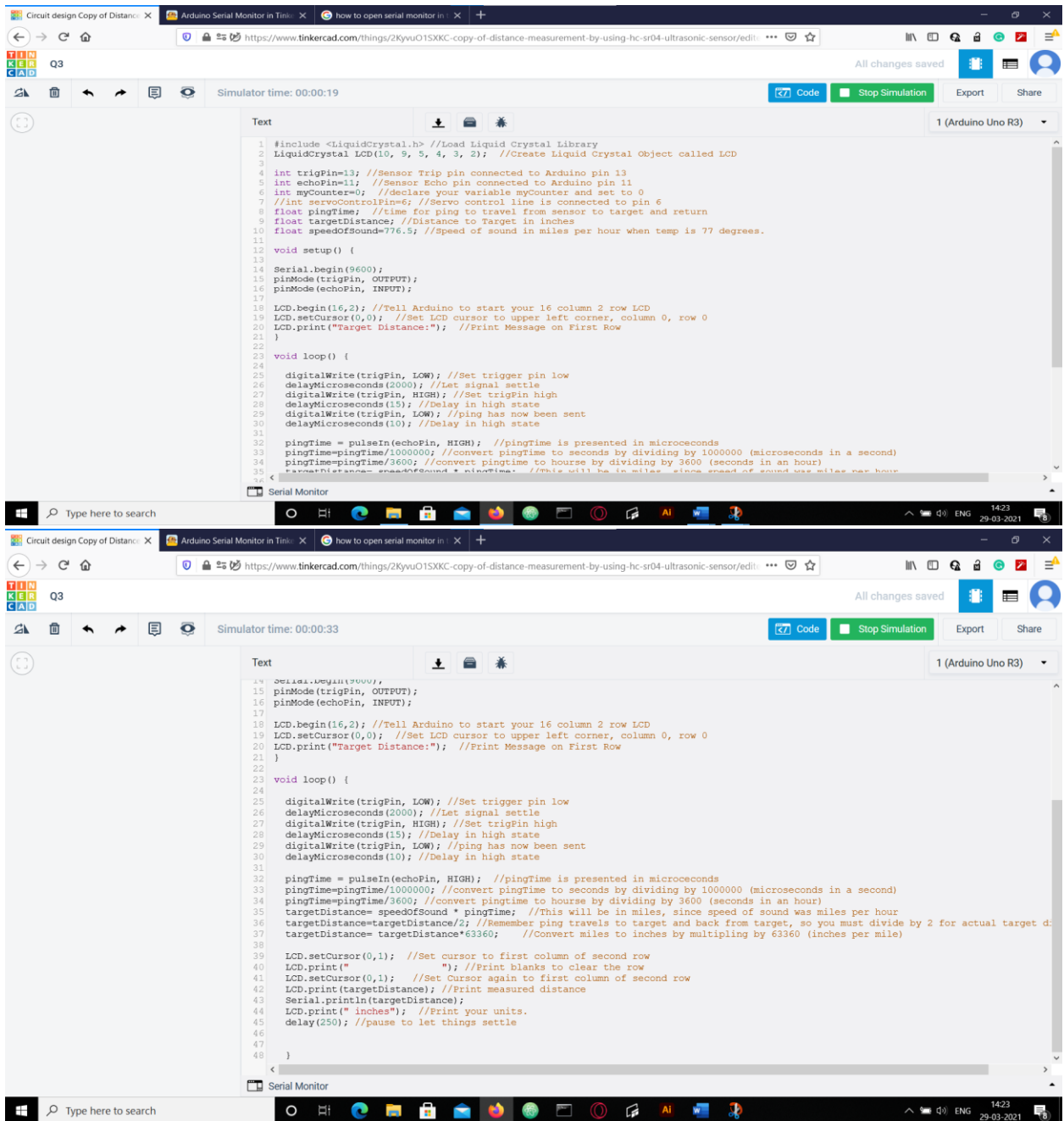
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Week# \_\_\_\_8\_\_\_\_

Program Number: \_\_\_\_3\_\_

**Implement a Tinkercad simulation to measure a distance with the HC-SR04 ultrasonic sensor and show the result on the serial monitor.**

Arduino Code (1).



