

# Microprocessor and Computer Architecture Laboratory

UE19CS256

4th Semester, Academic Year 2020-21

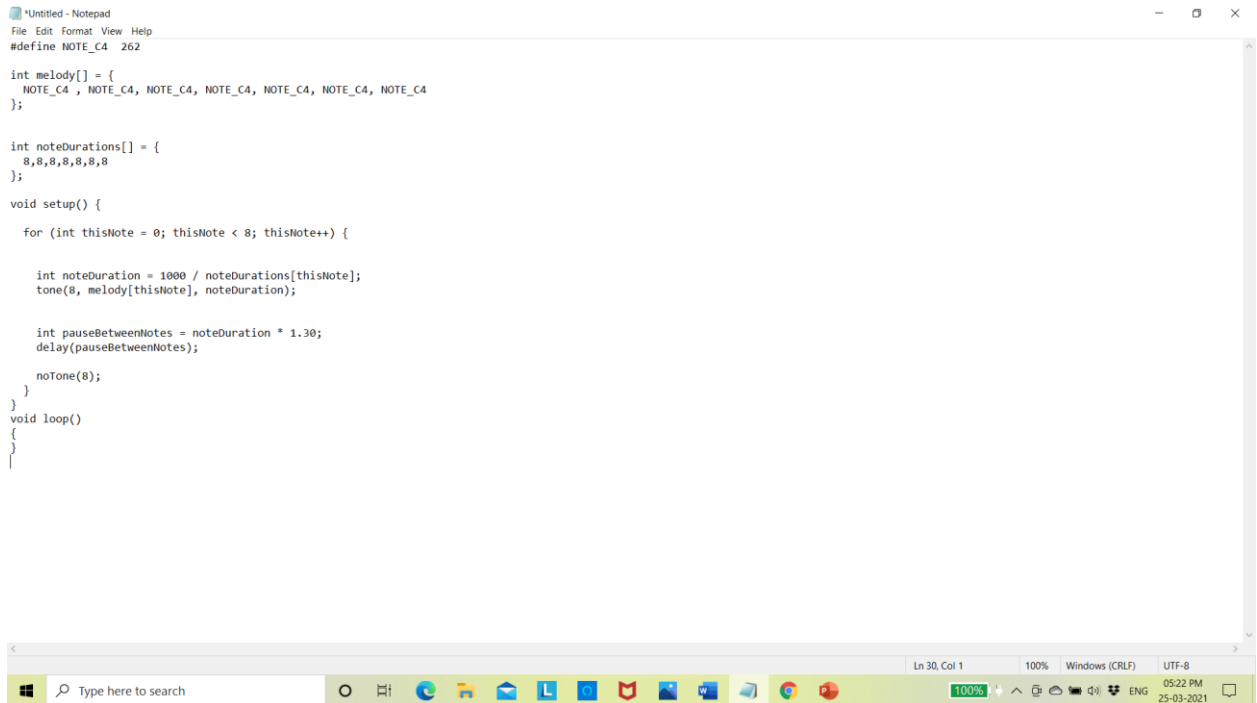
Date:25/01/2021

Name: T.LOHITH SRINIVAS	SRN:PES2UG19CS203	Section D
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Week# \_\_\_\_8\_\_\_\_

