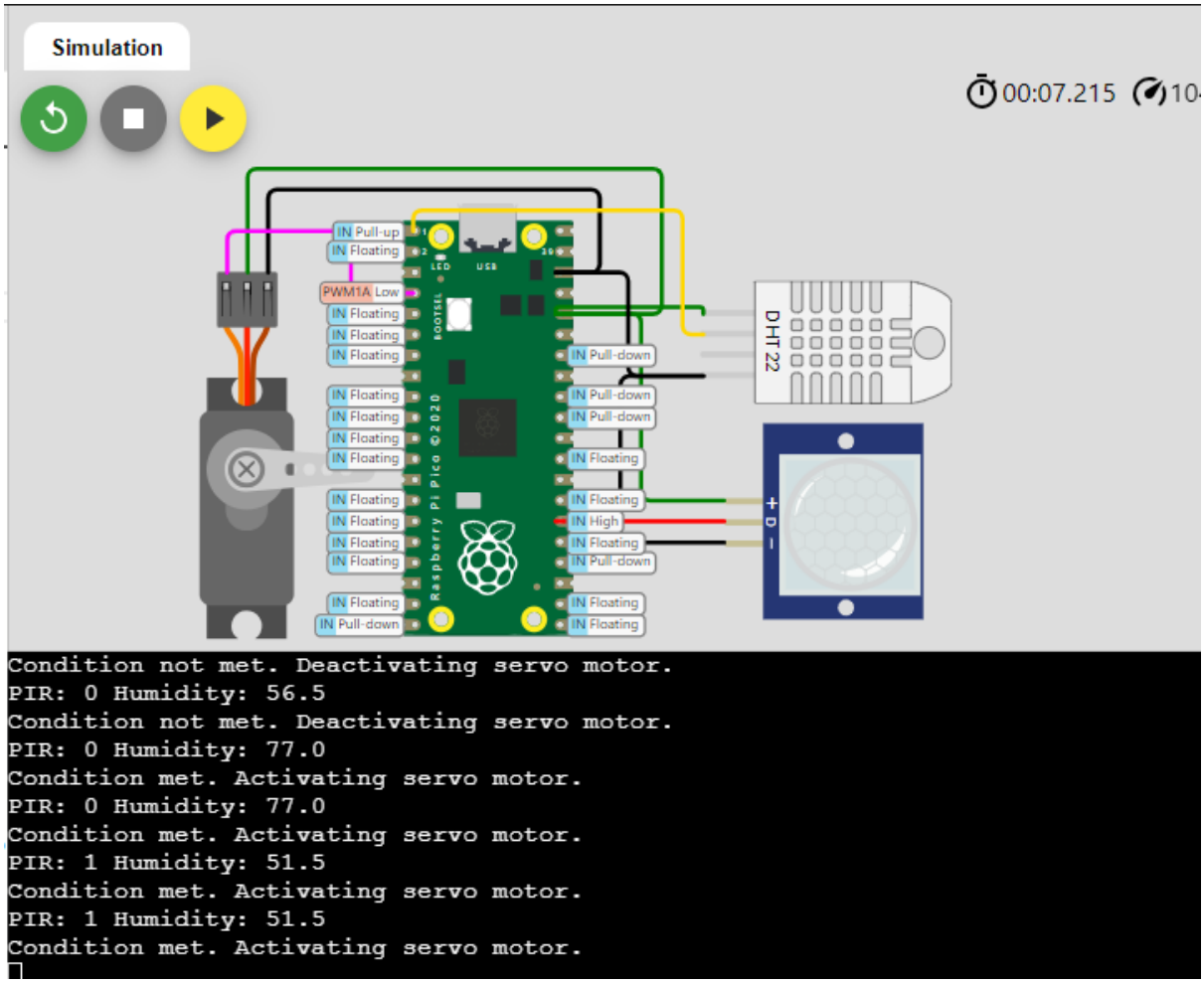
Ankit Soni

Batch : 3

Washroom ventilation Lab Simulation online

Used Component : Servo motor, DHT22 sensor, PIR sensor.



Code :

```
from machine import Pin, PWM
from time import sleep
import dht

# Define the GPIO pins for the sensors and the servo motor
PIR_PIN = 20  # GPIO pin connected to PIR sensor
DHT_PIN = 0  # GPIO pin connected to DHT22 sensor
SERVO_PIN = 2  # GPIO pin connected to the servo motor

# Define threshold for humidity
HUMIDITY_THRESHOLD = 70  # Adjust the threshold as needed

# Setup PIR sensor
pir_sensor = Pin(PIR_PIN, Pin.IN)
```

```
# Setup DHT22 sensor
dht_sensor = dht.DHT22(Pin(DHT_PIN))

# Setup servo motor
servo = PWM(Pin(SERVO_PIN))
servo.freq(50)  # 50Hz for servo motor

# Function to set servo angle
def set_servo_angle(angle):
    # Duty cycle for the given angle (0-180 degrees mapped to duty_u16 range
0-65535)
    min_duty = 1638  # 2.5% duty cycle
    max_duty = 8192  # 12.5% duty cycle
    duty = int((angle / 180) * (max_duty - min_duty) + min_duty)
    servo.duty_u16(duty)

try:
    while True:
        # Read PIR sensor
        pir_value = pir_sensor.value()

        # Read DHT22 sensor
        dht_sensor.measure()
        humidity = dht_sensor.humidity()

        # Print sensor values for debugging
        print("PIR:", pir_value, "Humidity:", humidity)

        # Check if the conditions are met to start the motor
        if pir_value == 1 or humidity > HUMIDITY_THRESHOLD:
            print("Condition met. Activating servo motor.")
            set_servo_angle(0)  # Set servo to 0 degrees (activate)
        else:
            print("Condition not met. Deactivating servo motor.")
            set_servo_angle(-90)  # Set servo to -90 degrees (deactivate)

        # Wait for a second before next reading
        sleep(1)
except KeyboardInterrupt:
    print("Program stopped")
```