Intelligence Bathroom Ventilation System

```
import machine
import utime
import dht

# Pin definitions
pir_pin = machine.Pin(13, machine.Pin.IN)
dht22_pin = machine.Pin(0)
servo_pin = machine.Pin(27)

# Initialize DHT22 sensor
dht22 = dht.DHT22(dht22_pin)

# Initialize Servo Motor
servo = machine.PWM(servo_pin)

def set_servo_angle(angle):
    # Map the angle (0 to 180 degrees) to the duty cycle (6553 to 32767)
    duty = int(6553 + angle * 295)
    servo.duty_u16(duty)

def read_dht22():
    try:
        dht22.measure()
        temperature = dht22.temperature()
        humidity = dht22.humidity()
        return temperature, humidity
    except Exception as e:
        print('Failed to read DHT22 sensor:', e)
        return None, None

def main():
    while True:
        if pir_pin.value():  # Motion detected
            print("Motion detected! Turning servo on.")
            set_servo_angle(90)  # Move servo to 90 degrees
        else:  # No motion detected
            print("No motion detected. Turning servo off.")
            set_servo_angle(0)   # Move servo to 0 degrees

        temperature, humidity = read_dht22()
        if temperature is not None and humidity is not None:
            print("Temperature:", temperature, "C")
            print("Humidity:", humidity, "%")

        utime.sleep(1)  # Wait for 1 second before the next iteration
```

```
if __name__ == '__main__':
    main()
```