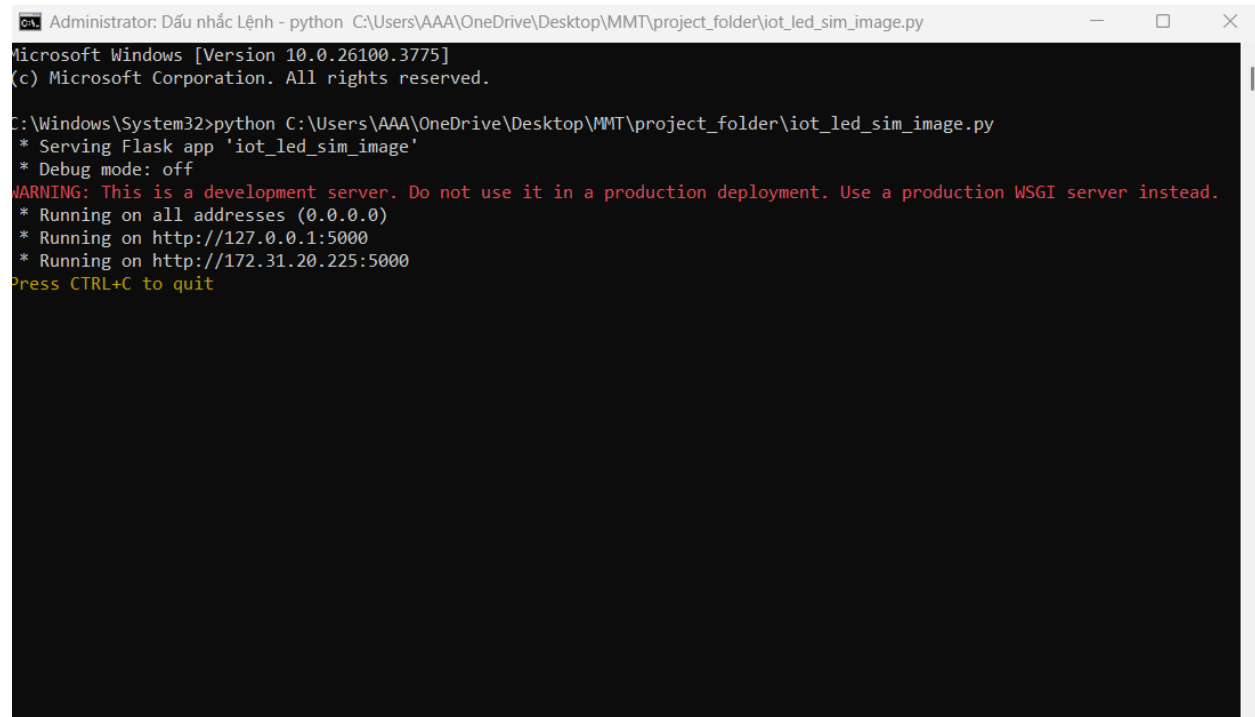


LAB 1.2. MÔ PHỎNG ĐIỀU KHIỂN LED QUA HTTP BẰNG FRAMEWORK FLASK

- Cấu trúc thư mục:

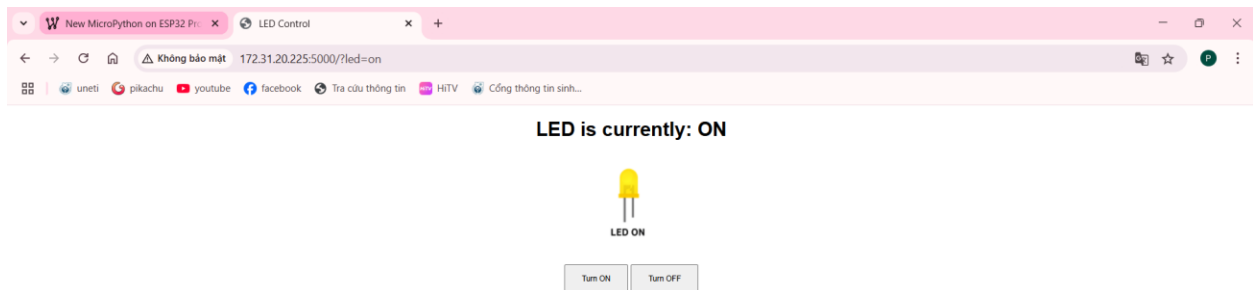
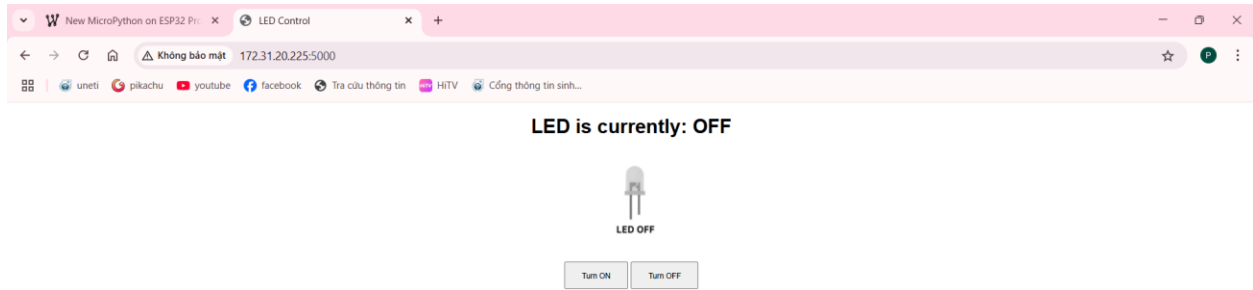
```
lab1_2_streamlit/  
├── app.py  
└── images/  
    ├── led_on.png  
    └── led_off.png
```

- Cài Flask sau đó chạy mã nguồn `iot_led_sim_image.py`:



```
Administrator: Dấu nhắc Lệnh - python C:\Users\AAA\OneDrive\Desktop\MMT\project_folder\iot_led_sim_image.py  
Microsoft Windows [Version 10.0.26100.3775]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Windows\System32>python C:\Users\AAA\OneDrive\Desktop\MMT\project_folder\iot_led_sim_image.py  
* Serving Flask app 'iot_led_sim_image'  
* Debug mode: off  
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.  
* Running on all addresses (0.0.0.0)  
* Running on http://127.0.0.1:5000  
* Running on http://172.31.20.225:5000  
Press CTRL+C to quit
```

- Mở trình duyệt trên PC, truy cập địa chỉ <http://127.0.0.1:5000> hoặc <http://172.31.20.225:5000>



- Quan sát giao diện web hiển thị trạng thái LED và các nút điều khiển:

```
Administrator: Dấu nhắc Lệnh - python C:\Users\AAA\OneDrive\Desktop\MMT\project_folder\iot_led_sim_image.py
Microsoft Windows [Version 10.0.26100.3775]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\System32>python C:\Users\AAA\OneDrive\Desktop\MMT\project_folder\iot_led_sim_image.py
* Serving Flask app 'iot_led_sim_image'
* Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on all addresses (0.0.0.0)
* Running on http://127.0.0.1:5000
* Running on http://172.31.20.225:5000
Press CTRL+C to quit
172.31.20.225 - - [21/May/2025 13:05:35] "GET / HTTP/1.1" 200 -
172.31.20.225 - - [21/May/2025 13:05:36] "GET /static/led_off.png HTTP/1.1" 200 -
172.31.20.225 - - [21/May/2025 13:05:36] "GET /favicon.ico HTTP/1.1" 404 -
172.31.20.225 - - [21/May/2025 13:06:25] "GET /?led=on HTTP/1.1" 200 -
172.31.20.225 - - [21/May/2025 13:06:26] "GET /static/led_on.png HTTP/1.1" 200 -
```

MỞ RỘNG: Truy cập từ điện thoại trong cùng mạng Wifi:

- Trên máy tính đang chạy, mở CMD và nhập lệnh ipconfig:

```
Administrator: Dấu nhắc Lệnh

C:\Windows\System32>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 1:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

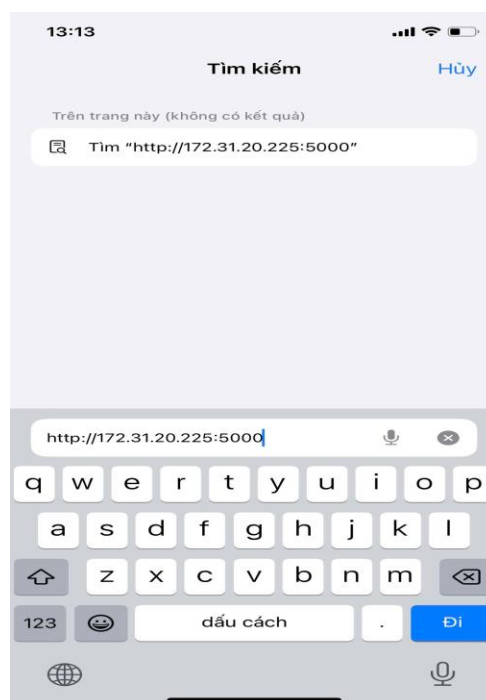
Wireless LAN adapter Wifi:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::a6fe:e384:2bee:3a30%8
    IPv4 Address. . . . . : 172.31.20.225
    Subnet Mask . . . . . : 255.255.240.0
    Default Gateway . . . . . : 172.31.16.1

C:\Windows\System32>
```

- Địa chỉ Ipv4: 172.31.20.225

- Mở trình duyệt trên điện thoại và truy cập địa chỉ: <http://172.31.20.225:5000>



```

172.31.20.216 - - [21/May/2025 13:14:04] "GET /static/led_on.png HTTP/1.1" 304 -
172.31.20.216 - - [21/May/2025 13:14:08] "GET /?led=off HTTP/1.1" 200 -
172.31.20.216 - - [21/May/2025 13:14:08] "GET /static/led_off.png HTTP/1.1" 200 -
172.31.20.216 - - [21/May/2025 13:15:39] "GET /?zarsrc=30&utm_source=zalo&utm_medium=zalo&utm_campaign=zalo HTTP/1.1" 200 -
172.31.20.216 - - [21/May/2025 13:15:39] "GET /static/led_off.png HTTP/1.1" 304 -
172.31.20.216 - - [21/May/2025 13:15:41] "GET /?led=on HTTP/1.1" 200 -
172.31.20.216 - - [21/May/2025 13:15:41] "GET /static/led_on.png HTTP/1.1" 304 -

```

- Thao tác bật tắt trên điện thoại

