

Intelligent Bathroom Ventilation Fan Controller

Python Code:-

```
import machine
import time
import dht
import utime

# Initialize PIR sensor
pir_sensor = machine.Pin(8, machine.Pin.IN)

# Initialize DHT22 sensor
dht22 = dht.DHT22(machine.Pin(16))

# Initialize Servo
servo = machine.PWM(machine.Pin(11))
servo.freq(50)

# Function to set servo angle
def set_servo_angle(angle):
    # Servo expects pulse width between 0.5ms to 2.5ms
    pulse_width = int((angle / 180) * 2000 + 500)
    duty = pulse_width * (65535 // 20000)
    servo.duty_u16(duty)

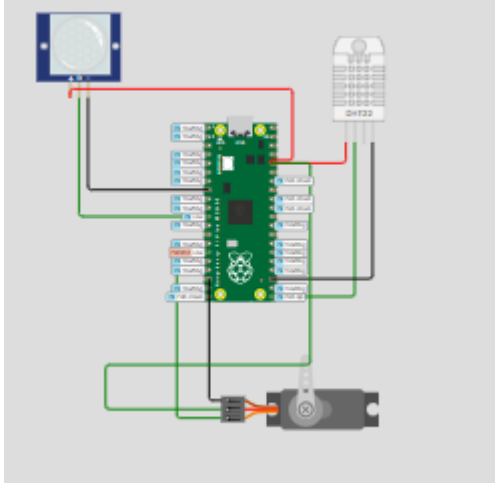
# Main loop
while True:
    if pir_sensor.value() == 1:
        print("Person detected!")

        # Read temperature and humidity from DHT22
        dht22.measure()
        temperature = dht22.temperature()
        humidity = dht22.humidity()

        print("Temperature:", temperature, "C")
        print("Humidity:", humidity, "%")

        # Rotate servo
        set_servo_angle(90) # Rotate to 90 degrees
        time.sleep(1)       # Hold position for 1 second
        set_servo_angle(0)  # Rotate back to 0 degrees
```

```
else:  
    print("No person detected.")  
  
time.sleep(1) # Delay to avoid excessive readings
```



Circuit Diagram

RESULT

```
Temperature: 24.0 C  
Humidity: 40.0 %  
Person detected!  
Temperature: 24.0 C  
Humidity: 40.0 %  
Person detected!  
Temperature: 24.0 C  
Humidity: 40.0 %  
Person detected!  
Temperature: 24.0 C  
Humidity: 40.0 %
```