Program Number: \_\_\_\_1\_\_\_\_

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



```
*Untitled - Notepad
File Edit Format View Help
#define NOTE_C4 262

int melody[] = {
  NOTE_C4, NOTE_C4, NOTE_C4, NOTE_C4, NOTE_C4, NOTE_C4, NOTE_C4
};

int noteDurations[] = {
  8,8,8,8,8,8,8
};

void setup() {
  for (int thisNote = 0; thisNote < 8; thisNote++) {

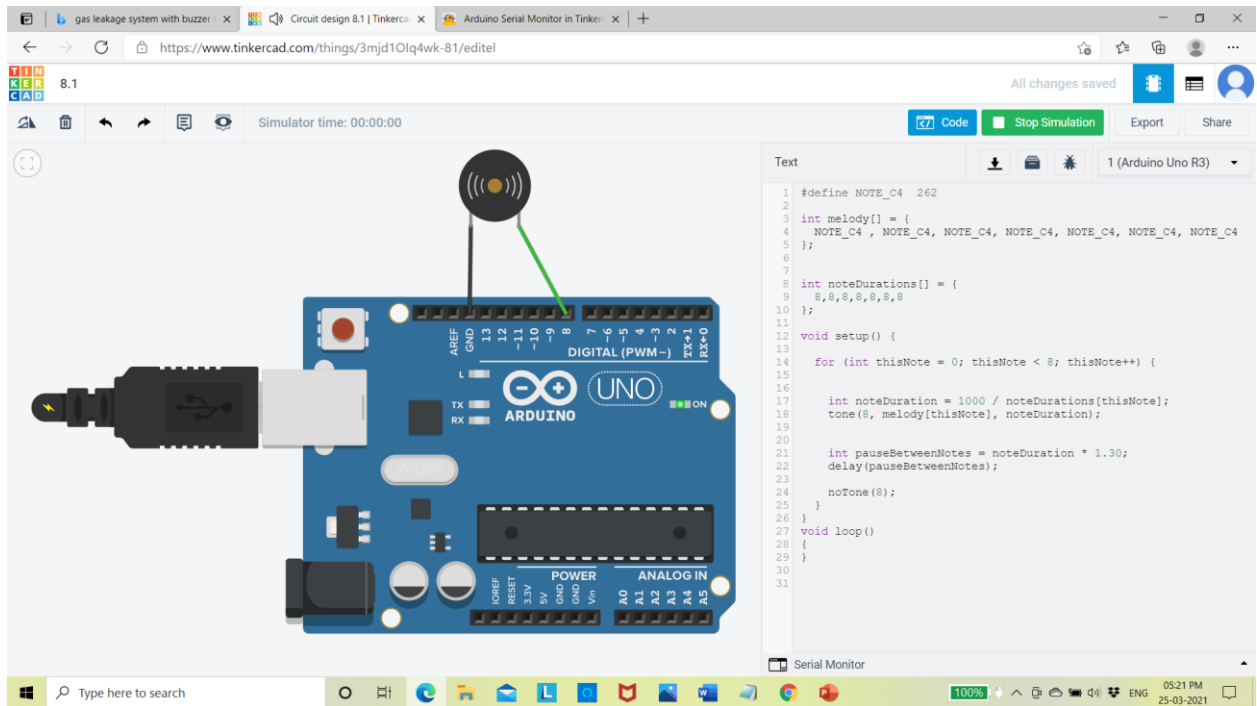
    int noteDuration = 1000 / noteDurations[thisNote];
    tone(8, melody[thisNote], noteDuration);

    int pauseBetweenNotes = noteDuration * 1.30;
    delay(pauseBetweenNotes);

    noTone(8);
  }
}

void loop()
{
}
```

# Output Screen Shot (1)



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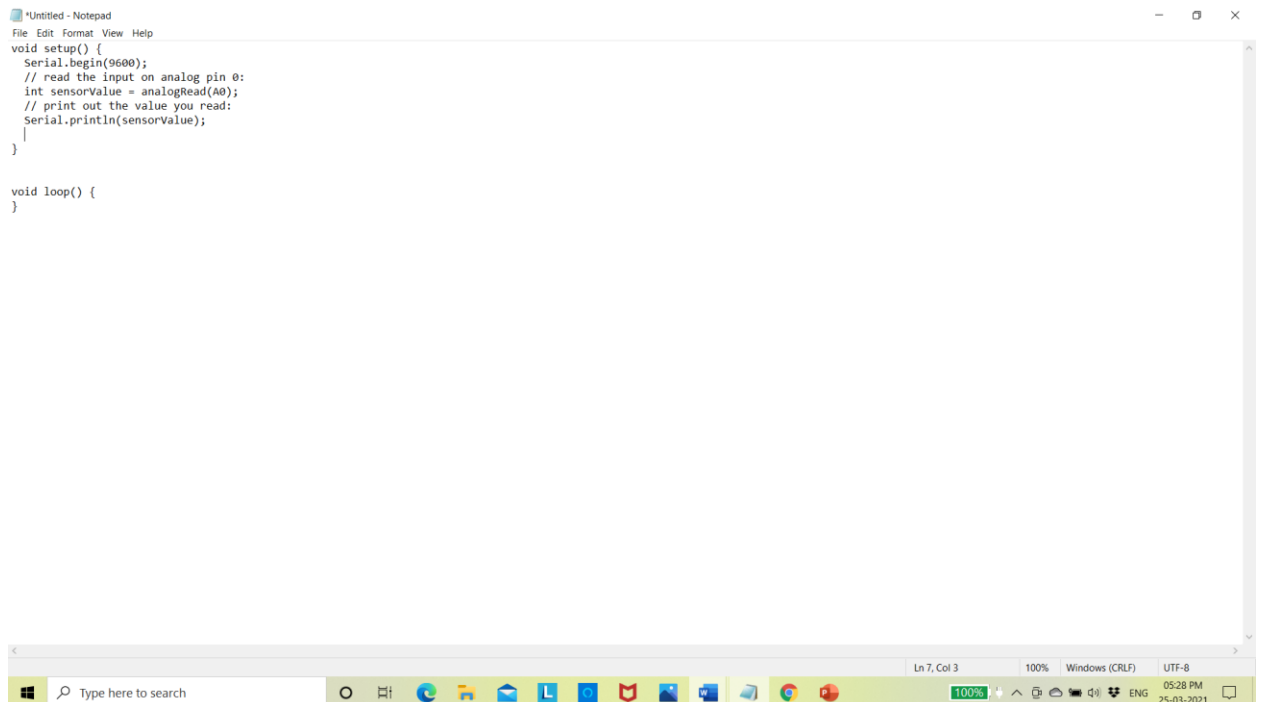
Date:25/03/2021