Output Screen Shot (1)

Circuit design Copy of Distance: X Arduino Serial Monitor in Tink: X how to open serial monitor in: X +

https://www.tinkercad.com/things/2KyvuO15XKC-copy-of-distance-measurement-by-using-hc-sr04-ultrasonic-sensor/edit: ...

Q3 All changes saved

Simulator time: 00:00:03

Code Stop Simulation Export Share

Text

```

14 digitalWrite(trigPin, LOW);
15 pinMode(trigPin, OUTPUT);
16 pinMode(echoPin, INPUT);
17
18 LCD.begin(16,2); //Tell Arduino to start your 16 column 2 row LCD
19 LCD.setCursor(0,0); //Set LCD cursor to upper left corner, column 0, row 0
20 LCD.print("Target Distance:"); //Print Message on First Row
21 }
22
23 void loop() {
24   digitalWrite(trigPin, LOW); //Set trigger pin low
25   delayMicroseconds(2000); //Let signal settle
26   digitalWrite(trigPin, HIGH); //Set trigPin high
27   delayMicroseconds(15); //Delay in high state
28   digitalWrite(trigPin, LOW); //ping has now been sent
29   delayMicroseconds(10); //Delay in high state
30
31   pingTime = pulseIn(echoPin, HIGH); //pingTime is presented in
32   pingTime=pingTime/1000000; //convert pingTime to seconds by dividing
33   pingTime=pingTime/3600; //convert pingTime to hours by dividing
34   targetDistance= speedOfSound * pingTime; //This will be in miles
35   targetDistance=targetDistance/2; //Remember ping travels to target and back
36   targetDistance= targetDistance*63360; //convert miles to inches
37
38 }
39

```

Serial Monitor

37.17  
37.15  
37.17  
37.17  
37.17  
37.17  
37.17  
37.17  
36

Send Clear

Type here to search

Circuit design Copy of Distance: X Arduino Serial Monitor in Tink: X how to open serial monitor in: X +

https://www.tinkercad.com/things/2KyvuO15XKC-copy-of-distance-measurement-by-using-hc-sr04-ultrasonic-sensor/edit: ...

Q3 Saving...

Simulator time: 00:00:01

Code Stop Simulation Export Share

Components Basic

Search

Resistor LED Pushbutton Potentiometer Capacitor Slideswitch

9V

Target Distance:  
37.17 inches

Type here to search

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Date:

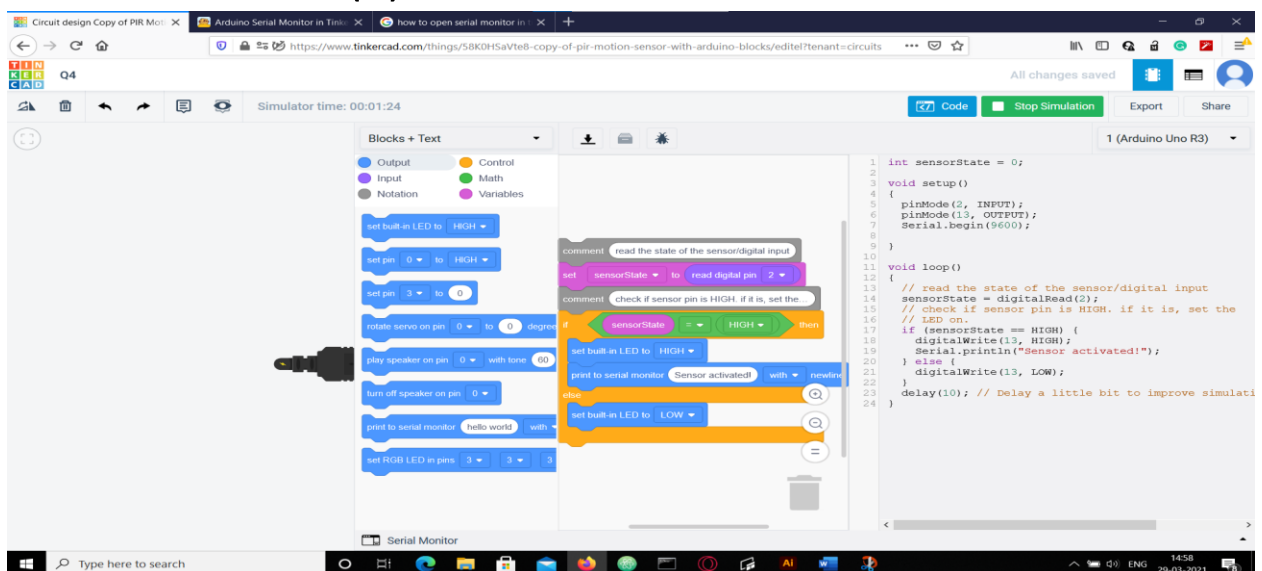
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Week#\_\_\_8\_\_\_

