TASK 4

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Intelligent Bathroom Ventilation Fan Controller-WOKWI

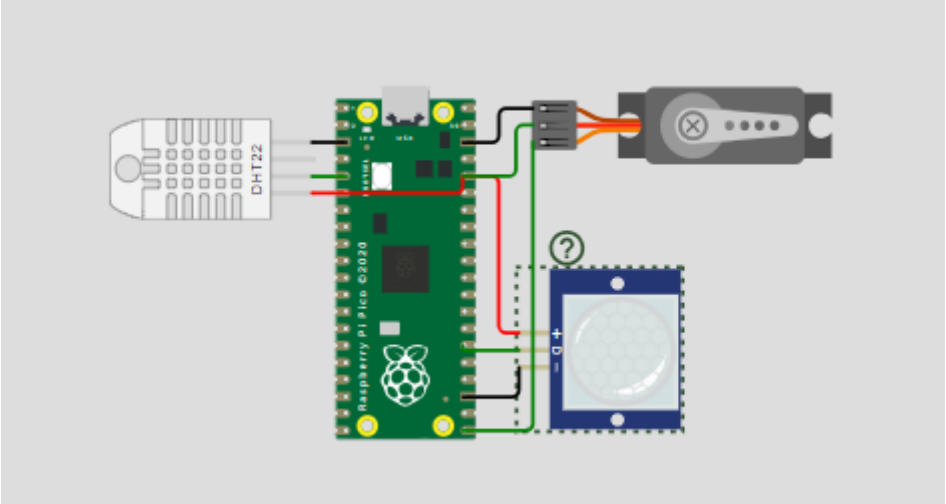

Fig.1: Circuit

CODE:

```
from machine import Pin
import dht
import time

# Constants
MOTOR_PIN = 16          # GPIO pin connected to the motor (via relay or
transistor)
PIR_PIN = 20            # GPIO pin connected to the PIR sensor
DHT22_PIN = 3          # GPIO pin connected to the DHT22 sensor

# Initialize components
motor = Pin(MOTOR_PIN, Pin.OUT)
pir_sensor = Pin(PIR_PIN, Pin.IN)
dht_sensor = dht.DHT22(Pin(DHT22_PIN))

def read_temperature():
    """Read temperature from the DHT22 sensor."""
    try:
        dht_sensor.measure()
        temperature = dht_sensor.temperature()
        humidity = dht_sensor.humidity()
        print("Temperature: {:.1f}°C, Humidity: {:.1f}%".format(temperature,
humidity))
        return temperature
    except OSError as e:
```

```
        print("Failed to read sensor data.")
        return None

def main_loop():
    """Main loop to check motion and control motor."""
    print("Starting main loop...")
    while True:
        motion_detected = pir_sensor.value()
       # print("PIR Sensor Value: ", motion_detected)
        if motion_detected == 1:  # Motion detected
            print("Motion detected!")
            temperature = read_temperature()
            if temperature is not None:
                print("Temperature: {:.1f}°C".format(temperature))
            motor.on()  # Turn on the motor
            print("Motor is ON")

        else:
            motor.off()  # Turn off the motor
            print("Motor is OFF")

        time.sleep(1)  # Wait before checking again

# Run the main loop
main_loop()
```

OUTPUT

```
Starting main loop...
Motor is OFF
Motor is OFF
Motor is OFF
Motion detected!
Temperature: 24.0°C, Humidity: 40.0%
Temperature: 24.0°C
Motor is ON
Motion detected!
Temperature: 24.0°C, Humidity: 40.0%
Temperature: 24.0°C
Motor is ON
```

Fig.2: Output