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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.**

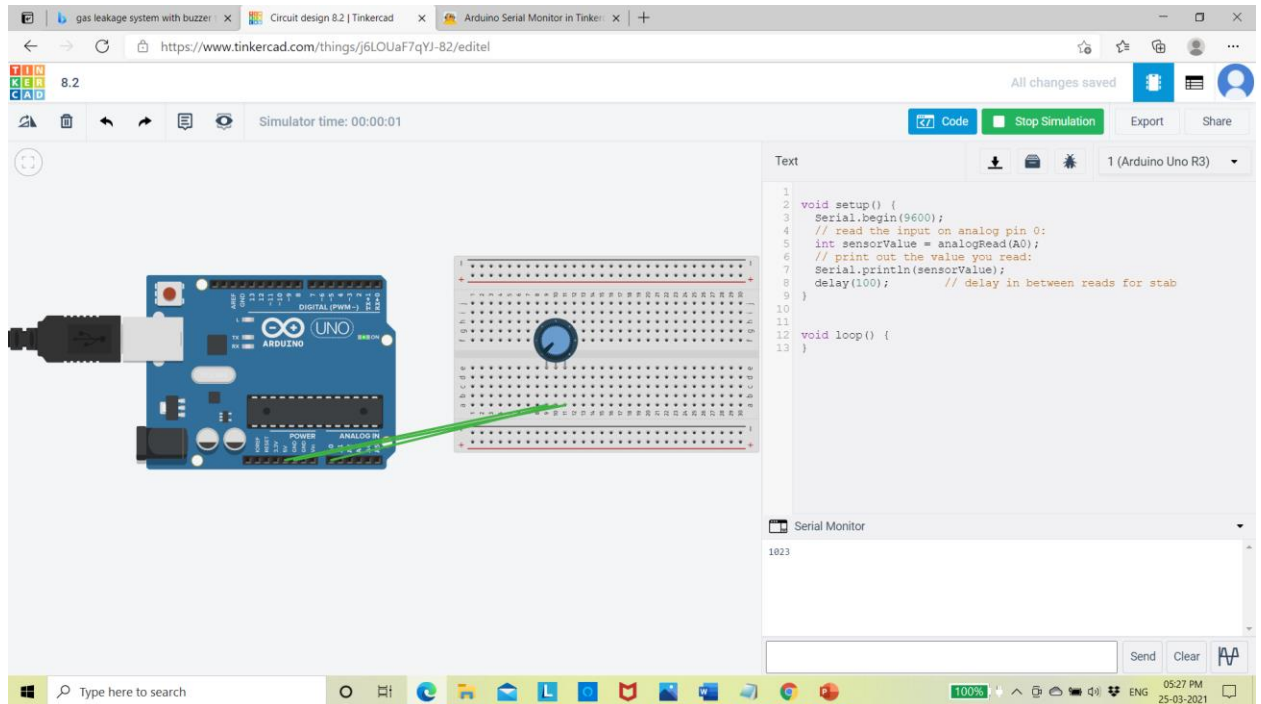
**Arduino Code (1).**



```
File Edit Format View Help
void setup() {
  Serial.begin(9600);
  // read the input on analog pin 0:
  int sensorValue = analogRead(A0);
  // print out the value you read:
  Serial.println(sensorValue);
}

void loop() {
}
```