Program Number: \_\_\_4\_\_\_

**Implement a Tinkercad simulation to sense movement in a room with a PIR motion sensor and Arduino's digital input.**

Arduino Code (1).





# Output Screen Shot (1)

Circuit design Copy of PIR Motion Sensor with Arduino Uno

Arduino Serial Monitor in Time

how to open serial monitor in

https://www.tinkercad.com/things/58K0HSaVte8-copy-of-pir-motion-sensor-with-arduino-blocks/edit?tenant=circuits

Q4

All changes saved

Simulator time: 00:02:15

Code Stop Simulation Export Share

PIR Sensor

Name	1
Target X	-3.60
Target Y	-294.30
Target Z	-194.68

Starters Arduino

Search

Debounce State Change Detection

Analog Input Digital Read Serial

Analog Read Serial Servo

Tone Keyboard Tone Melody

Circuit design Copy of PIR Motion Sensor with Arduino Uno

Arduino Serial Monitor in Time

how to open serial monitor in

https://www.tinkercad.com/things/58K0HSaVte8-copy-of-pir-motion-sensor-with-arduino-blocks/edit?tenant=circuits

Q4

All changes saved

Simulator time: 00:00:02

Code Stop Simulation Export Share

Starters Arduino

Search

Debounce State Change Detection

Analog Input Digital Read Serial

Analog Read Serial Servo

Tone Keyboard Tone Melody

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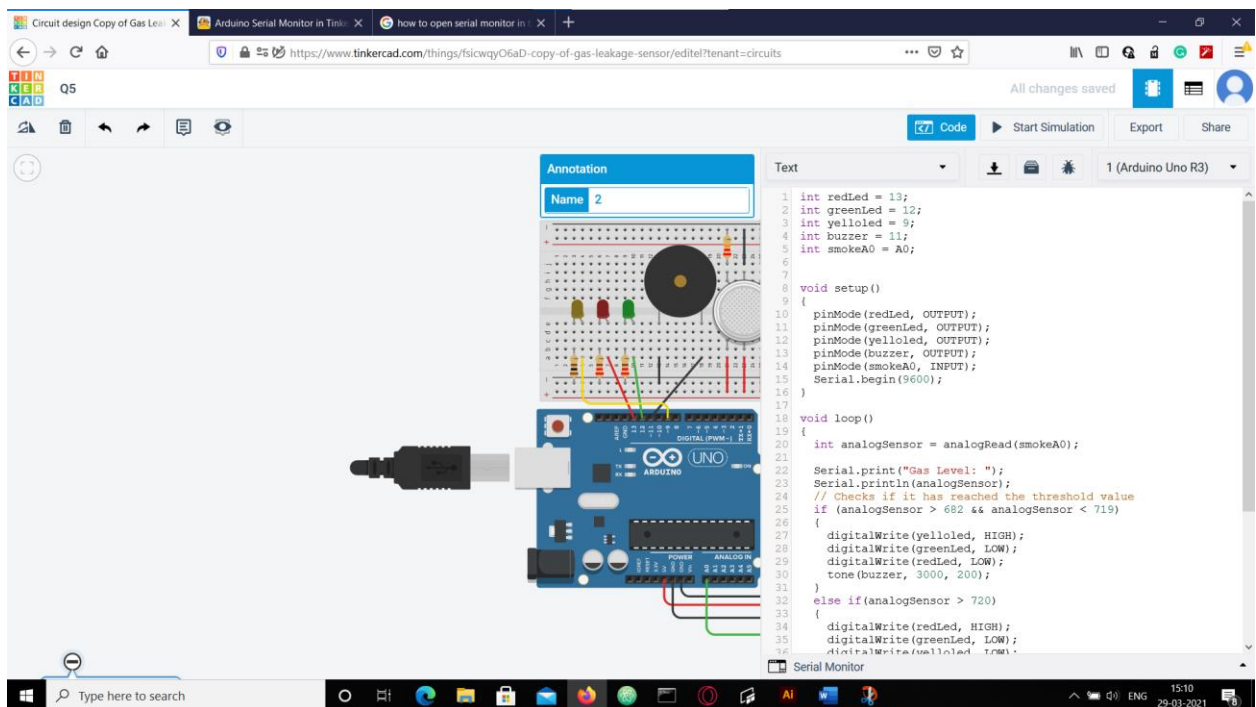
Date:

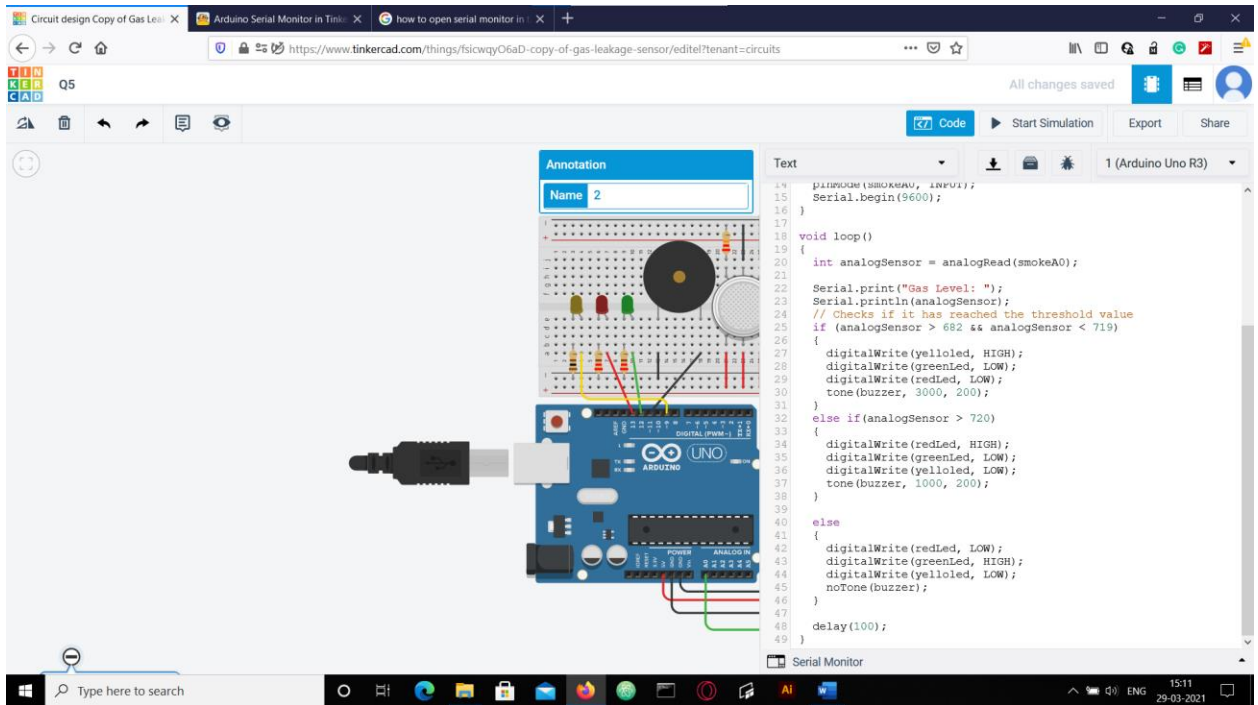
Name: OP JOY JEFFERSON	SRN:PES2UG19CS270	Section:E
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Week# \_\_\_\_8\_\_\_\_

