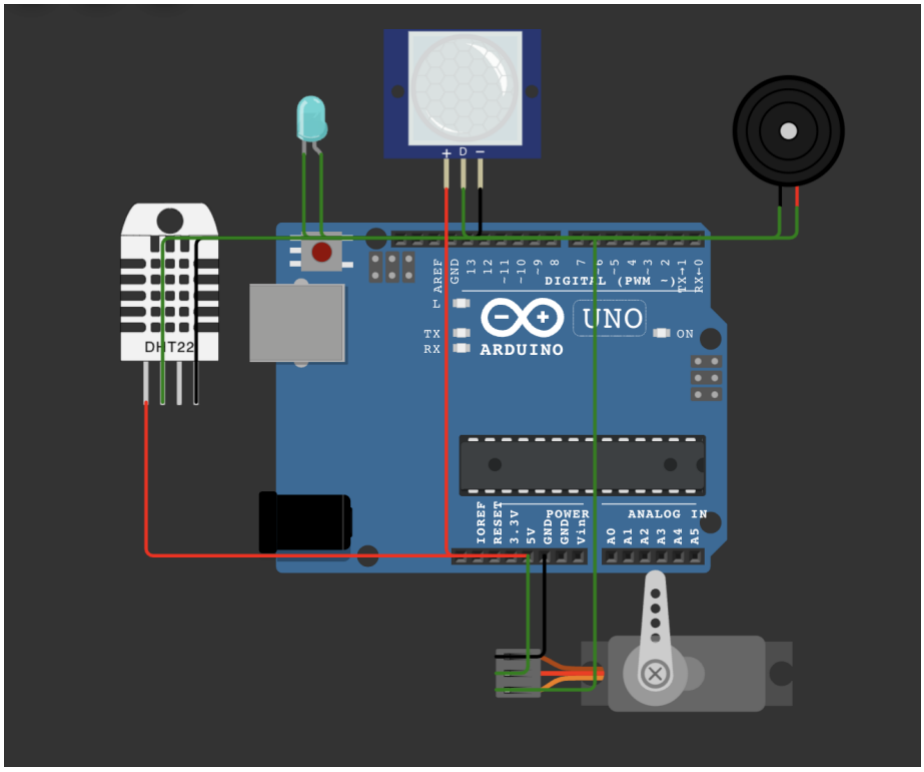
ASSIGNMENT 3

SCHEMATIC:



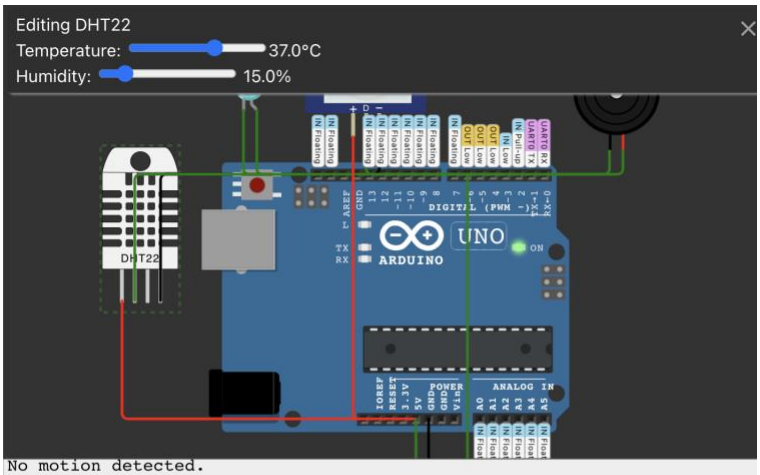
CODE:

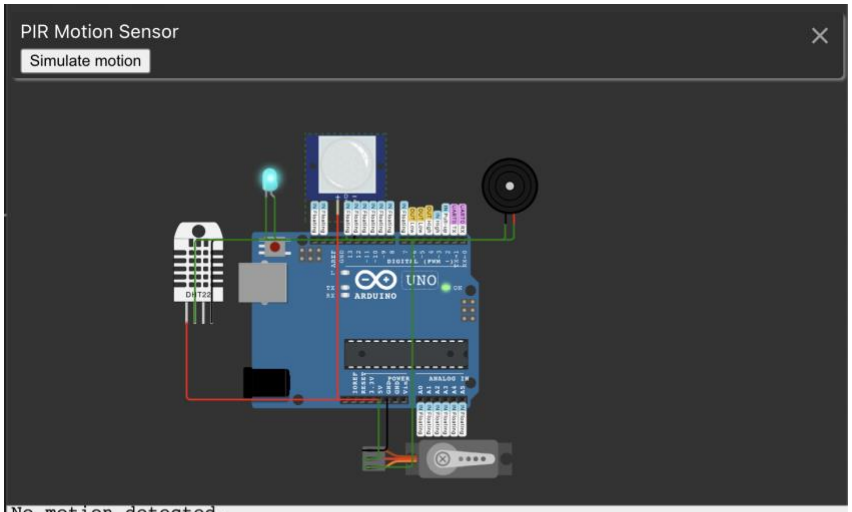
```
#include <Servo.h>
#include <Adafruit_Sensor.h>
#include <DHT.h>

#define DHTPIN 2        // Digital pin connected to the DHT sensor
#define DHTTYPE DHT11   // DHT 11

#define LEDPIN 4        // Digital pin connected to the LED
#define BUZZERPIN 5     // Digital pin connected to the Buzzer
#define SERVOPIN 6      // Digital pin connected to the Servo motor

int pirpin = 3 ;      // Digital pin connected to the PIR sensor
```

```
int pirstate = LOW;             // we start, assuming no motion detected
int val = 0;                    // variable for reading the pin status

DHT dht(DHTPIN, DHTTYPE);         // Create a DHT object
Servo servo;                    // Create a Servo object

int doorClosedAngle = 0;          // Angle for closed door position
int doorOpenAngle = 90;           // Angle for open door position

void setup() {
  Serial.begin(9600);
  dht.begin();
  pinMode(LEDPIN, OUTPUT);
  pinMode(BUZZERPIN, OUTPUT);
  pinMode(pirpin, INPUT);     // declare sensor as input
  servo.attach(SERVOPIN);
  servo.write(doorClosedAngle);
}

void loop() {
  // Read the temperature and humidity values from the DHT sensor
  val = digitalRead(pirpin);  // read input value
  float temperature = dht.readTemperature();
  float humidity = dht.readHumidity();
  Serial.print("Temperature: ");
  Serial.print(temperature);
  Serial.print(" *C\t Humidity: ");
  Serial.print(humidity);
  Serial.println(" %");

  // Check if there is motion detected by the PIR sensor
  if (val) {
    Serial.println("Motion detected!");
    digitalWrite(LEDPIN, HIGH);   // Turn on the LED
    pirstate  = HIGH;
    tone(BUZZERPIN, 500, 1000);   // Play a 1-second tone on the buzzer
    servo.write(doorOpenAngle);   // Unlock the door
    delay(5000);                  // Wait for 5 seconds
    servo.write(doorClosedAngle); // Lock the door
  } else {
```

```
    Serial.println("No motion detected.");
    pirstate = LOW;
    digitalWrite(LEDPIN, LOW);    // Turn off the LED
    noTone(BUZZERPIN);            // Turn off the buzzer
  }

  delay(1000);                    // Wait for 1 second before taking the next measurement
}
```

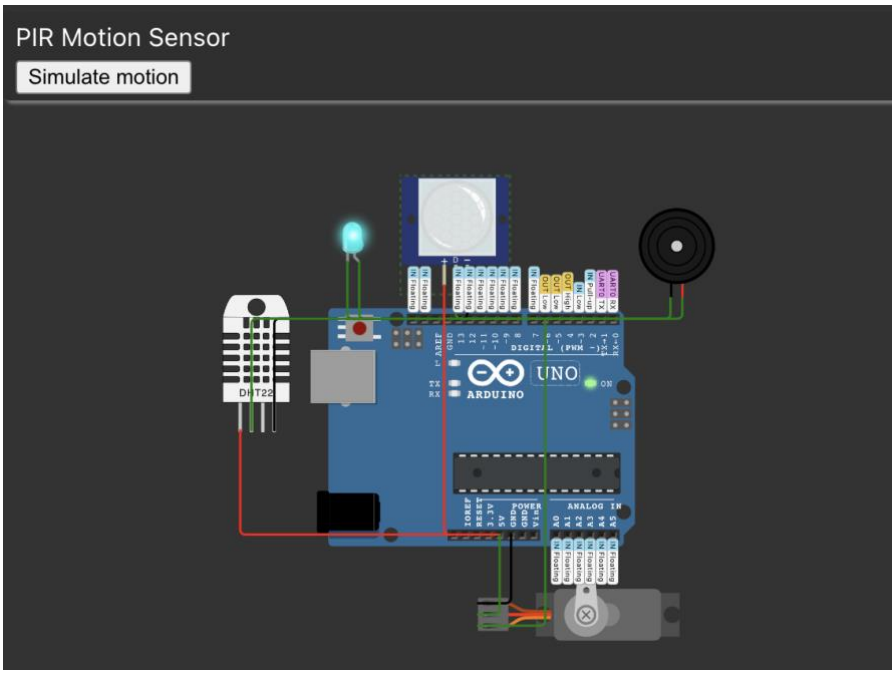
RESULTS:






```
No motion detected.
Temperature: 34.16 *C    Humidity: 15.00 %
No motion detected.
Temperature: 34.16 *C    Humidity: 15.00 %
No motion detected.
Temperature: 34.16 *C    Humidity: 15.00 %
Motion detected!
```

MOTION DETECTED SO SERVO MOTOR OPENS THE DOOR FOR FIVE SECONDS



AFTER FIVE SECONDS THE SERVO MOTOR CLOSES THE DOOR