# Output Screen Shot (1)



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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).

```
int triggerPin = 8;

int echoPin = 7;

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 0.01723 * pulseIn(echoPin, HIGH);
}

void setup()
{
    Serial.begin(9600);
}

void loop()
{
    Serial.println(readUltrasonicDistance(triggerPin, echoPin));
    delay(1000); // Delay a little bit to improve simulation performance
}
```

## Output Screen Shot (1)

The screenshot shows the Tinkercad simulation environment. On the left, an Arduino Uno is connected to an Ultrasonic Distance Sensor (HC-SR04). The sensor's display shows a reading of 27.8in / 70.7cm. On the right, the code editor displays the same code as the first screenshot. The Serial Monitor is open at the bottom, showing the output of the code. The Tinkercad interface includes a top toolbar with various tools and a bottom status bar showing the simulation time as 00:00:33.

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

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

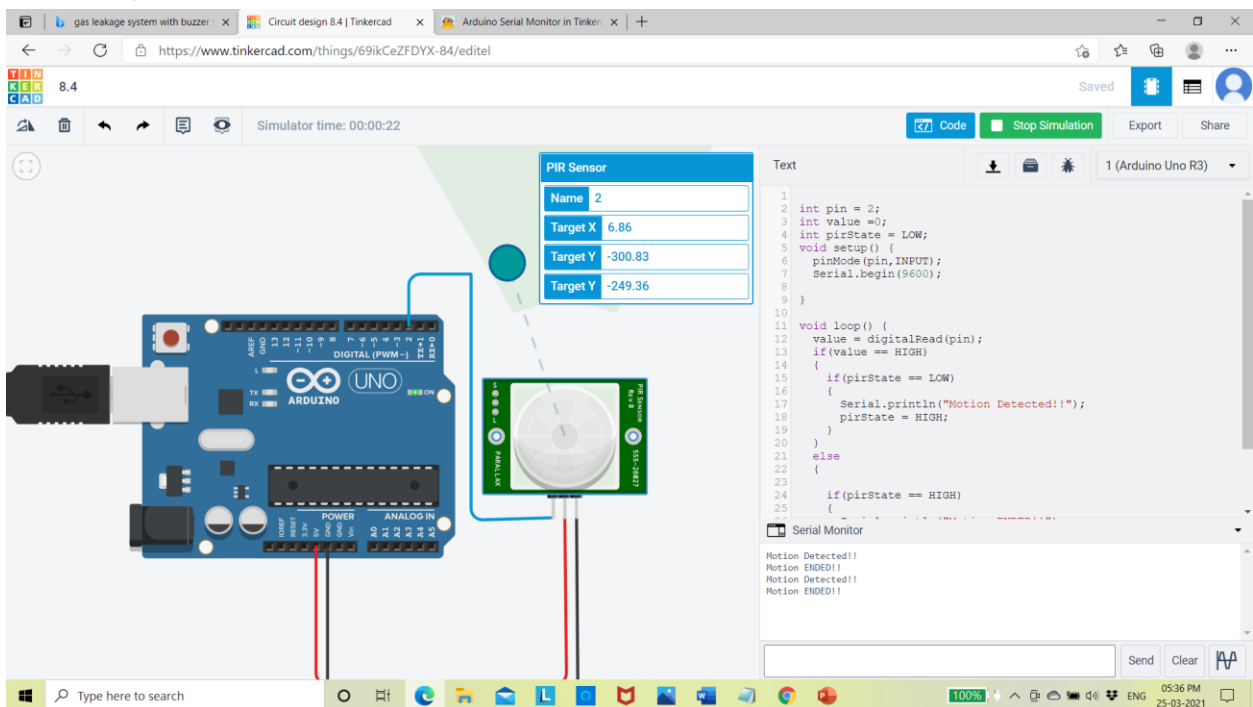
**Implement a Tinkercad simulation to sense movement in a room with a PIR motion sensor and Arduino's digital input.**

# Arduino Code (1).

```
int pin = 2;
int value = 0;
int pirState = LOW;
void setup() {
  pinMode(pin, INPUT);
  Serial.begin(9600);
}

void loop() {
  value = digitalRead(pin);
  if(value == HIGH)
  {
    if(pirState == LOW)
    {
      Serial.println("Motion Detected!!");
      pirState = HIGH;
    }
  }
  else
  {
    if(pirState == HIGH)
    {
      Serial.println("Motion ENDED!!");
      pirState = LOW;
    }
  }
}
```

# Output Screen Shot (1)





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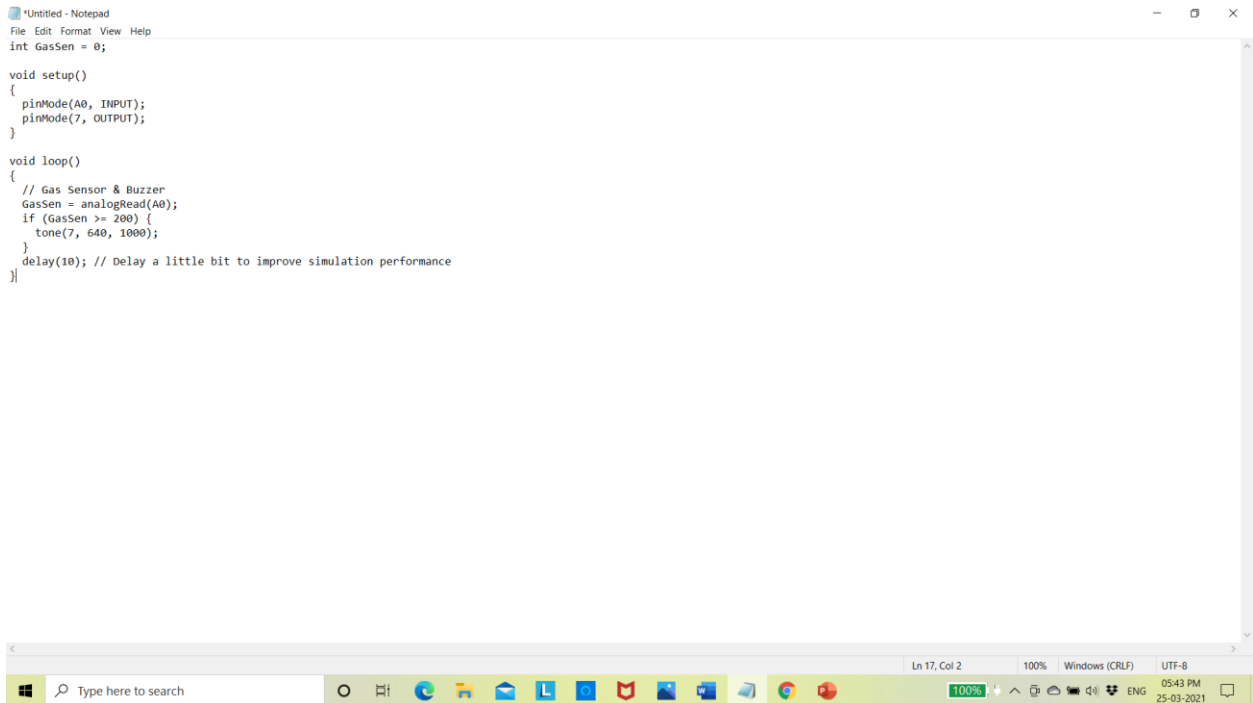
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Week# \_\_\_\_8\_\_\_\_

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

**Implement a Tinkercad simulation for gas leakage detection with buzzer system using Arduino**

**Arduino Code (1).**



```
*Untitled - Notepad
File Edit Format View Help
int GasSen = 0;

void setup()
{
  pinMode(A0, INPUT);
  pinMode(7, OUTPUT);
}

void loop()
{
  // Gas Sensor & Buzzer
  GasSen = analogRead(A0);
  if (GasSen >= 200) {
    tone(7, 640, 1000);
  }
  delay(10); // Delay a little bit to improve simulation performance
}
```

# Output Screen Shot (1)

The screenshot displays the Tinkercad web interface for a project titled "gas leakage system with buzzer". The main workspace shows an Arduino Uno R3 connected to a breadboard. A gas sensor module is connected to the breadboard, and a buzzer is also connected. The code on the right is as follows:

```
1 int GasSen = 0;
2
3 void setup()
4 {
5   pinMode(A0, INPUT);
6   pinMode(7, OUTPUT);
7 }
8
9 void loop()
10 {
11   // Gas Sensor & Buzzer
12   GasSen = analogRead(A0);
13   if (GasSen >= 200) {
14     tone(7, 640, 1000);
15   }
16   delay(10); // Delay a little bit to improve simulation performance
17 }
```

The Serial Monitor is currently empty. The bottom status bar shows the system time as 05:42 PM on 25-03-2021.

### **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.

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Date: 25/03/2021