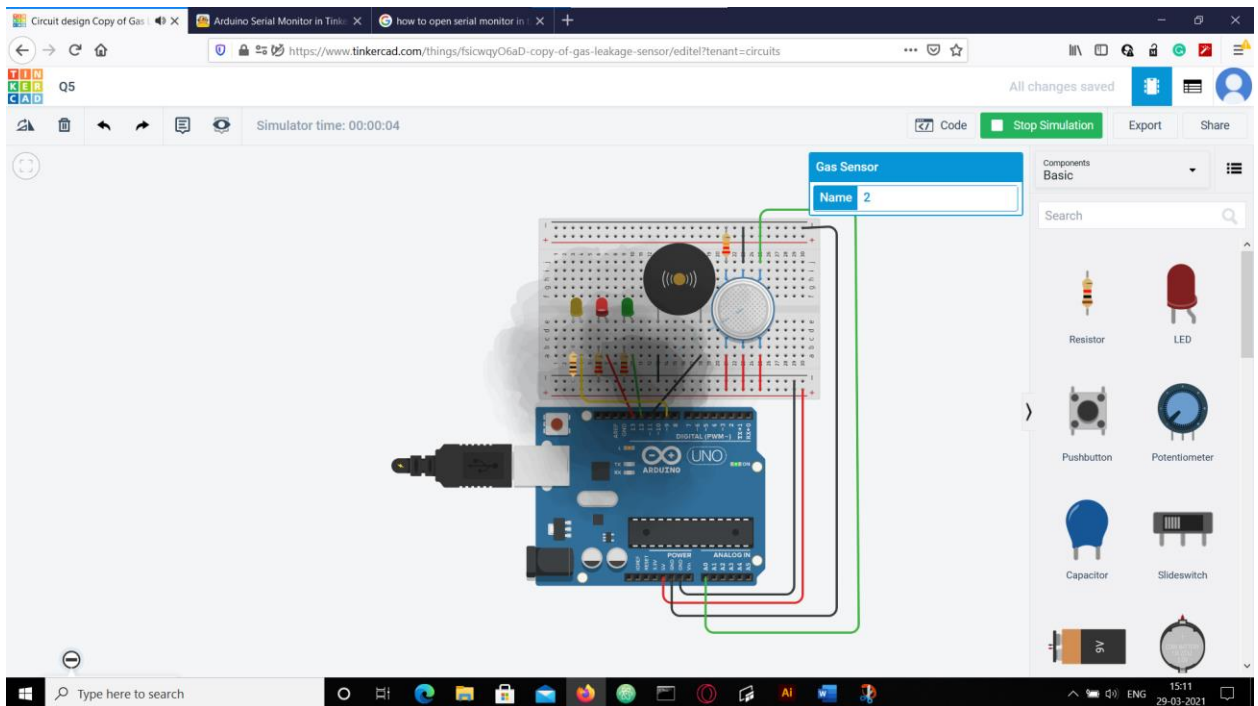
Program Number: \_\_\_\_5\_\_\_\_

**Implement a Tinkercad simulation for gas leakage detection with buzzer system using Arduino**  
Arduino Code (1).





## Output Screen Shot (1)



### **Disclaimer:**

- The programs and output submitted is duly written, verified and executed by me.
- I have not copied from any of my peers nor from the external resource such as internet.
- If found plagiarized, I will abide with the disciplinary action of the University.

Signature:

Name:

SRN:

Section:

Date: