Faculty of Engineering and Technology

Department of Electrical and Computer Engineering

ENCS3321

COMPUTER NETWORKS

SECOND SEMESTER PROJECT 2023-2024

Prepared by:

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Section: **2**

Abstract

This project aims to create network applications using socket programming. The goals include constructing a UDP client-server setup for message broadcasting and developing a flexible web server capable of handling diverse content types and requests.In the first part, we explore network tools such as ping and nslookup, along with network testing using Wireshark, to comprehend network connectivity.The second part elaborates on setting up a UDP communication system, allowing clients within a network to exchange messages, showcasing real-time data transmission.In the third part, the focus shifts to building a web server that caters to various client requests, supports multiple content types, and effectively manages redirections and errors.Through this project, we enhance our practical grasp of network communications and establish a groundwork for more advanced network applications.

Theory

Computer networks:

A computer network is a set of computers sharing resources located on or provided by network nodes. Computers use common communication protocols over digital interconnections to communicate with each other. These interconnections are made up of telecommunication network technologies based on physically wired.

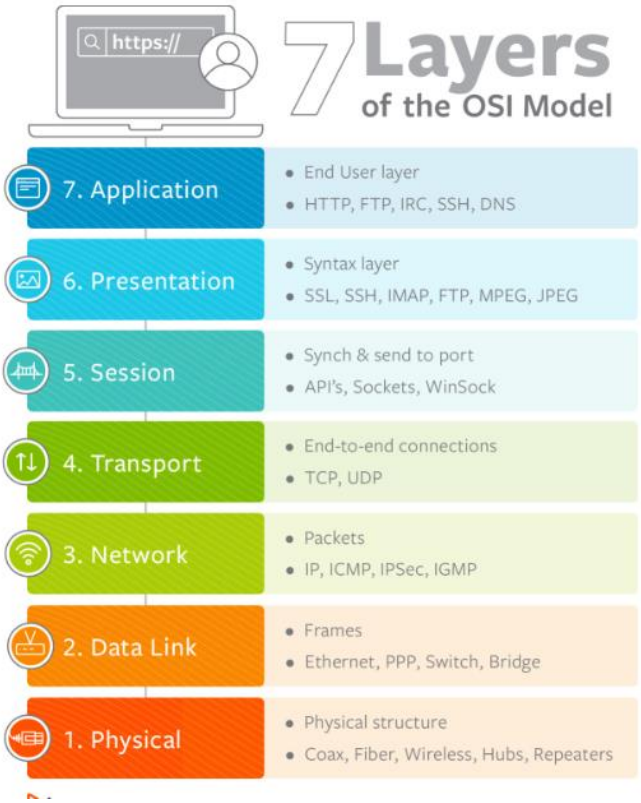

Figure 1.1 [1]

TCP and UDP

TCP ➔ The TCP protocol (Transmission Control Protocol) is the most widely used transport protocol in the world and is one of the core components of the Internet. For this reason IP stacks like emNet are often called TCP/IP stacks while they are not limited to TCP or the IP protocol only. [2]

UDP ➔ is one of the core communication protocols of the Internet protocol suite used to send messages (transported as datagrams in packets) to other hosts on an Internet Protocol (IP) network. Within an IP network, UDP does not require prior communication to set up communication channels or data paths.[2]

TCP vs UDP

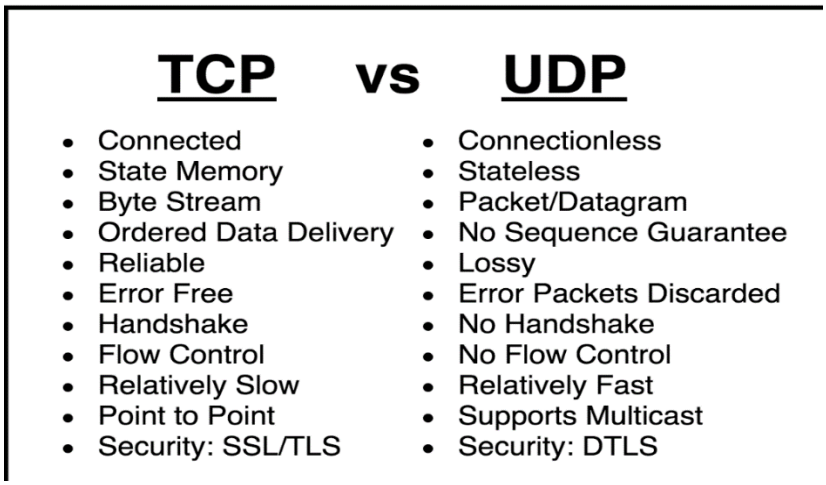

Figure1.2[2]

Routers:

A router is a device that connects two or more packet-switched networks or subnetworks. It serves two primary functions: managing traffic between these networks by forwarding data packets to their intended IP addresses, and allowing multiple devices to use the same Internet connection. [3]

There are several types of routers, but most routers pass data between LANs (local area networks) and WANs (wide area networks). A LAN is a group of connected devices restricted to a specific geographic area. A LAN usually requires a single router.[3]

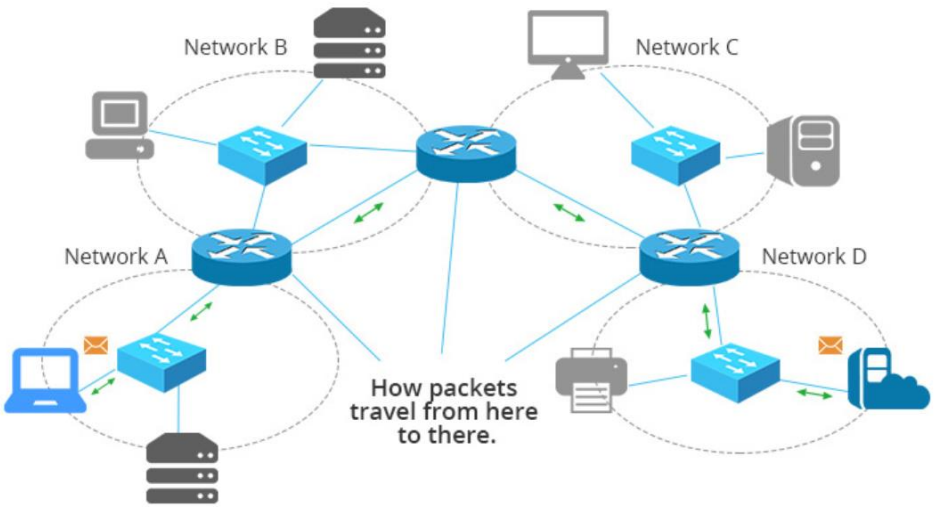

Figure 1.3 [3]

HTTP:

Hypertext Transfer Protocol (HTTP) is an application layer protocol in the Internet protocol suite model for distributed, collaborative, hypermedia information systems.[1] HTTP is the foundation of data communication for the World Wide Web, where hypertext documents include hyperlinks to other resources that the user can easily access, for example by a mouse click or by tapping the screen in a web browser.Development of HTTP was initiated by Tim Berners-Lee at CERN in 1989 and summarized in a simple document describing the behavior of a client and a server using the first HTTP version, named 0.9.[2] That version was subsequently developed, eventually becoming the public 1.0. Development of early HTTP Requests for Comments (RFCs) started a few years later in a coordinated effort by the Internet Engineering Task Force (IETF) and the World Wide Web Consortium (W3C), with work later moving to the IETF.[4]

Socket:

A network socket is a software structure within a network node of a computer network that serves as an endpoint for sending and receiving data across the network. The structure and properties of a socket are defined by an application programming interface (API) for the networking architecture. Sockets are created only during the lifetime of a process of an application running in the node.

Because of the standardization of the TCP/IP protocols in the development of the Internet, the term *network socket* is most commonly used in the context of the Internet protocol suite, and is therefore often also referred to as Internet socket. In this context, a socket is externally identified to other hosts by its socket address, which is the triad of transport protocol, IP address, and port number.

The term *socket* is also used for the software endpoint of node-internal inter-process communication (IPC), which often uses the same API as a network socket.[5]

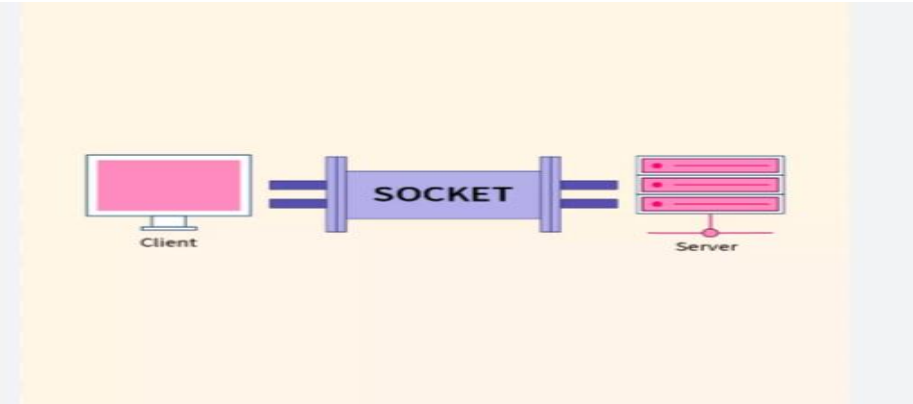

Figure 1.4

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PART #1

1. A few network essential commands

Ping ➔A tool for sending packets with a specific size and to set a timer to measure the time it takes for packets to travel to its destination, and before it sends the packets, it determine whether the IP address is accessible or not.

Tracert ➔For displaying the visited routers and the taken path from the sender device to a specified destination along the packet's journey, by sending incremental TTL for each router until it reaches its destination.

Nslookup➔ used to query the Domain Name System (DNS) to obtain domain name or IP address mapping, DNS records, and other DNS-related information. It's available on most operating systems, including Windows, macOS, and Linux.

Telnet➔ used to establish a command-line connection between two computers over a network. It was one of the first Internet protocols and is still widely used for various purposes, although it has largely been replaced by more secure protocols like SSH (Secure Shell).

2. Running the commands

a. Ping a device in the same network, e.g. from a laptop to a smartphone

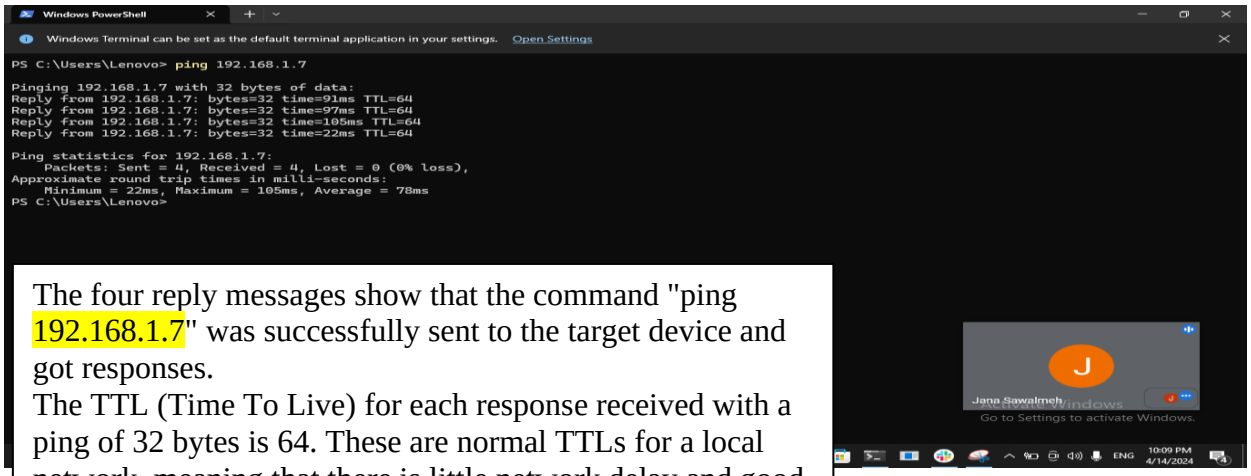


Figure 1.5

The four reply messages show that the command "ping 192.168.1.7" was successfully sent to the target device and got responses.
The TTL (Time To Live) for each response received with a ping of 32 bytes is 64. These are normal TTLs for a local network, meaning that there is little network delay and good device connectivity.
The fact that the TTL value of 64 has not dramatically dropped from a maximum of 128 or 255 (typical starting values depending on the operating system) indicates that the devices are either on the same network or quite close to one another in terms of network.

The data (Sent = 4, Received = 4, Lost = 0) show that there was no packet loss during this test, which indicates
.

b. ping www.stanford.edu

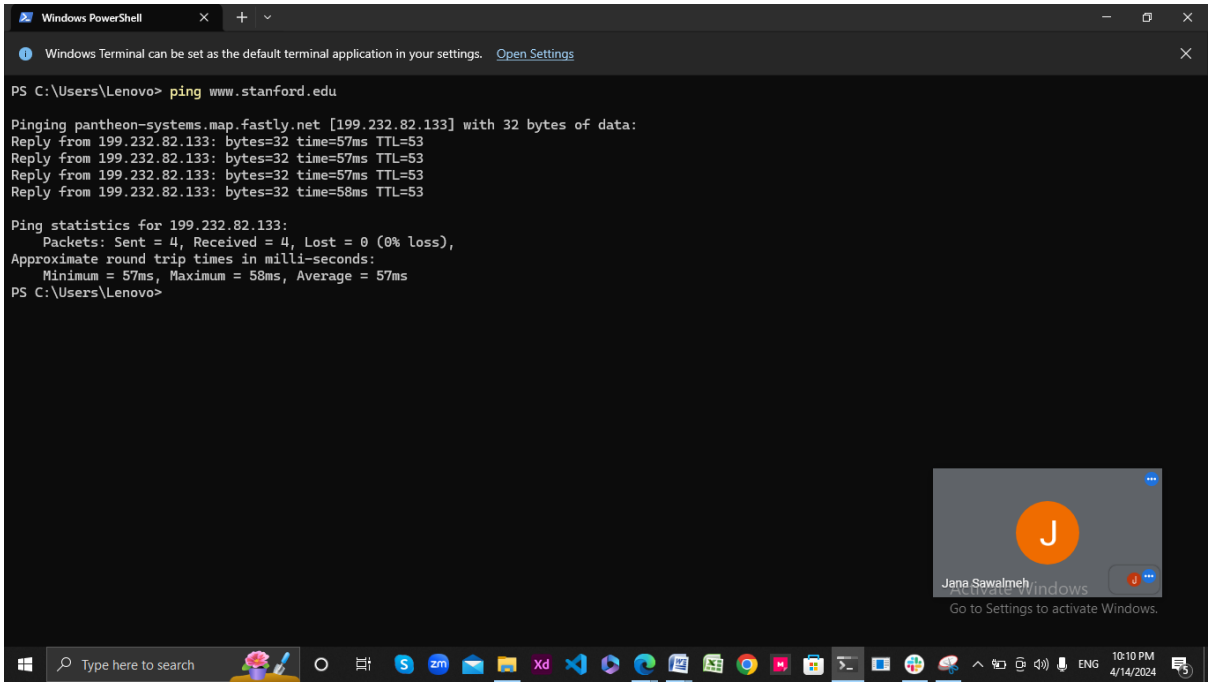


Figure 1.6

C. From the ping results, do you think the response you got is from USA? Explain your answer briefly.

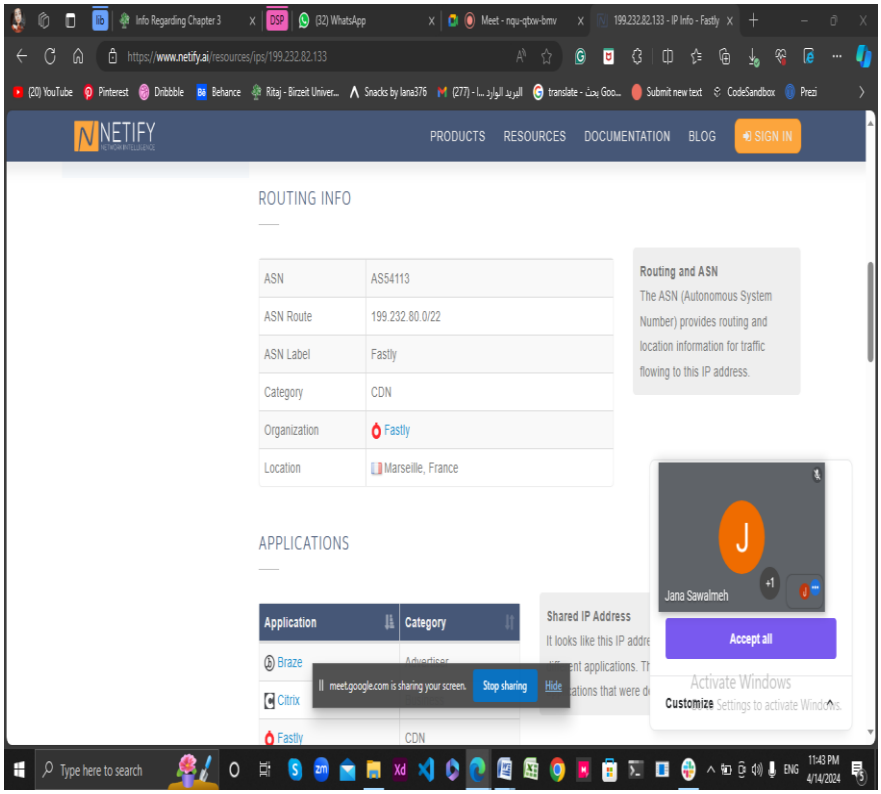


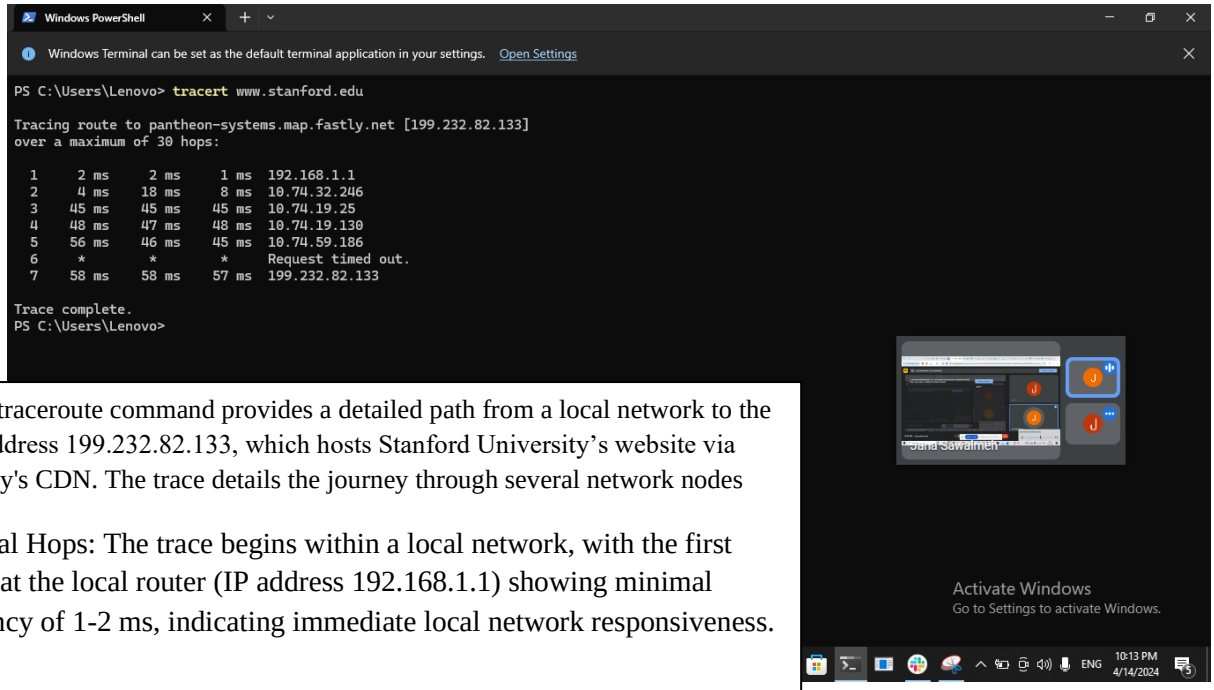
Figure 1.7

As shown in the above figure, at the first site we think that the response is from the USE because most of the servers are located there, but when we check Fastly website we see that the response location is from Marseille, France not USA.

199.232.82.133 - IP Info - Fastly (netify.ai)

Fastly network map | Fastly

d. tracert www.stanford.edu

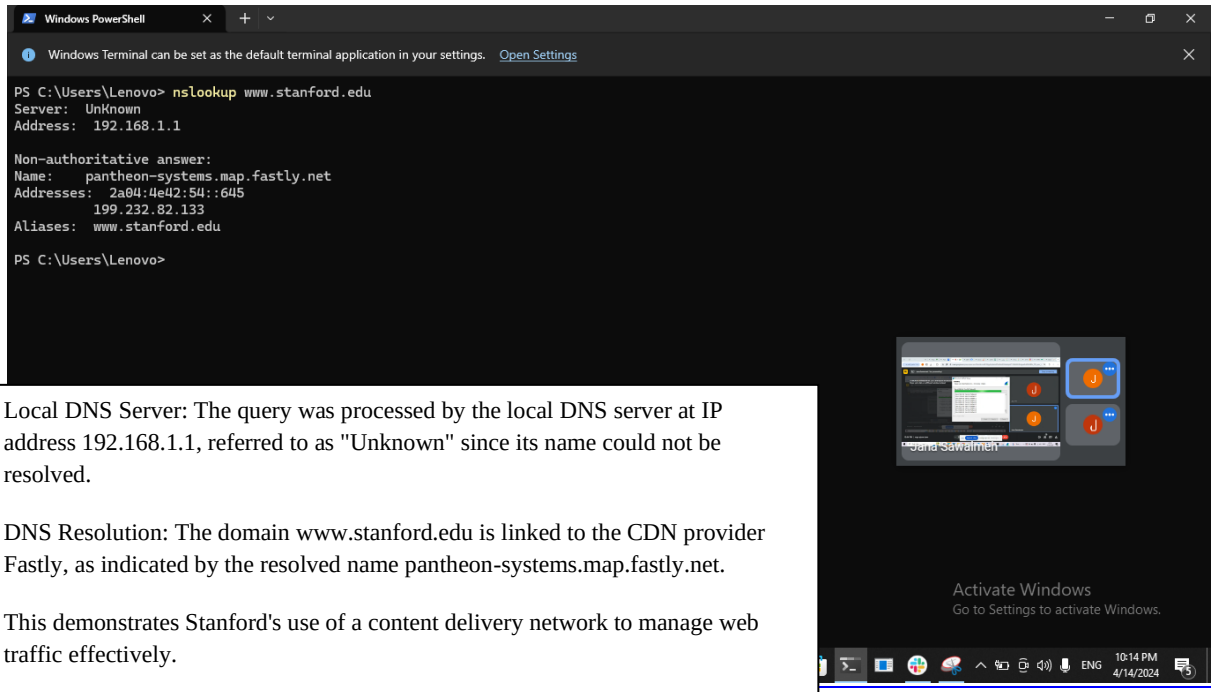


The traceroute command provides a detailed path from a local network to the IP address 199.232.82.133, which hosts Stanford University's website via Fastly's CDN. The trace details the journey through several network nodes

Initial Hops: The trace begins within a local network, with the first hop at the local router (IP address 192.168.1.1) showing minimal latency of 1-2 ms, indicating immediate local network responsiveness.

Figure 1.8

e. nslookupwww.stanford.edu



Local DNS Server: The query was processed by the local DNS server at IP address 192.168.1.1, referred to as "Unknown" since its name could not be resolved.

DNS Resolution: The domain www.stanford.edu is linked to the CDN provider Fastly, as indicated by the resolved name pantheon-systems.map.fastly.net.

This demonstrates Stanford's use of a content delivery network to manage web traffic effectively.

IP Addresses: The lookup returned both IPv4 and IPv6 addresses:

IPv4: 199.232.82.133

IPv6: 2a04:4e42:54::645

Figure 1.9

3. Using Wireshark for capturing some DNS messages

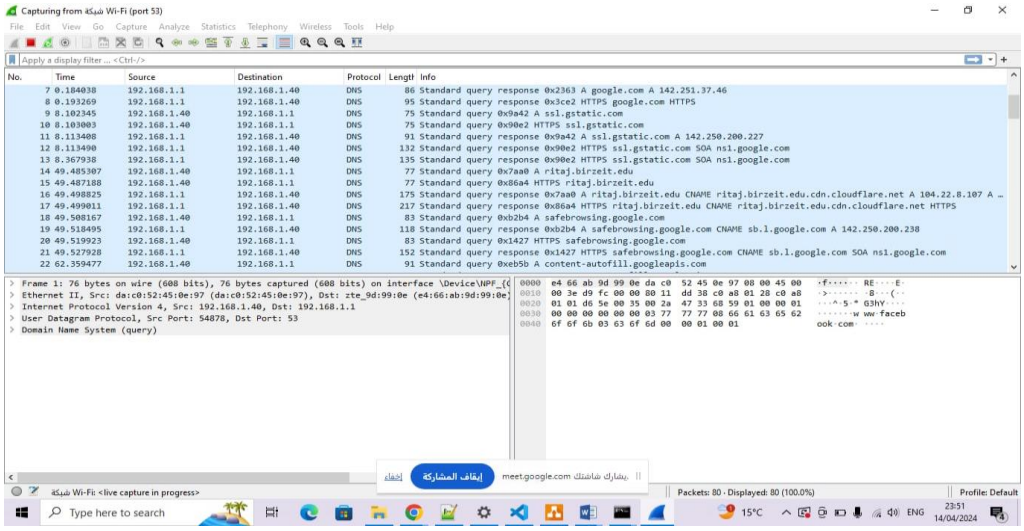
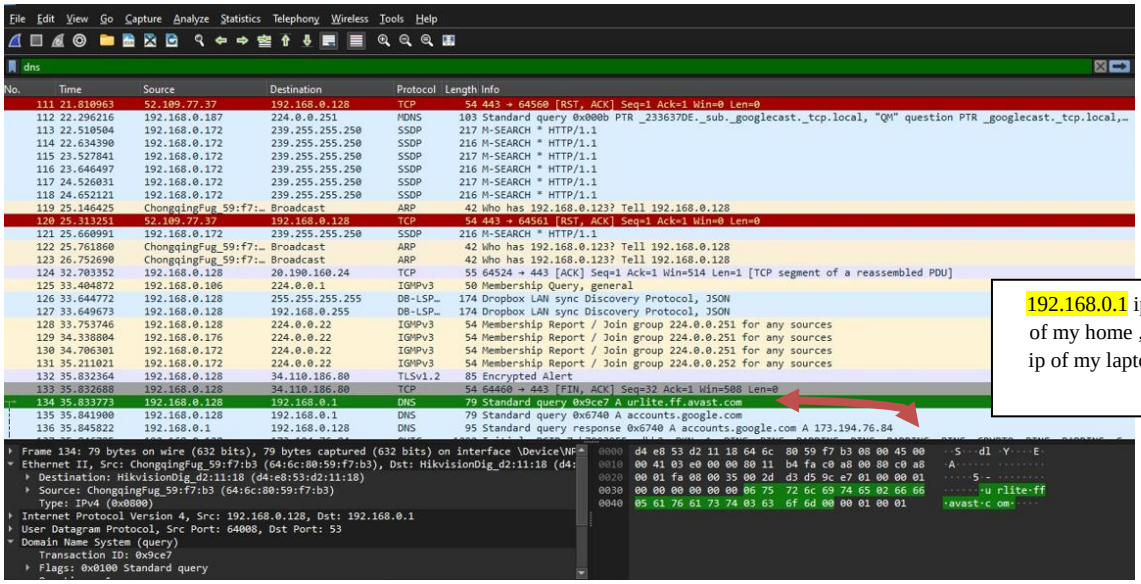


Figure 1.10

Did the operation from two different Laptops process {open wireshark wi_fi , cmd ipconfig / flushdns , open website , then write dns on wireshark}



192.168.0.1 ip means the router of my home ,192.168.0.128 the ip of my laptop Send query and received

Wireshark is an open-source network protocol analyzer widely used for capturing, analyzing, and troubleshooting network traffic. Developed by the Wireshark community, it provides a detailed and real-time view of data moving across a network, helping users understand the communication patterns between devices

Here we have to use the wireshark to capture some DNS messages, we chose Wi-Fi the network interface that corresponds to the network we want to monitor, to focus on DNS messages, we applied a display filter (DNS).

PART #2

code

```python
# Part 2  Jana,Lana,Tariq
import socket
import threading
import datetime

PORT = 5051
# broadcast_ip we use Radmin vpn online network not the one from my laptop ipconfig
broadcast_ip = '26.255.255.255'
#this line retrieves the local IP address of the machine by getting the hostname,
#resolving it to IP addresses, and selecting the first IP address from the list.
local_ip = socket.gethostbyname_ex(socket.gethostname())[2][0]
first_name = input("Enter your first name: ")
last_name = input("Enter your last name: ")
full_name = f"{first_name} {last_name}"
buffer=1024 # max num of data will be recived

def bring_time_of_now():
    # build in function that bring the time now
    return datetime.datetime.now().strftime("%H:%M:%S")
```

```python
def mange_messeges(SOCKET_, received_messeges):
    while True:
        data, addr = SOCKET_.recvfrom(buffer)
        # cheak weather the messege is from peer itself or not
        if addr[0] != local_ip:
            messege = data.decode('utf-8')
            current_time = bring_time_of_now()
            received_messeges = f"received a message from {messege.split(":")[0]} at {current_time}"
            received_messeges.append(messege)
            print(f"from peer {full_name}")
            print(received_messeges)

def print_messages(messages):
    print(f"\nPeer {full_name}")
    # j represent the index of the tuple in messege list
    for j, messege in enumerate(messages, 1):
        print(f"{j}- {messege[0]}")

def print_full_messege(messages, command):

    try:
        l = int(command[:-1]) - 1
        print("\nFull message:")
        print(messages[l][1])
        #catches potential errors that may occur during the execution of the code inside the try block.
        #If there's either an IndexError (which means the index l is out of range for the messages list) or
        #a ValueError (which means the command couldn't be converted to an integer), it prints "Invalid command or index."
    except (IndexError, ValueError):
        print("Invalid command or index.")
```

```python
def manage_sending_messege(SOCKET_, received_messegeS):
    while True:
        com = input("\n please enter your message or [Digit_D] => (Message OR #D) ")

        # here we have two choices if u send Degit_D then the messege is sent to the peer server
        if com.upper().endswith('D') and com[:-1].isdigit():
            print_full_messege(received_messegeS, com)
        #else the messege is sent to other peers in the broadcast
        else:
            full_message = f"{full_name}: {com}"
            SOCKET_.sendto(full_message.encode('utf-8'), (broadcast_ip, PORT))

def construct_peers():
    # creating a new socket
    SOCKET_ = socket.socket(socket.AF_INET, socket.SOCK_DGRAM)
    #tells the socket to allow the reuse of addresses
    SOCKET_.setsockopt(socket.SOL_SOCKET, socket.SO_REUSEADDR, 1)
    SOCKET_.setsockopt(socket.SOL_SOCKET, socket.SO_BROADCAST, 1)
    SOCKET_.bind((local_ip, PORT))

    #to save the recived messeges
    Received_messege = []
    # to send messeges for all peers at the same time
    #once the messege sent from one peer it sends to other
    threading.Thread(target=mange_messeges, args=(SOCKET_,  Received_messege), daemon=True).start()
    manage_sending_messege(SOCKET_,  Received_messege)

if __name__ == "__main__":
    construct_peers()
```

Messages

```
                        > & C:/Users/user/AppData/Local/Programs/Python/Python31
Enter your first name: JANA
Enter your last name: SAWALMEH

Type your message or command (Message or #D): from peer JANA SAWALMEH
received a message from lana musaffer at 22:44:57


Type your message or command (Message or #D): HI from peer JANA SAWALMEH
received a message from tariq atrash at 22:45:15
from peer JANA SAWALMEH
received a message from tariq atrash at 22:45:17


Type your message or command (Message or #D): from peer JANA SAWALMEH
received a message from tariq atrash at 22:46:06
from peer JANA SAWALMEH
received a message from lana musaffer at 22:46:41
from peer JANA SAWALMEH
received a message from tariq atrash at 22:47:00


Type your message or command (Message or #D): HELLO FREIND

Type your message or command (Message or #D): from peer JANA SAWALMEH
received a message from tariq atrash at 22:47:54
from peer JANA SAWALMEH
received a message from tariq atrash at 22:47:57
from peer JANA SAWALMEH
received a message from lana musaffer at 22:48:28
from peer JANA SAWALMEH
received a message from lana musaffer at 22:48:31
```

PART #3

- **Have a look also on rfc2616 (https://datatracker.ietf.org/doc/html/rfc2616). From rfce2616, what is Entity Tag Cache Validators in the HTTP protocol and why do we need it?**

1_Entity Tag (ETag) Cache Validators are a component of the RFC 2616-defined HTTP protocol. They give web servers a way to give online resources (such files or documents) distinct identities so that clients may use them to find out if the resource has changed since the last time it was requested.

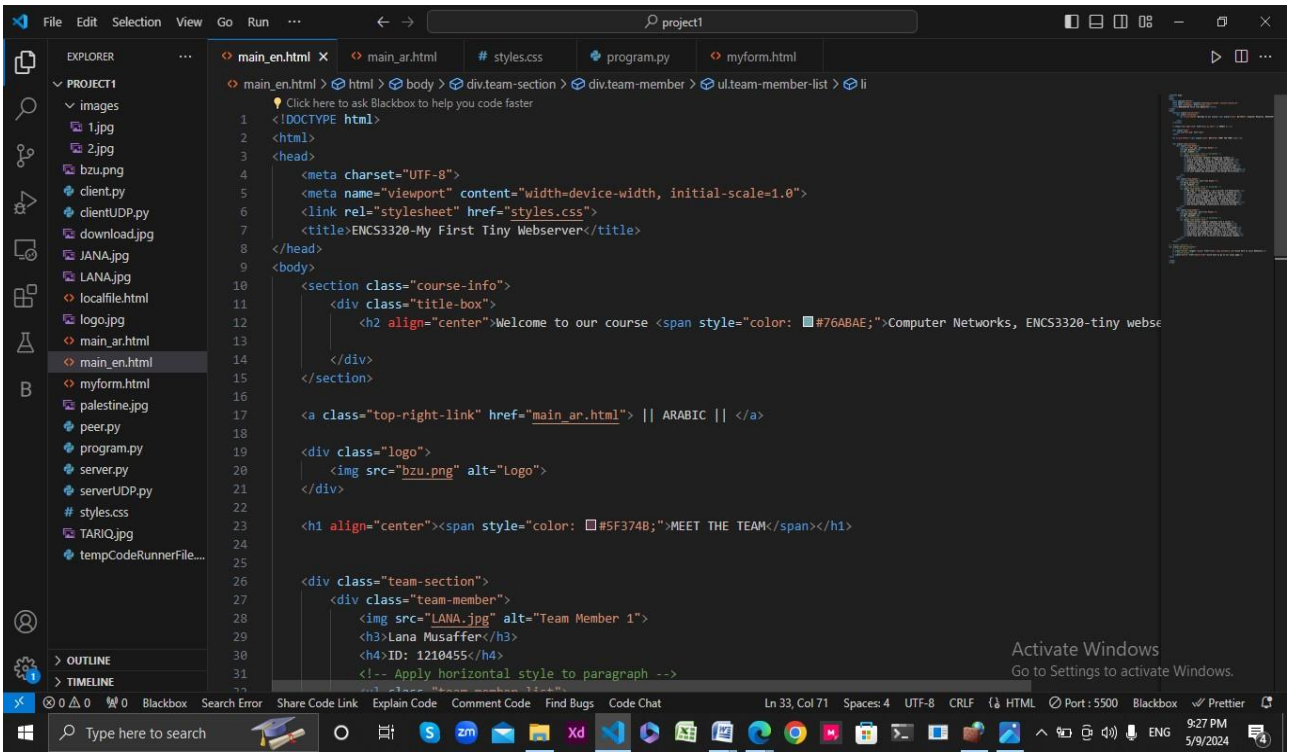
2_ The server appends an ETag header with the resource's unique identification to a response sent by a client when it requests a resource. This identifier can then be stored by the client and used for upcoming requests. The client returns the ETag to the server in an If-None-Match header when requesting the same resource again. The server replies with a "304 Not Modified" response code, meaning that the client's cached copy of the resource is still valid, if it hasn't changed since the last request.

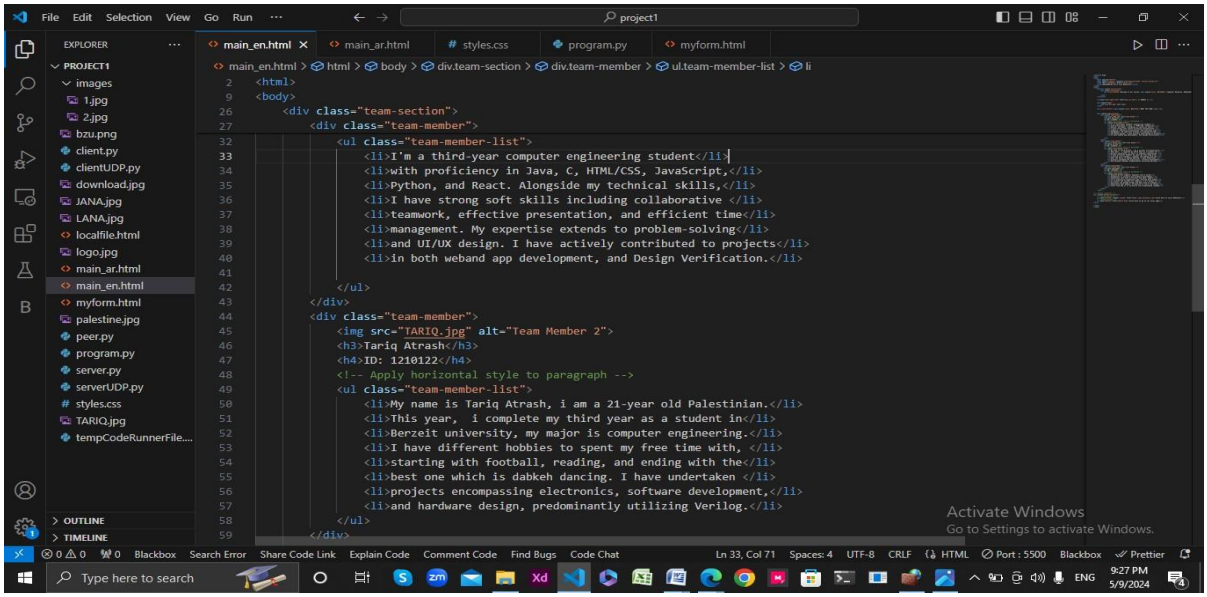
3_ETag Cache Validators minimize pointless data transport, which contributes to increased efficiency. They save bandwidth and enhance performance by enabling clients to cache resources locally and only request them from the server when they have been changed.

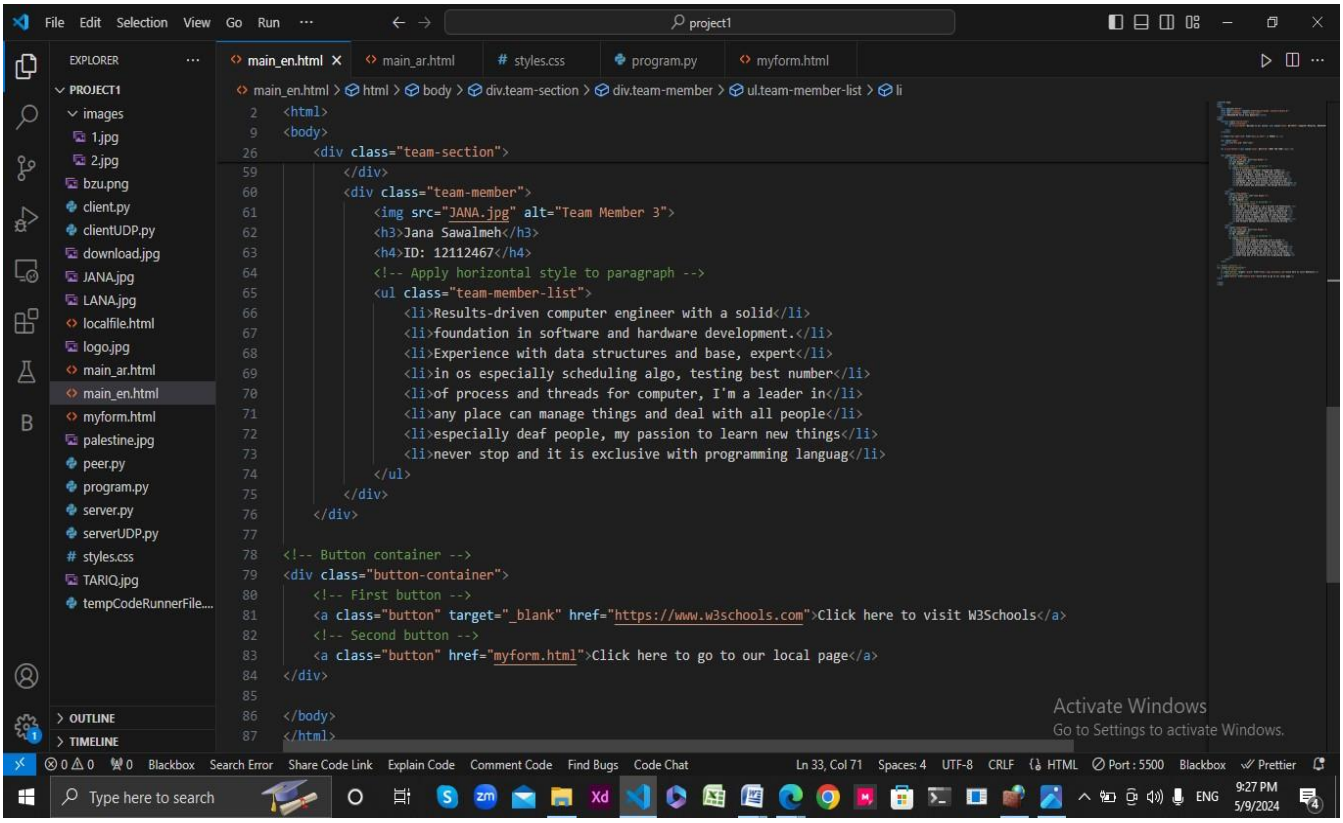
- **We implemented a complete web server using python and socket programming, this server is listening on port 6060. The program checks:**

1. **if the request is / or /index.html or /main_en.htmlor /en (for example localhost:6060/ or localhost:6060/en) then the server should send main_en.html file with Content-Type: text/html.**

main_en.html code:






File Edit Selection View Go Run
project1
EXPLORER
main_en.html
main_ar.html
styles.css
program.py
myform.html
PROJECT1
images
1.jpg
2.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
myform.html
palestine.jpg
peer.py
program.py
server.py
serverUDP.py
styles.css
TARIQ.jpg
tempCodeRunnerFile....
OUTLINE
TIMELINE
main_en.html > html > body > div.team-section > div.team-member > ul.team-member-list > li
<html>
<body>

<img src="JANA.jpg" alt="Team Member 3">
<h3>Jana Sawalmeh</h3>
<h4>ID: 12112467</h4>
<!-- Apply horizontal style to paragraph -->
<ul class="team-member-list">
Results-driven computer engineer with a solid
foundation in software and hardware development.
Experience with data structures and base, expert
in os especially scheduling algo, testing best number
of process and threads for computer, I'm a leader in
any place can manage things and deal with all people
especially deaf people, my passion to learn new things
never stop and it is exclusive with programming languag

<!-- Button container -->

<!-- First button -->
Click here to visit W3Schools
<!-- Second button -->
Click here to go to our local page

</body>
</html>
Activate Windows
Go to Settings to activate Windows.
Blackbox Search Error Share Code Link Explain Code Comment Code Find Bugs Code Chat
Ln 33, Col 71 Spaces: 4 UTF-8 CRLF HTML Port : 5500 Blackbox Prettier
Type here to search
ENG
9:27 PM
5/9/2024

main_en.html page:

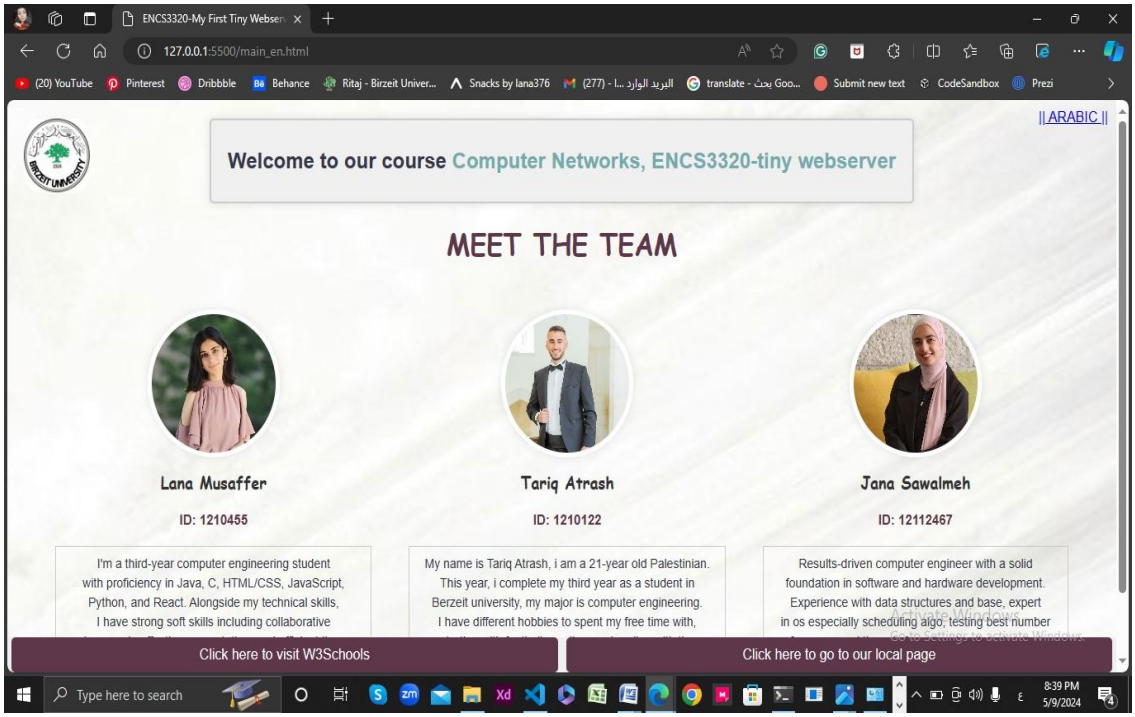


Figure 1.11

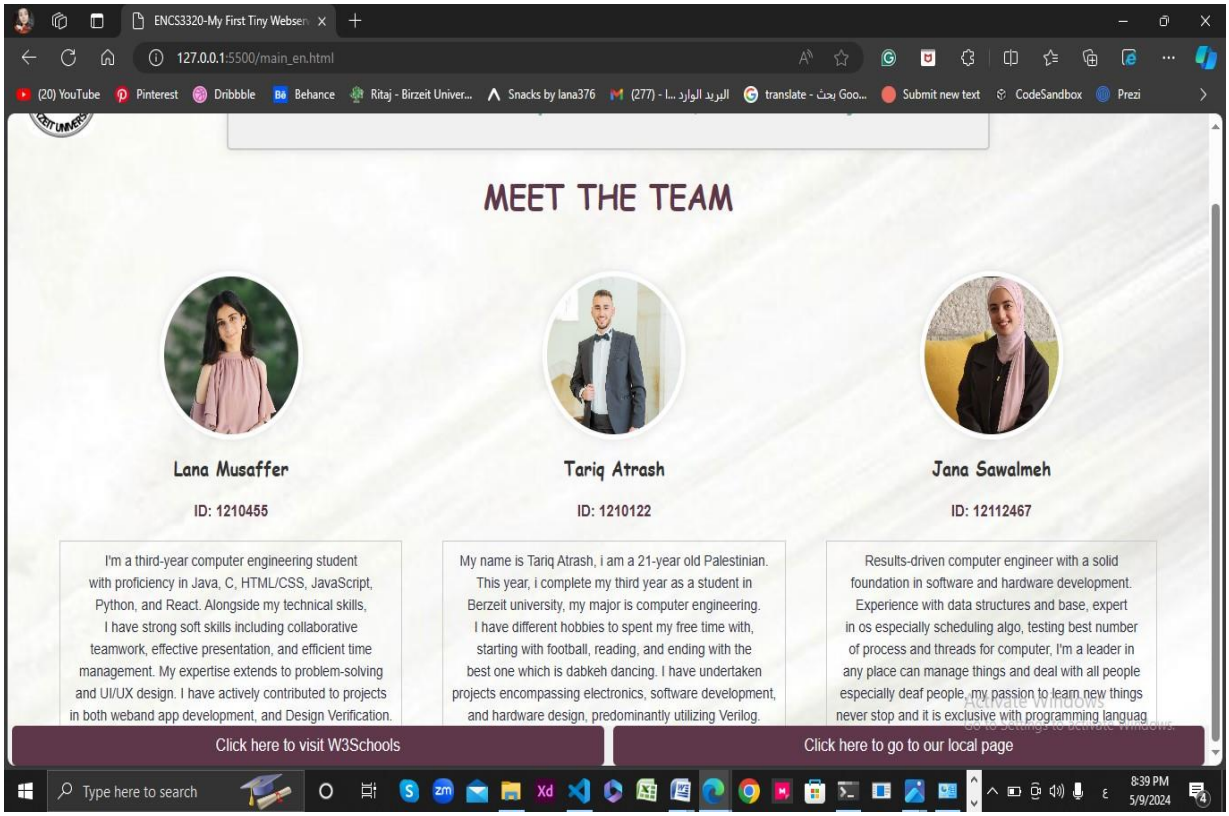
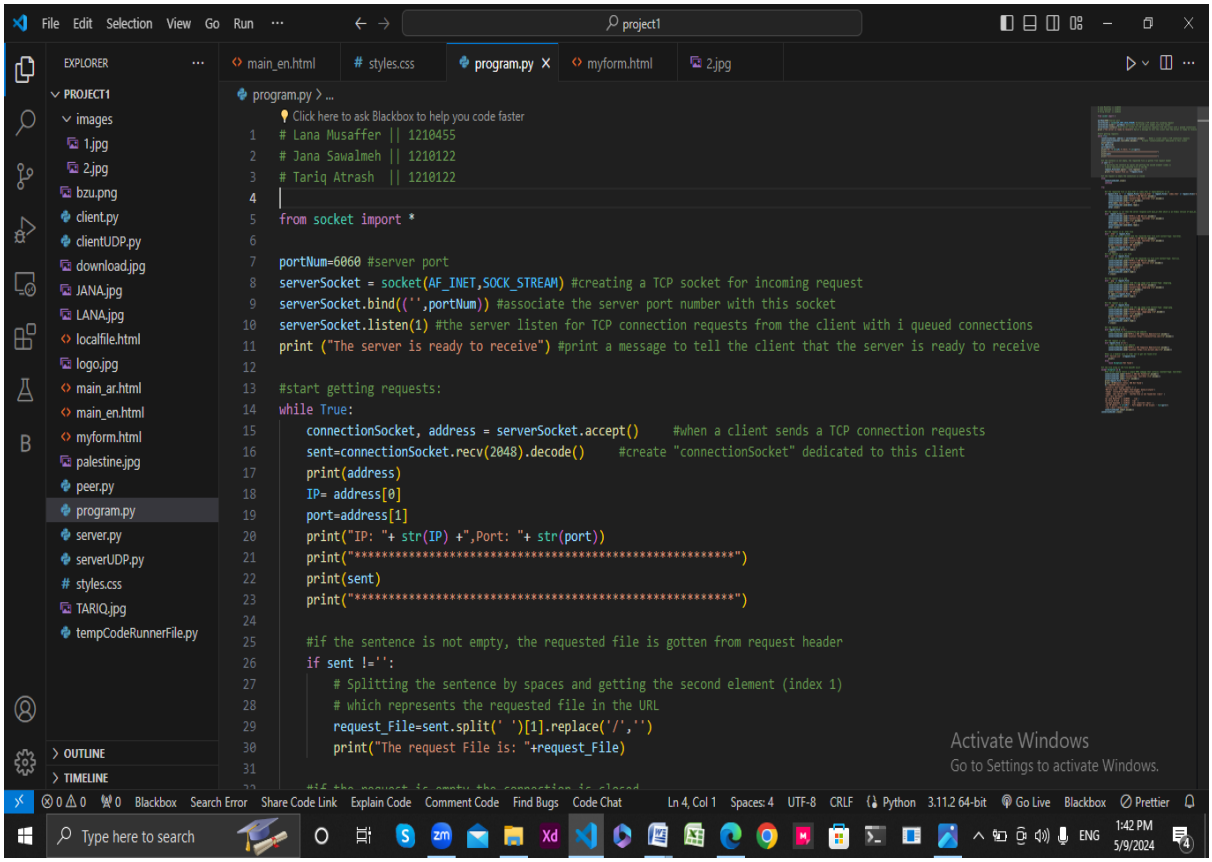
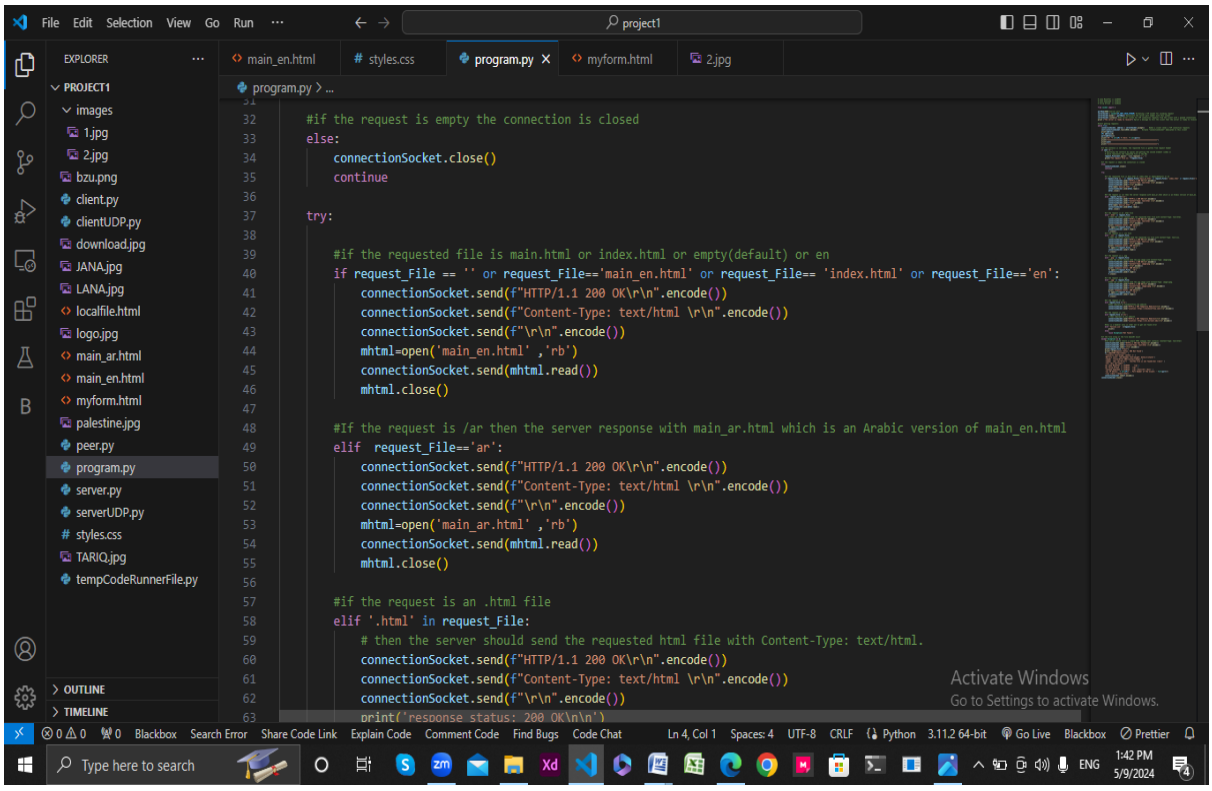
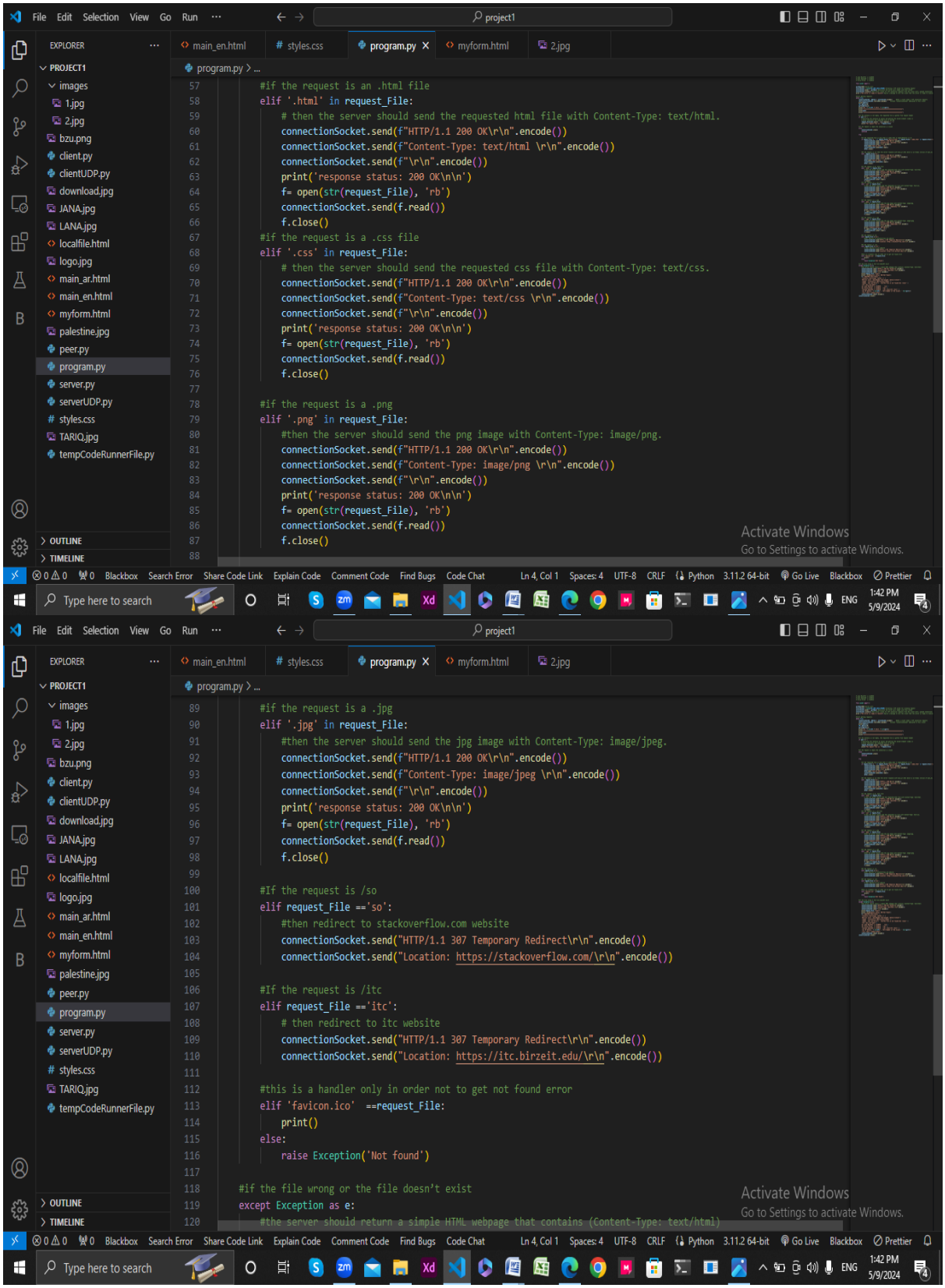


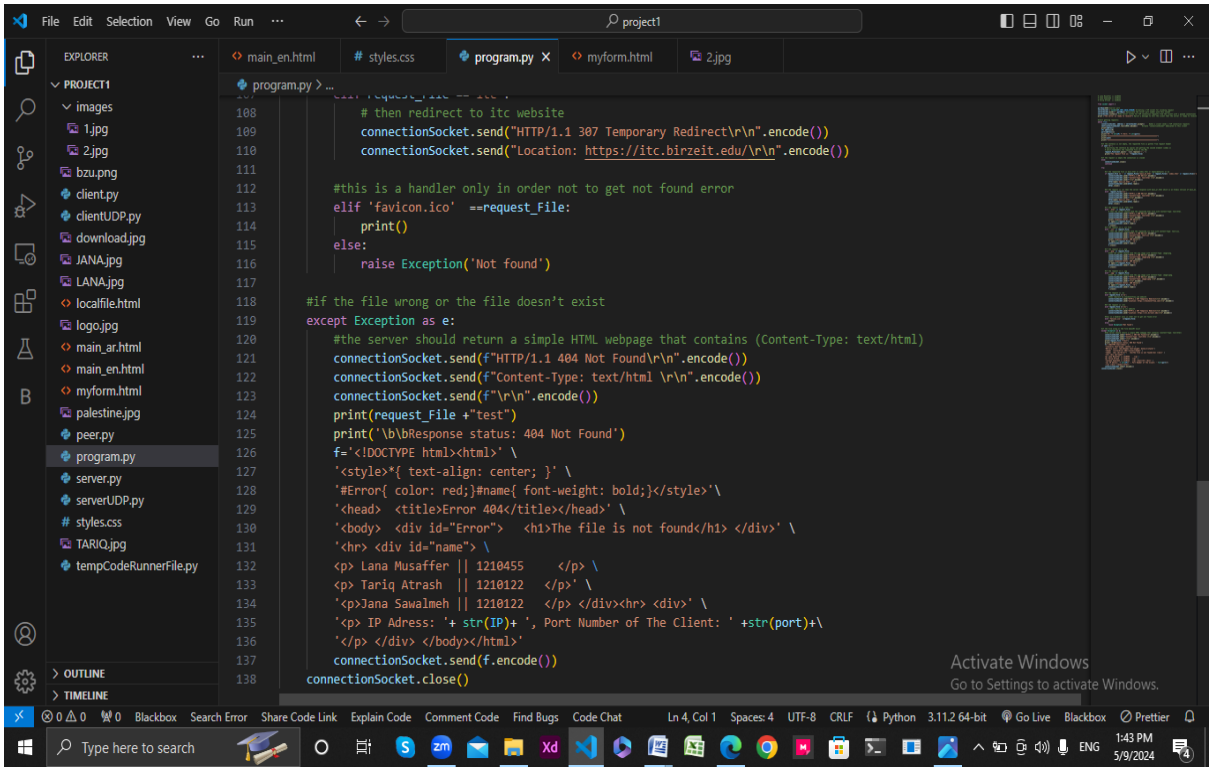
Figure 1.12

program.py code:

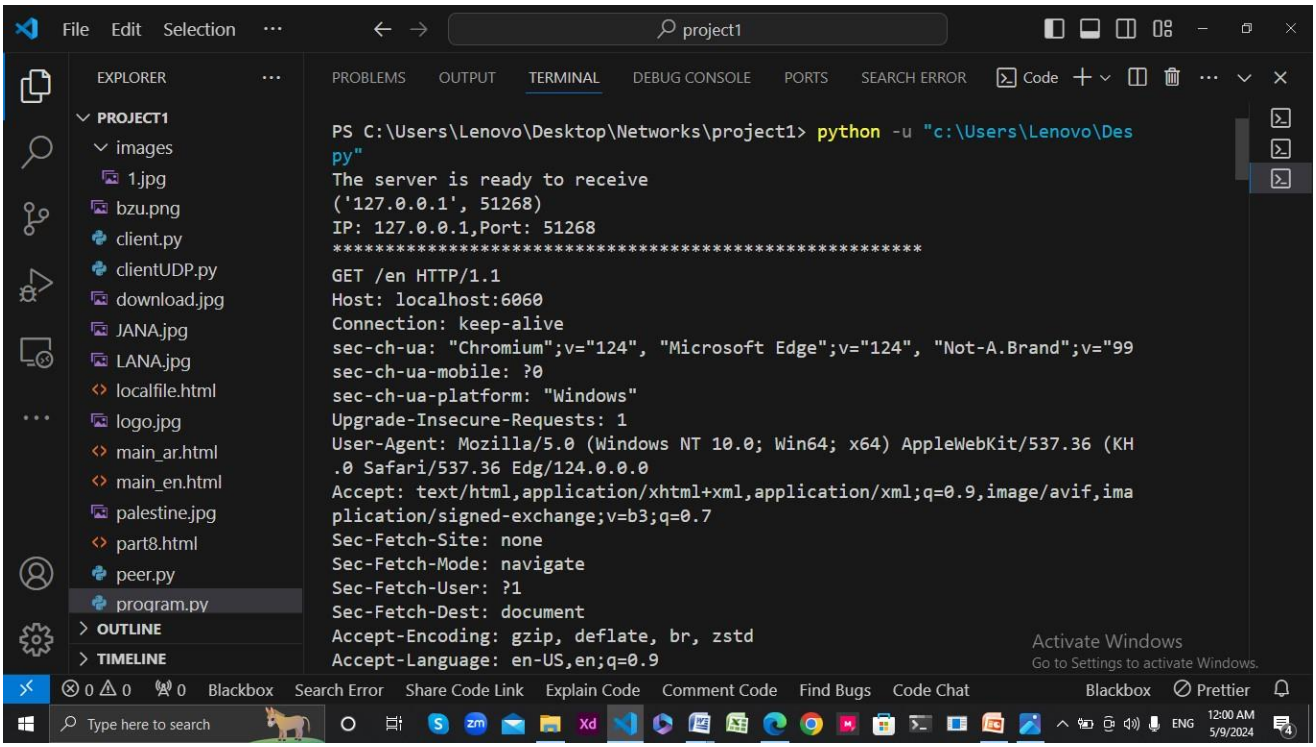


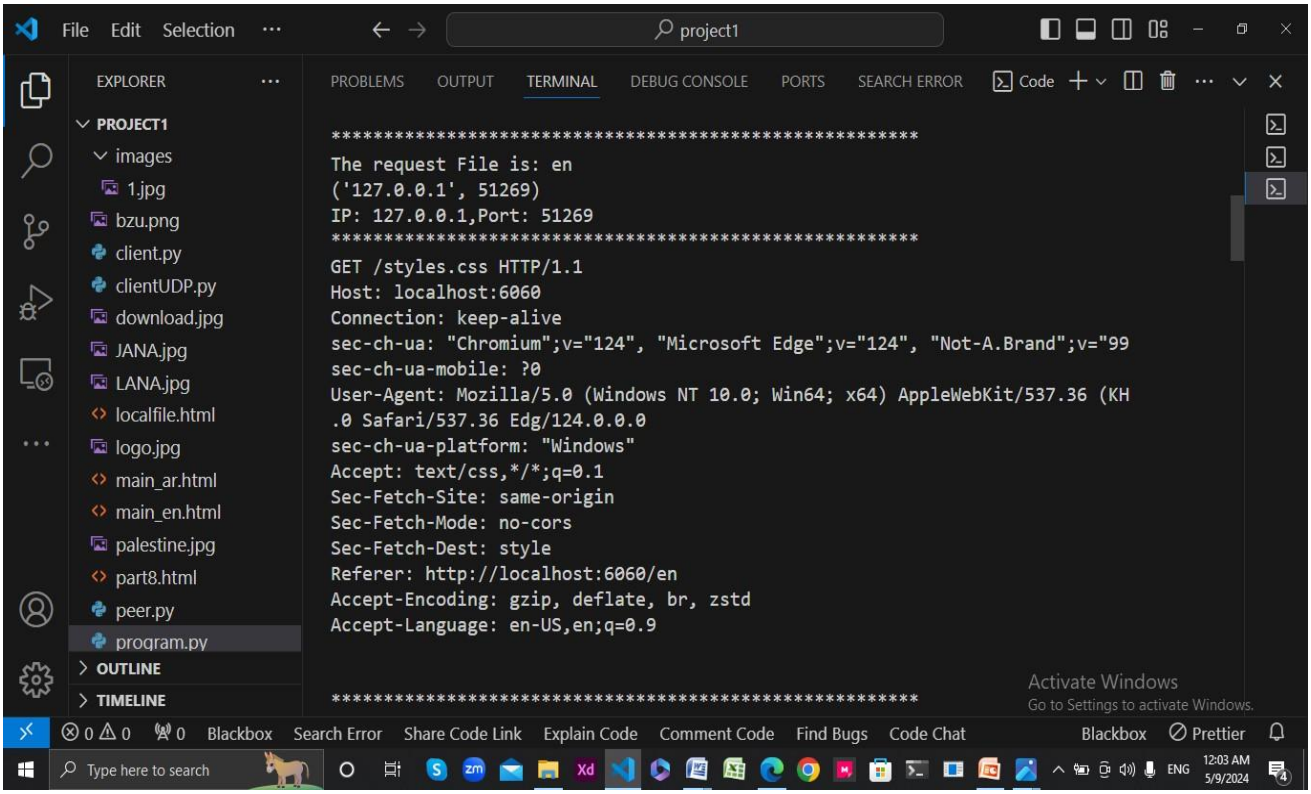


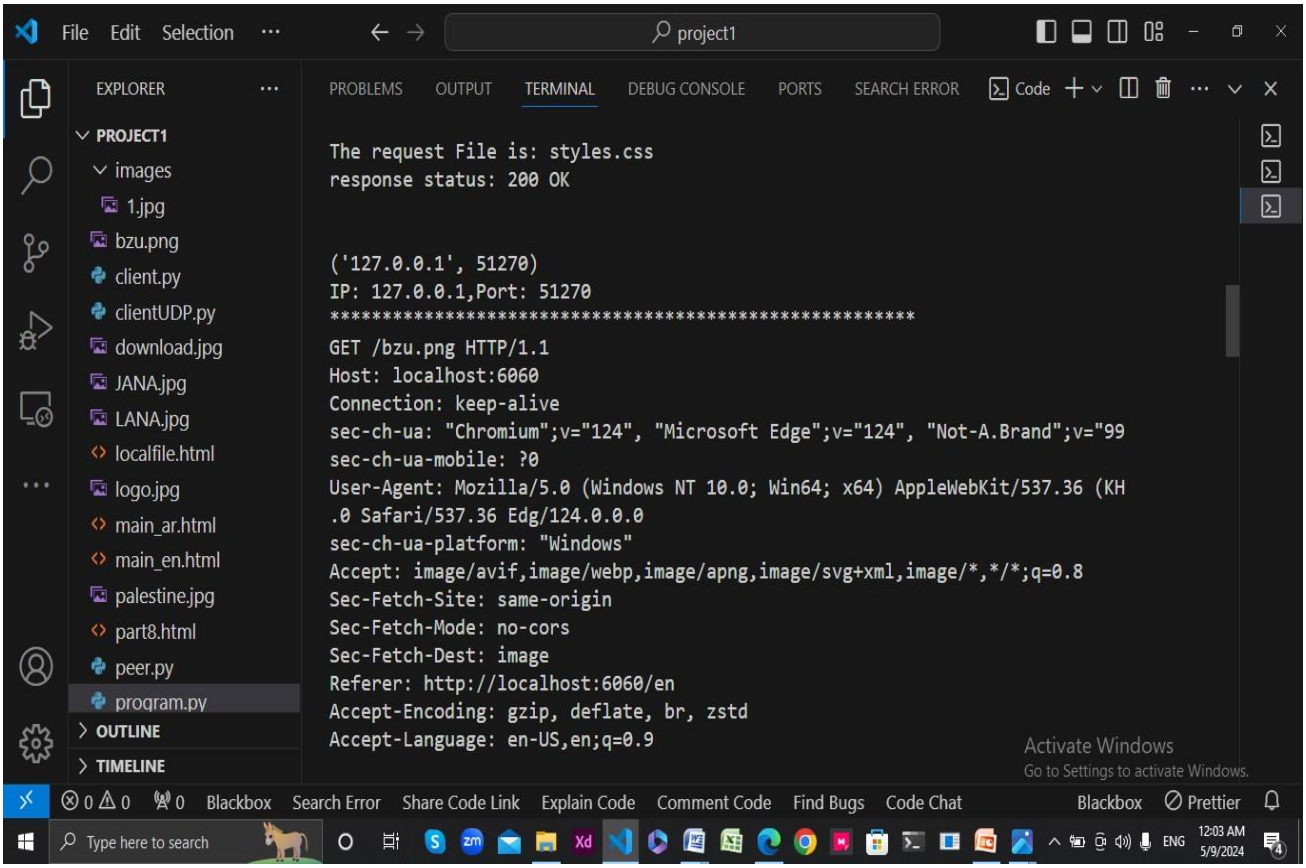

File Edit Selection View Go Run
project1
EXPLORER
PROJECT1
images
1.jpg
2.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
myform.html
palestine.jpg
peer.py
program.py
server.py
serverUDP.py
styles.css
TARIQ.jpg
tempCodeRunnerFile.py
OUTLINE
TIMELINE
main_en.html
styles.css
program.py
myform.html
2.jpg
program.py > ...
#if the request is an .html file
elif '.html' in request_File:
# then the server should send the requested html file with Content-Type: text/html.
connectionSocket.send(f"HTTP/1.1 200 OK\r\n".encode())
connectionSocket.send(f"Content-Type: text/html \r\n".encode())
connectionSocket.send(f"\r\n".encode())
print('response status: 200 OK\n\n')
f= open(str(request_File), 'rb')
connectionSocket.send(f.read())
f.close()
#if the request is a .css file
elif '.css' in request_File:
# then the server should send the requested css file with Content-Type: text/css.
connectionSocket.send(f"HTTP/1.1 200 OK\r\n".encode())
connectionSocket.send(f"Content-Type: text/css \r\n".encode())
connectionSocket.send(f"\r\n".encode())
print('response status: 200 OK\n\n')
f= open(str(request_File), 'rb')
connectionSocket.send(f.read())
f.close()
#if the request is a .png
elif '.png' in request_File:
#then the server should send the png image with Content-Type: image/png.
connectionSocket.send(f"HTTP/1.1 200 OK\r\n".encode())
connectionSocket.send(f"Content-Type: image/png \r\n".encode())
connectionSocket.send(f"\r\n".encode())
print('response status: 200 OK\n\n')
f= open(str(request_File), 'rb')
connectionSocket.send(f.read())
f.close()
Activate Windows
Go to Settings to activate Windows.
Ln 4, Col 1 Spaces: 4 UTF-8 CRLF Python 3.11.2 64-bit Go Live Blackbox Prettier
Type here to search
ENG
1:42 PM
5/9/2024
#if the request is a .jpg
elif '.jpg' in request_File:
#then the server should send the jpg image with Content-Type: image/jpeg.
connectionSocket.send(f"HTTP/1.1 200 OK\r\n".encode())
connectionSocket.send(f"Content-Type: image/jpeg \r\n".encode())
connectionSocket.send(f"\r\n".encode())
print('response status: 200 OK\n\n')
f= open(str(request_File), 'rb')
connectionSocket.send(f.read())
f.close()
#If the request is /so
elif request_File =='so':
#then redirect to stackoverflow.com website
connectionSocket.send("HTTP/1.1 307 Temporary Redirect\r\n".encode())
connectionSocket.send("Location: https://stackoverflow.com/\r\n".encode())
#If the request is /itc
elif request_File =='itc':
# then redirect to itc website
connectionSocket.send("HTTP/1.1 307 Temporary Redirect\r\n".encode())
connectionSocket.send("Location: https://itc.birzeit.edu/\r\n".encode())
#this is a handler only in order not to get not found error
elif 'favicon.ico' ==request_File:
print()
else:
raise Exception('Not found')
#if the file wrong or the file doesn't exist
except Exception as e:
#the server should return a simple HTML webpage that contains (Content-Type: text/html)
Activate Windows
Go to Settings to activate Windows.
Ln 4, Col 1 Spaces: 4 UTF-8 CRLF Python 3.11.2 64-bit Go Live Blackbox Prettier
Type here to search
ENG
1:42 PM
5/9/2024



main_en.html HTTP request on the terminal window:




File Edit Selection
project1
EXPLORER
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS SEARCH ERROR
Code
PROJECT1
images
1.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
palestine.jpg
part8.html
peer.py
program.py
OUTLINE
TIMELINE
****
The request File is: en
('127.0.0.1', 51269)
IP: 127.0.0.1,Port: 51269
****
GET /styles.css HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KH
.0 Safari/537.36 Edg/124.0.0.0
sec-ch-ua-platform: "Windows"
Accept: text/css,*/*;q=0.1
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: style
Referer: http://localhost:6060/en
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
****
Activate Windows
Go to Settings to activate Windows.
Blackbox Search Error Share Code Link Explain Code Comment Code Find Bugs Code Chat
Blackbox Prettier
Type here to search
ENG
12:03 AM
5/9/2024


File Edit Selection
project1
EXPLORER
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS SEARCH ERROR
Code
PROJECT1
images
1.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
palestine.jpg
part8.html
peer.py
program.py
OUTLINE
TIMELINE
The request File is: styles.css
response status: 200 OK
('127.0.0.1', 51270)
IP: 127.0.0.1,Port: 51270
****
GET /bzu.png HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KH
.0 Safari/537.36 Edg/124.0.0.0
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6060/en
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
Activate Windows
Go to Settings to activate Windows.
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Blackbox Prettier
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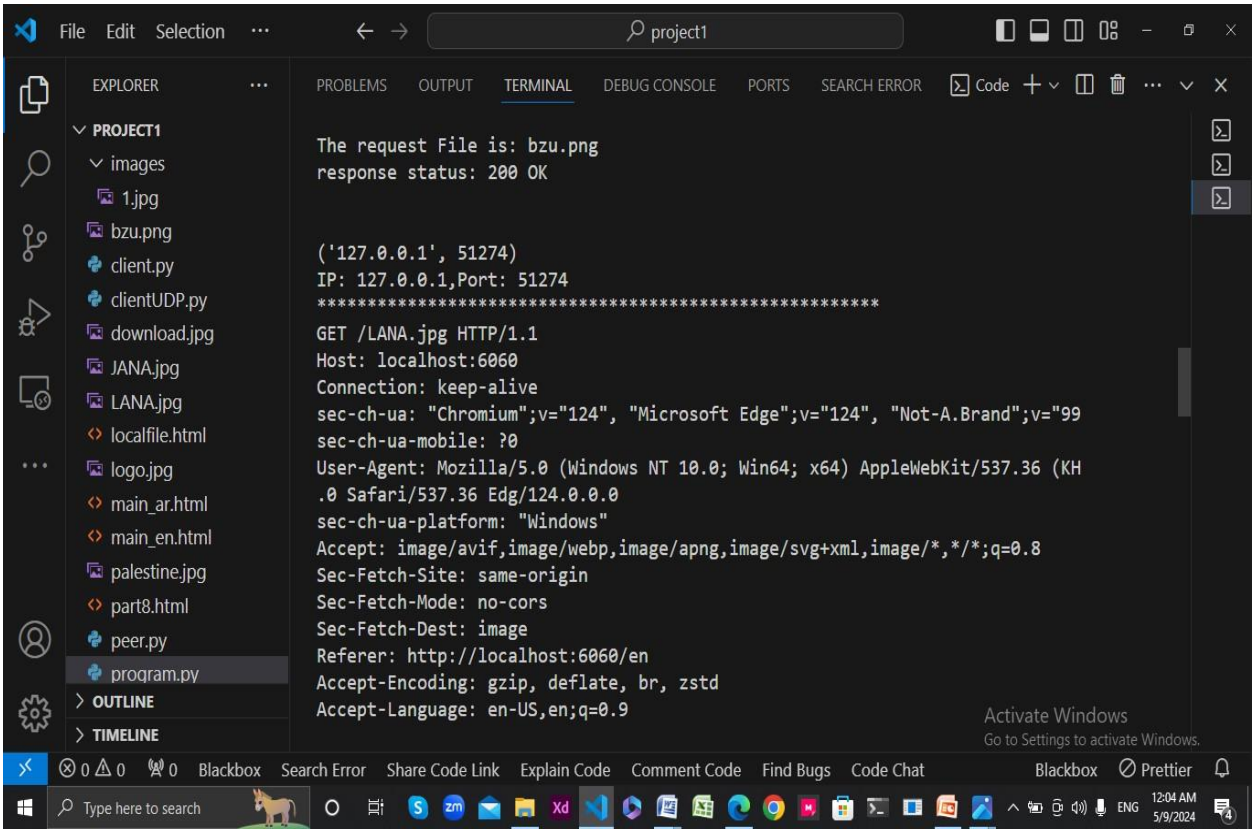
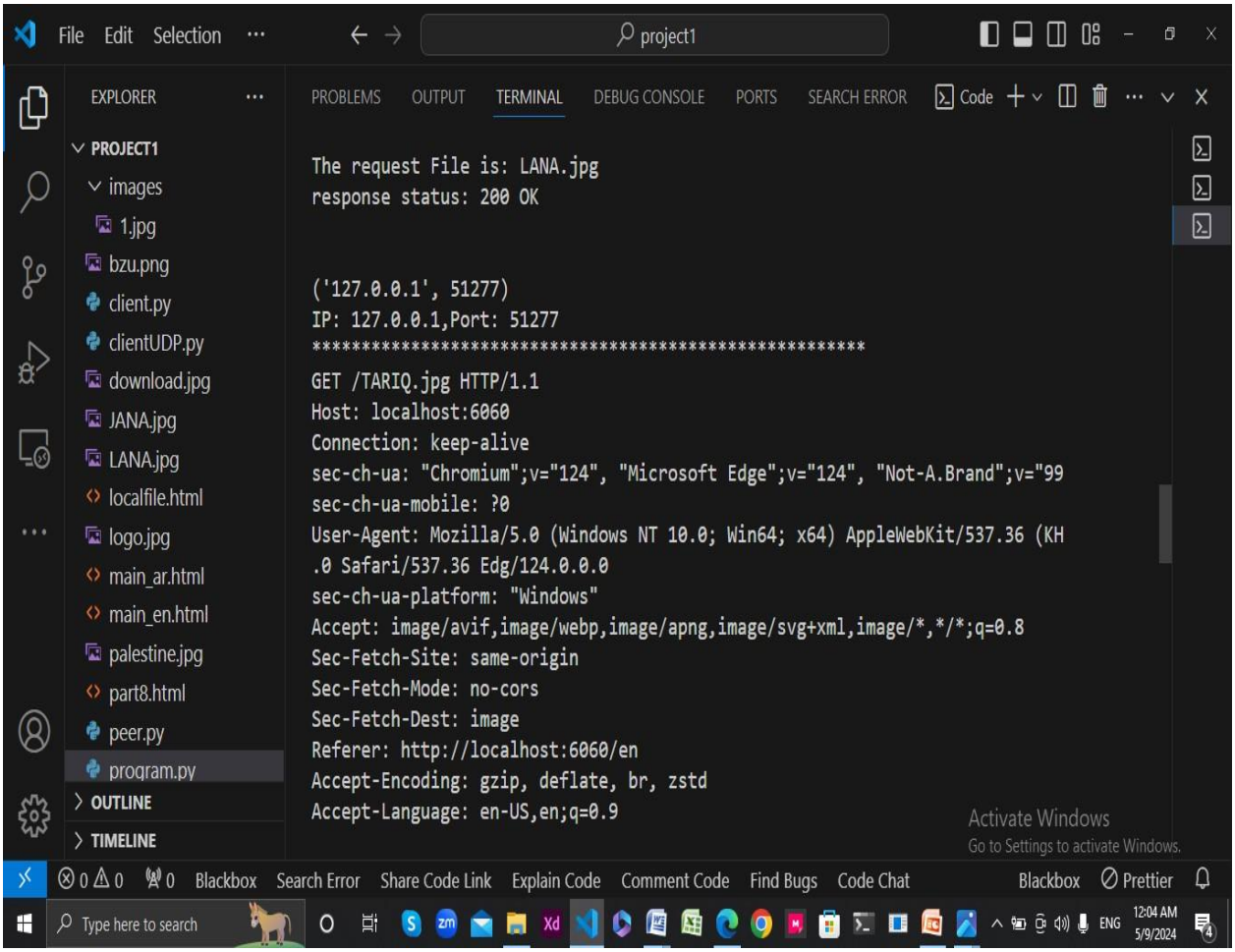
ENG
12:03 AM
5/9/2024


File Edit Selection
project1
EXPLORER
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS SEARCH ERROR
Code
PROJECT1
images
1.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
palestine.jpg
part8.html
peer.py
program.py
OUTLINE
TIMELINE
The request File is: bzu.png
response status: 200 OK
('127.0.0.1', 51274)
IP: 127.0.0.1,Port: 51274
****
GET /LANA.jpg HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KH
.0 Safari/537.36 Edg/124.0.0.0
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6060/en
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
Activate Windows
Go to Settings to activate Windows.
Blackbox Search Error Share Code Link Explain Code Comment Code Find Bugs Code Chat
Blackbox Prettier
Type here to search
ENG 12:04 AM 5/9/2024


File Edit Selection
project1
EXPLORER
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS SEARCH ERROR
Code
PROJECT1
images
1.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
palestine.jpg
part8.html
peer.py
program.py
OUTLINE
TIMELINE
The request File is: LANA.jpg
response status: 200 OK
('127.0.0.1', 51277)
IP: 127.0.0.1,Port: 51277
****
GET /TARIQ.jpg HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KH
.0 Safari/537.36 Edg/124.0.0.0
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6060/en
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
Activate Windows
Go to Settings to activate Windows.
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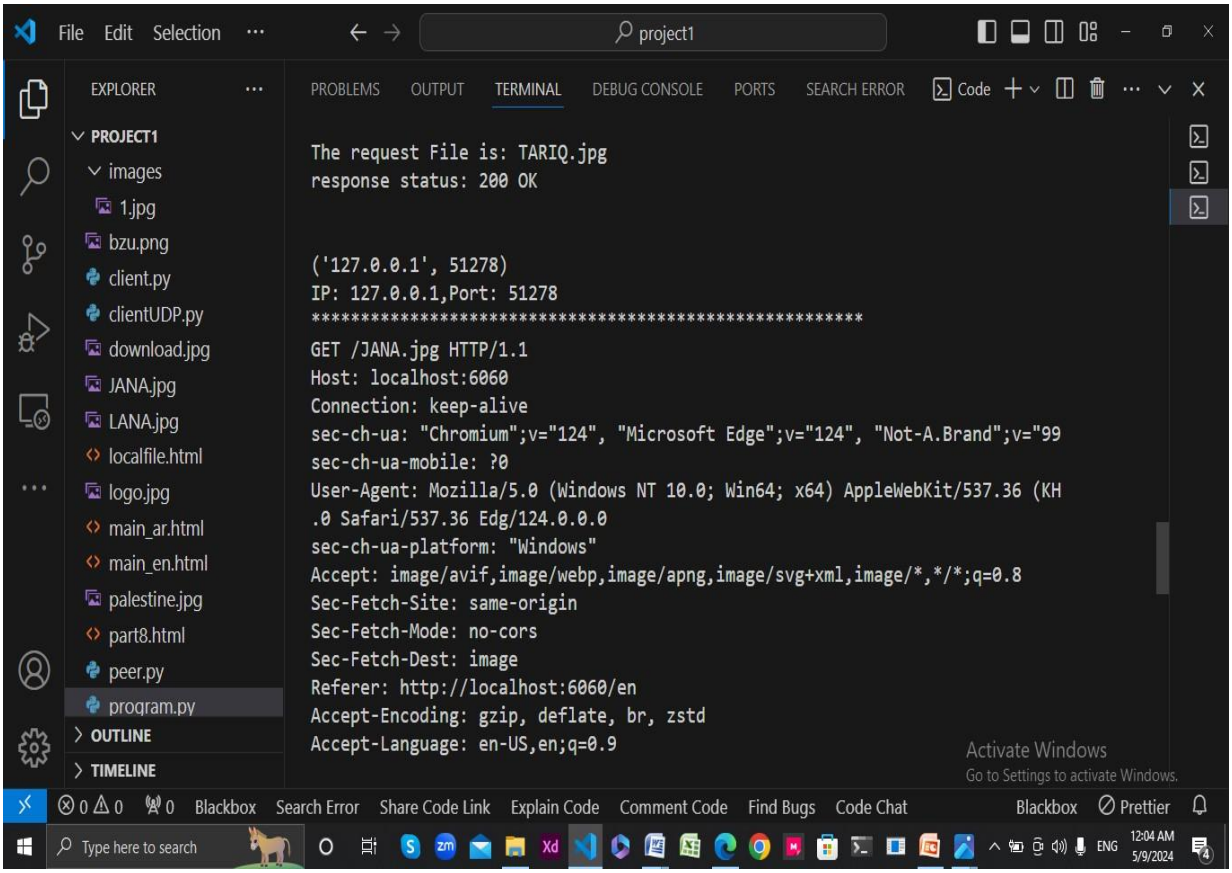
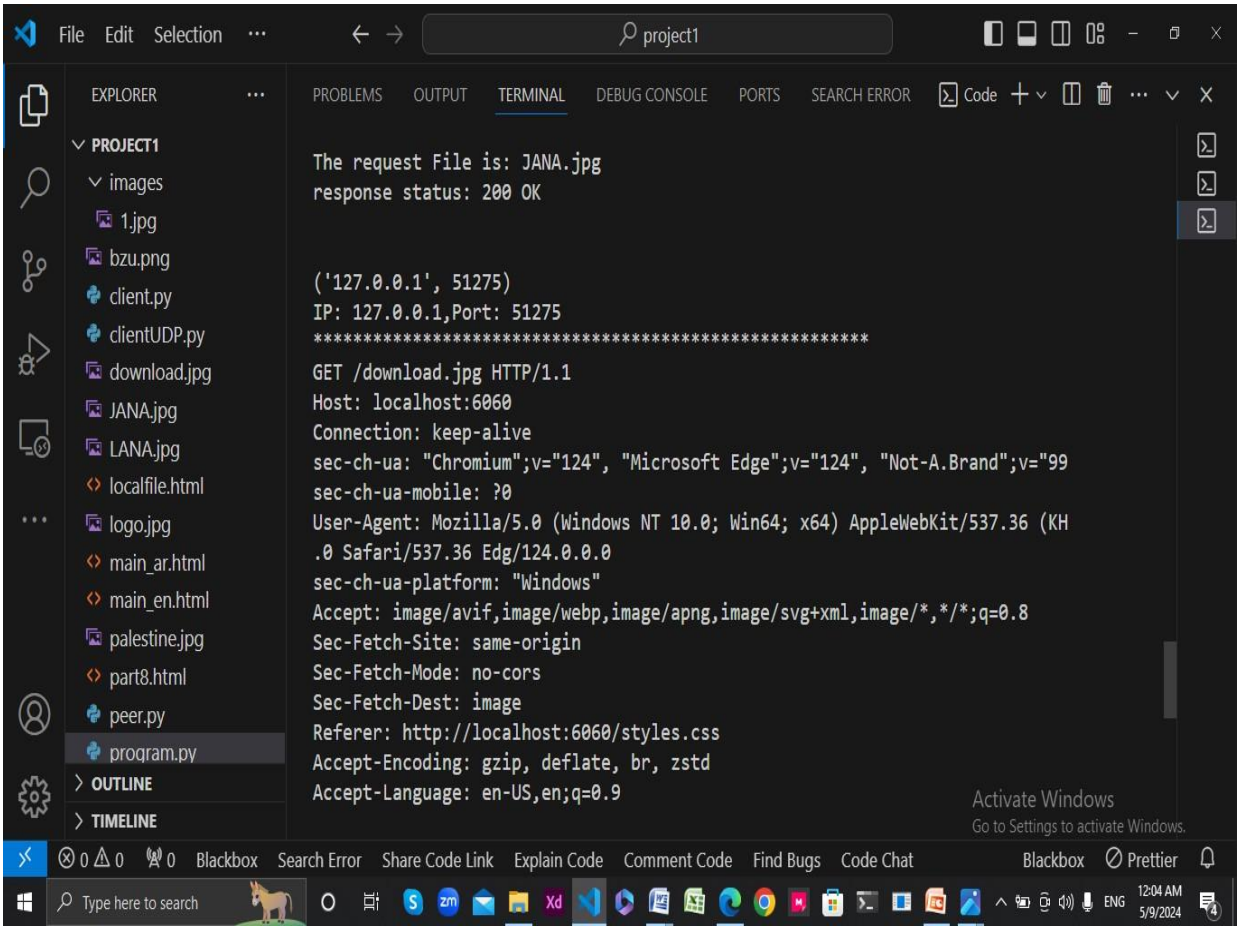
Blackbox Prettier
Type here to search
ENG 12:04 AM 5/9/2024


File Edit Selection
project1
EXPLORER
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS SEARCH ERROR
Code
PROJECT1
images
1.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
palestine.jpg
part8.html
peer.py
program.py
OUTLINE
TIMELINE
The request File is: TARIQ.jpg
response status: 200 OK
('127.0.0.1', 51278)
IP: 127.0.0.1,Port: 51278
****
GET /JANA.jpg HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KH
.0 Safari/537.36 Edg/124.0.0.0
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6060/en
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
Activate Windows
Go to Settings to activate Windows.
Blackbox Search Error Share Code Link Explain Code Comment Code Find Bugs Code Chat
Blackbox Prettier
Type here to search
ENG
12:04 AM
5/9/2024


File Edit Selection
project1
EXPLORER
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS SEARCH ERROR
Code
PROJECT1
images
1.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
palestine.jpg
part8.html
peer.py
program.py
OUTLINE
TIMELINE
The request File is: JANA.jpg
response status: 200 OK
('127.0.0.1', 51275)
IP: 127.0.0.1,Port: 51275
****
GET /download.jpg HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KH
.0 Safari/537.36 Edg/124.0.0.0
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6060/styles.css
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
Activate Windows
Go to Settings to activate Windows.
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Blackbox Prettier
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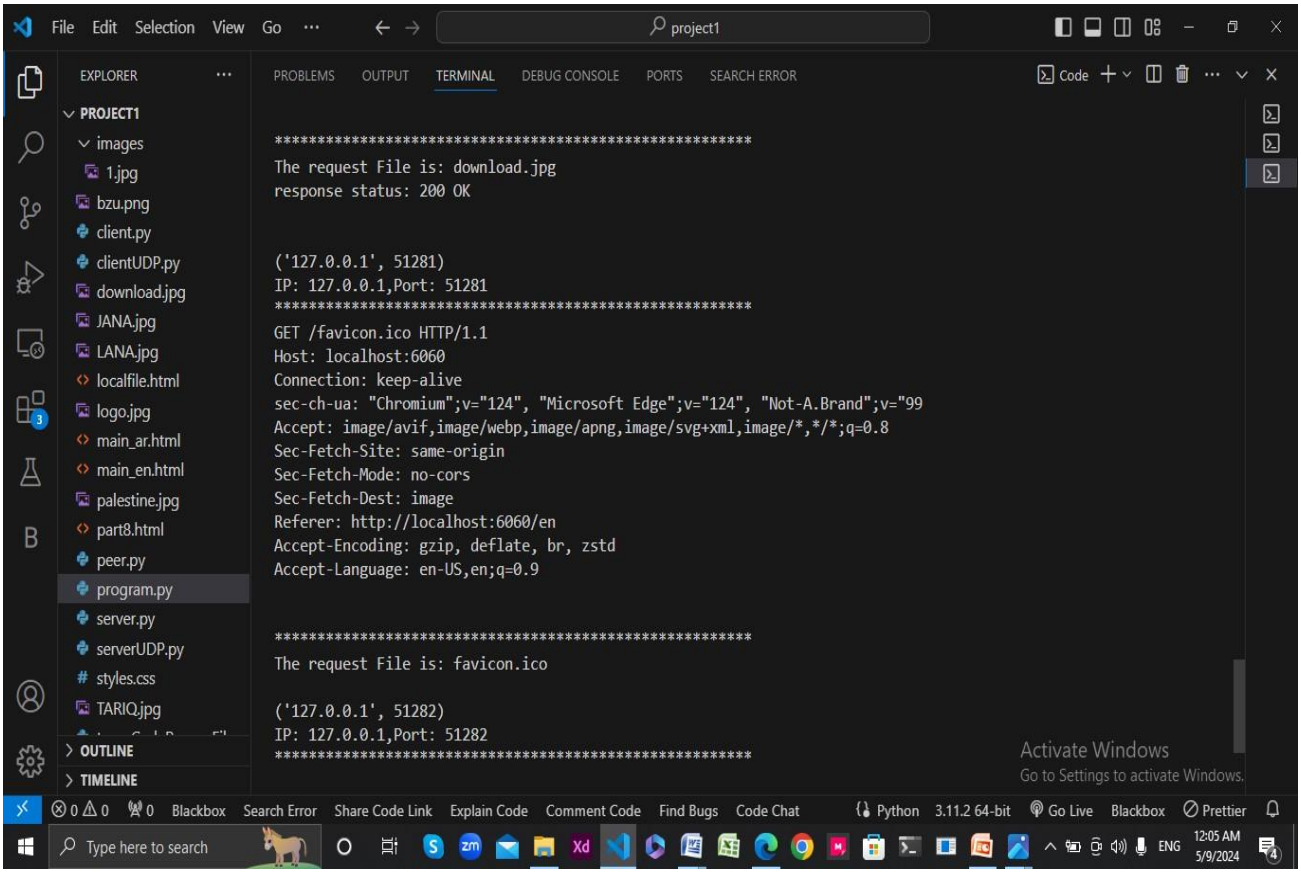
ENG
12:04 AM
5/9/2024


File Edit Selection View Go
project1
EXPLORER
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS SEARCH ERROR
PROJECT1
images
1.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
palestine.jpg
part8.html
peer.py
program.py
server.py
serverUDP.py
styles.css
TARIQ.jpg
OUTLINE
TIMELINE
****
The request File is: download.jpg
response status: 200 OK
('127.0.0.1', 51281)
IP: 127.0.0.1,Port: 51281
****
GET /favicon.ico HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6060/en
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
****
The request File is: favicon.ico
('127.0.0.1', 51282)
IP: 127.0.0.1,Port: 51282
****
Activate Windows
Go to Settings to activate Windows.
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Python 3.11.2 64-bit
Go Live
Blackbox
Prettier
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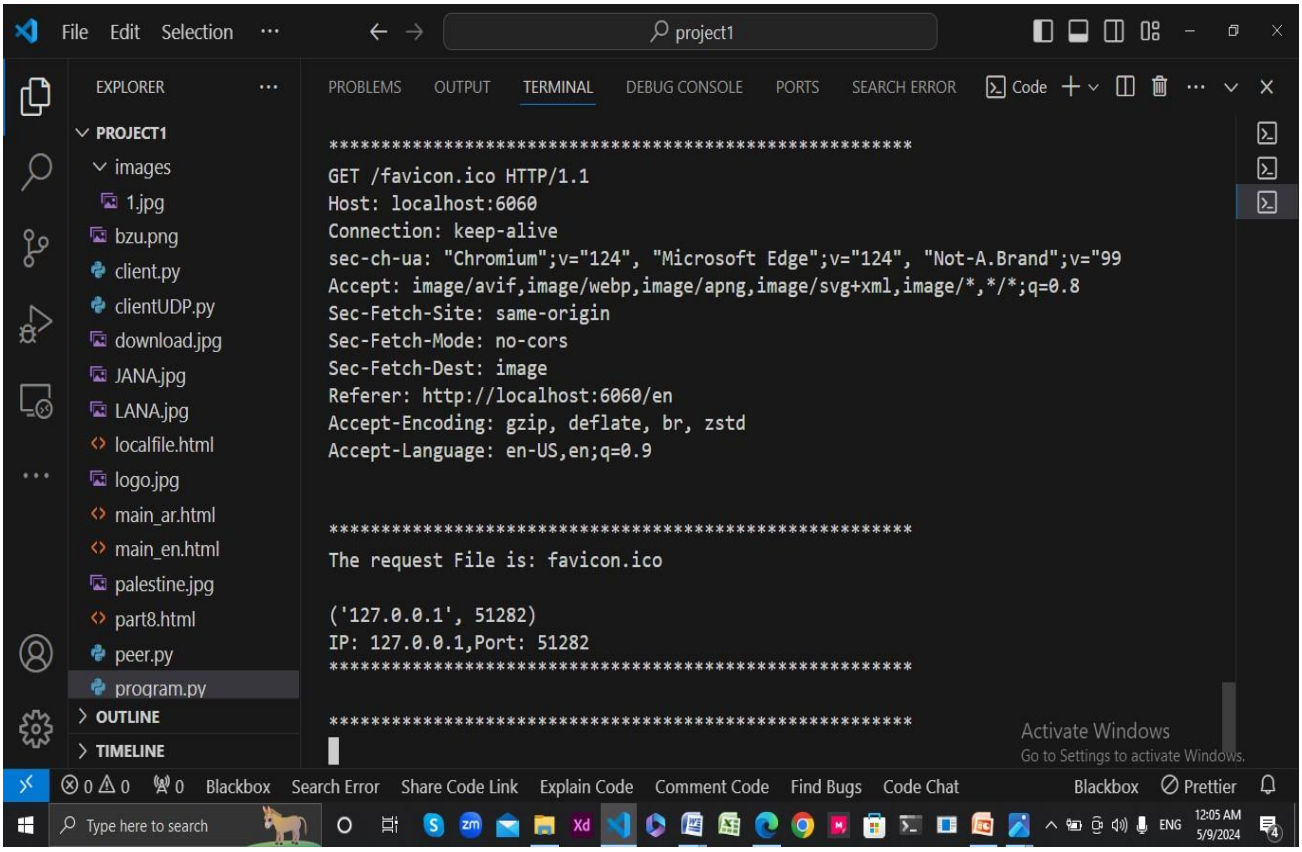
ENG
12:05 AM
5/9/2024


File Edit Selection
project1
EXPLORER
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS SEARCH ERROR
PROJECT1
images
1.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
palestine.jpg
part8.html
peer.py
program.py
OUTLINE
TIMELINE
****
GET /favicon.ico HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6060/en
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
****
The request File is: favicon.ico
('127.0.0.1', 51282)
IP: 127.0.0.1,Port: 51282
****
****
Activate Windows
Go to Settings to activate Windows.
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Blackbox
Prettier
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ENG
12:05 AM
5/9/2024

On our web page, you can visit W3schools website by clicking on the button:

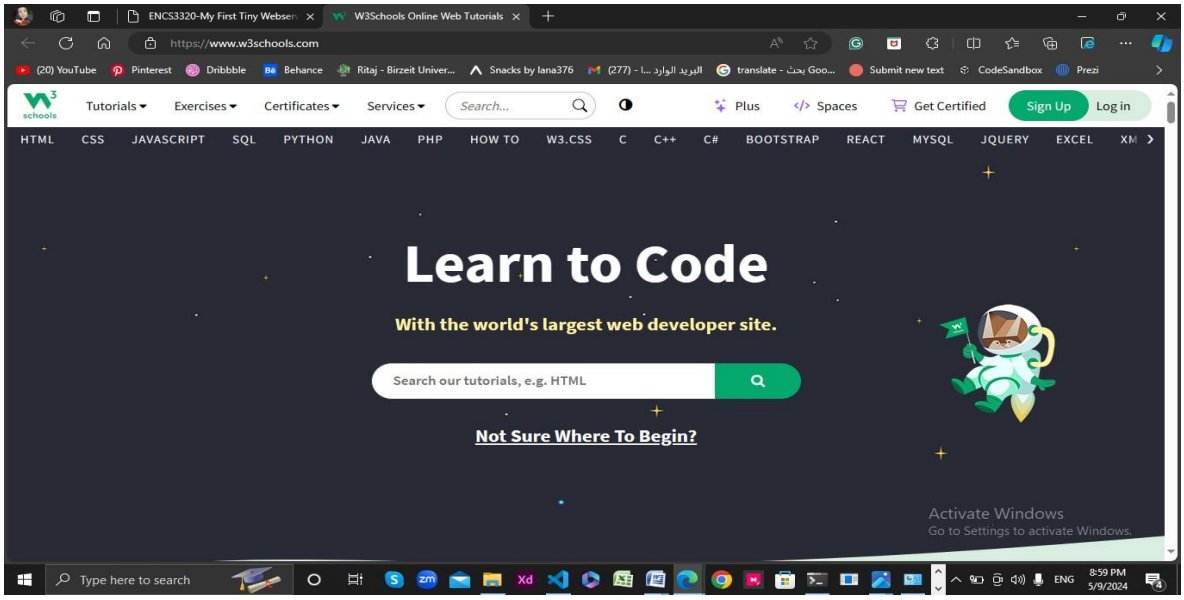


Figure 1.14

2. **If the request is /ar then the server response with main_ar.html which is an Arabic version of main_en.html**

main_ar.html page:

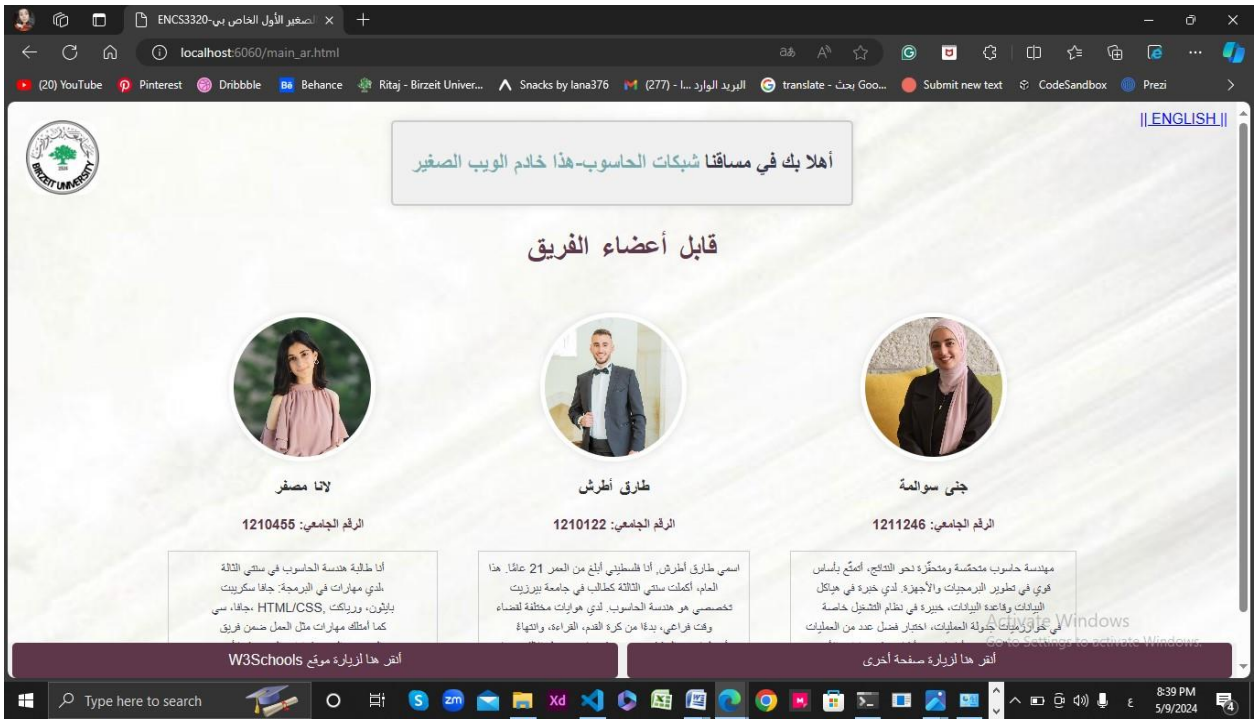


Figure 1.15

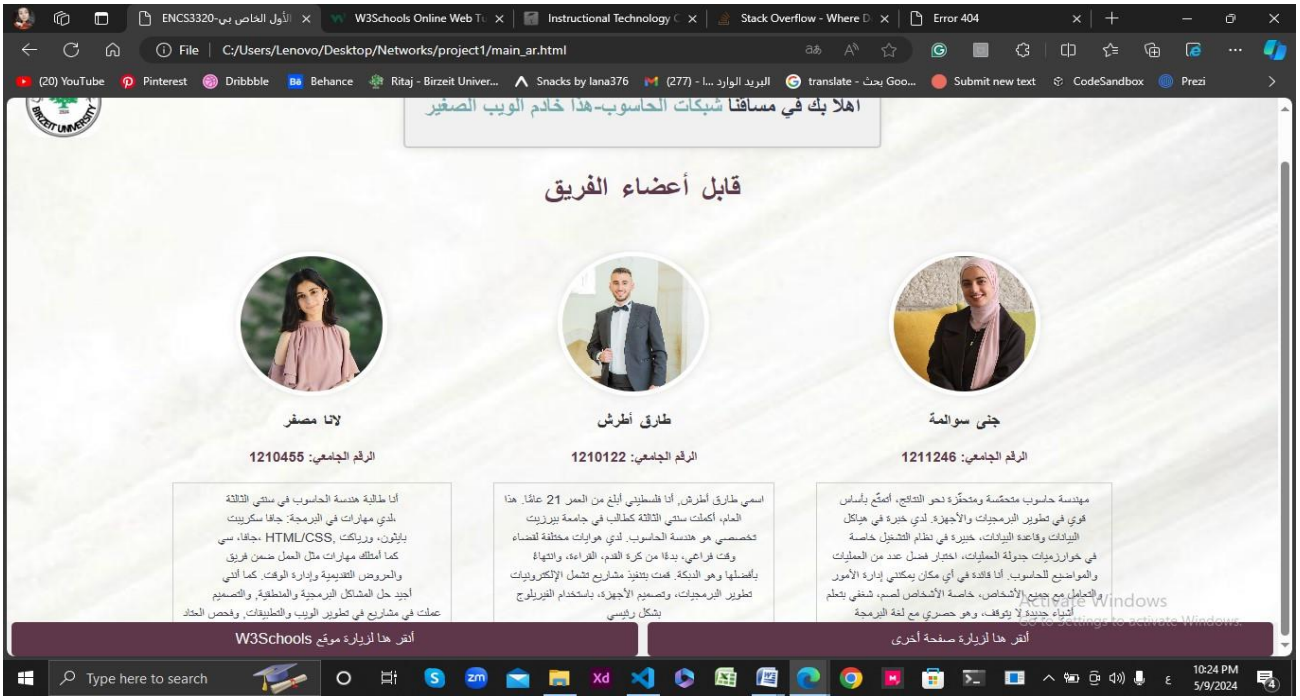
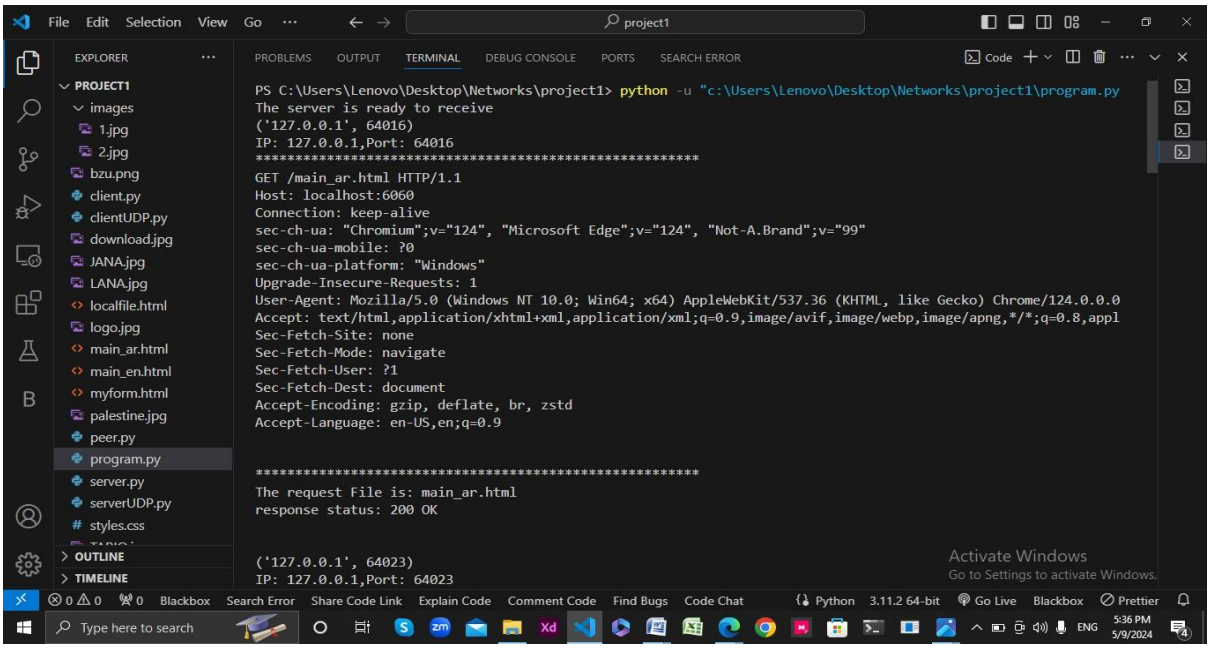
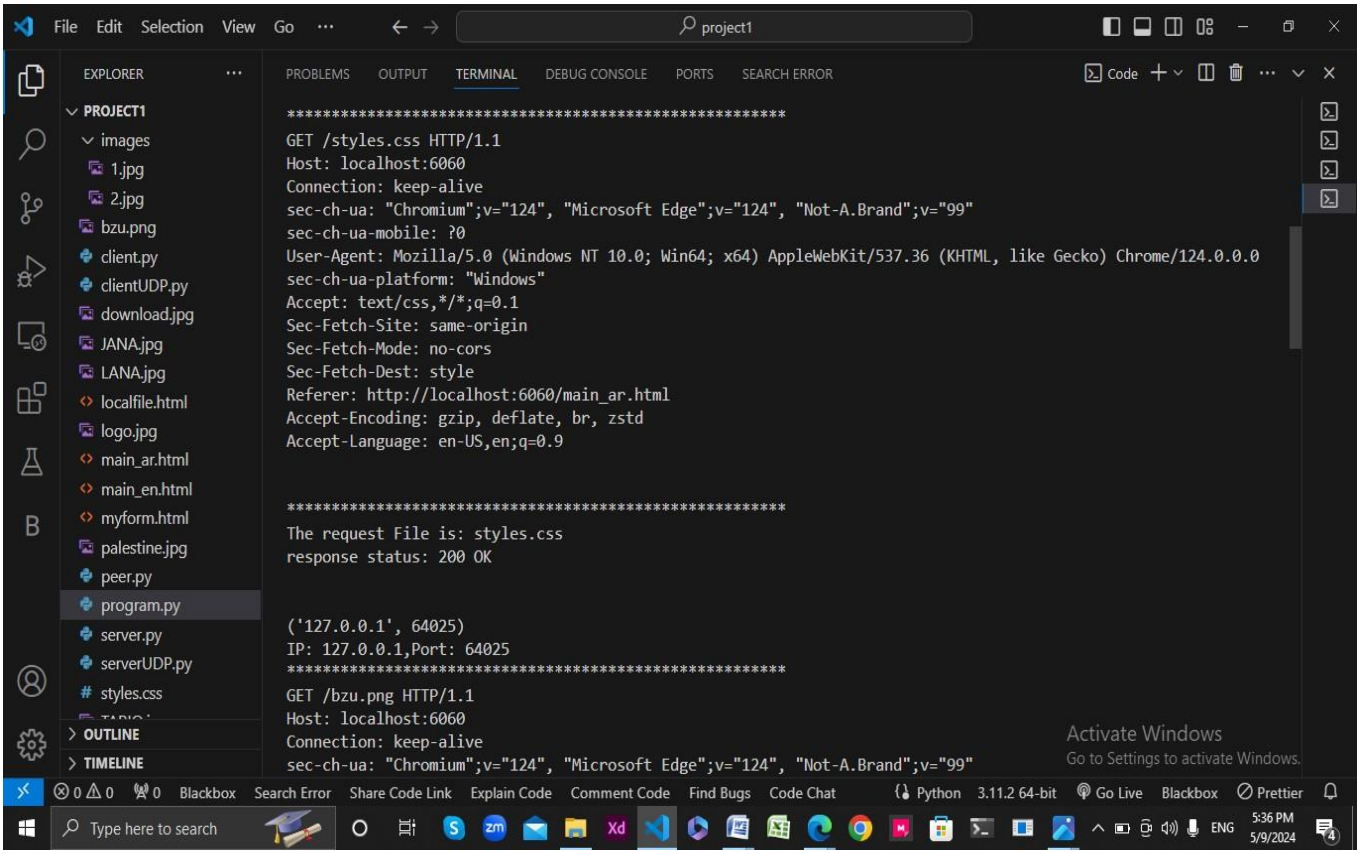


Figure 1.16

main_ar.html HTTP request on the terminal window:




File Edit Selection View Go ···
project1
EXPLORER
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS SEARCH ERROR
Code
PROJECT1
images
1.jpg
2.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
myform.html
palestine.jpg
peer.py
program.py
server.py
serverUDP.py
styles.css
OUTLINE
TIMELINE
****
GET /styles.css HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/124.0.0.0
sec-ch-ua-platform: "Windows"
Accept: text/css,*/*;q=0.1
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: style
Referer: http://localhost:6060/main_ar.html
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
****
The request File is: styles.css
response status: 200 OK
('127.0.0.1', 64025)
IP: 127.0.0.1,Port: 64025
****
GET /bzu.png HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99"
Activate Windows
Go to Settings to activate Windows.
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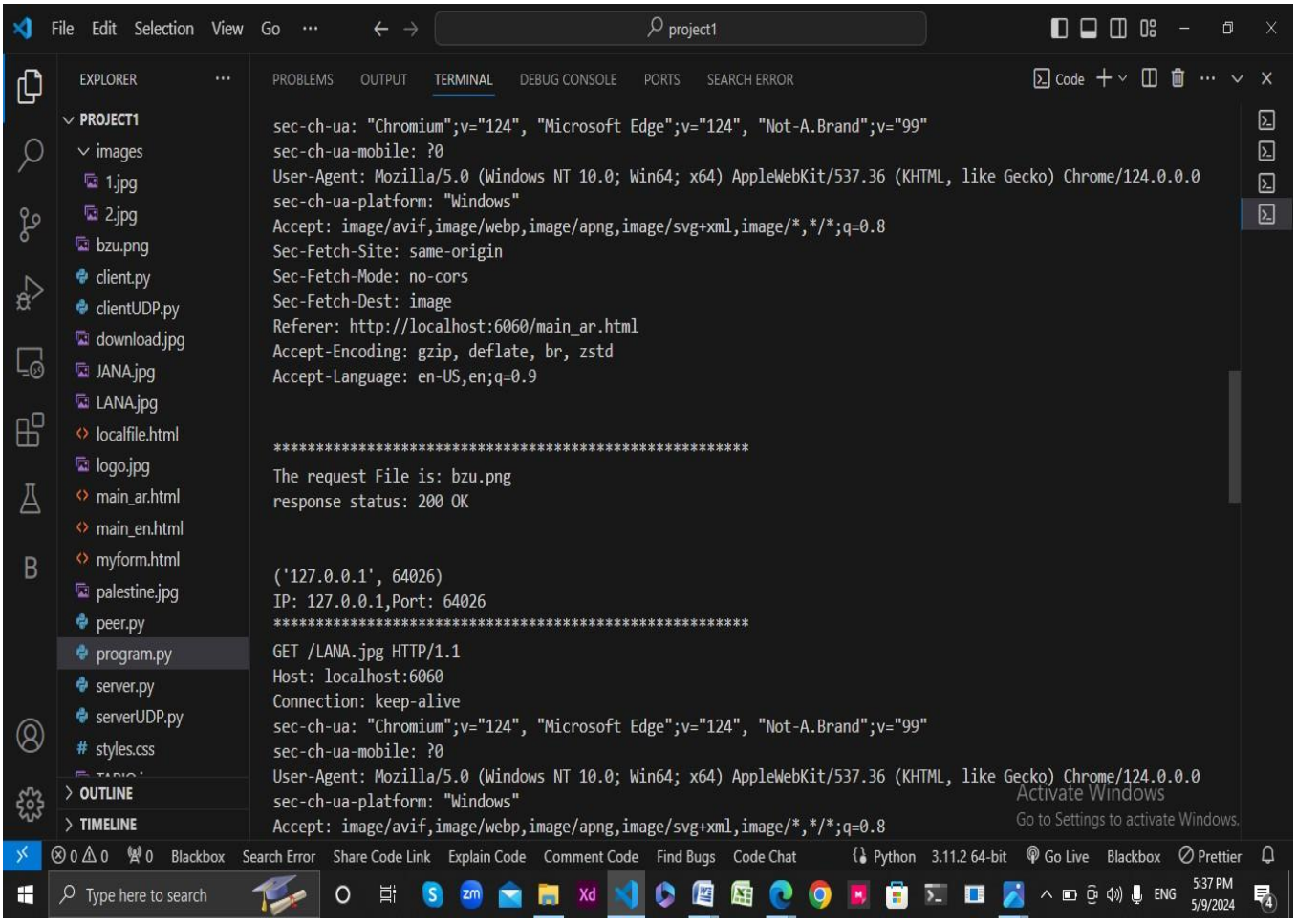
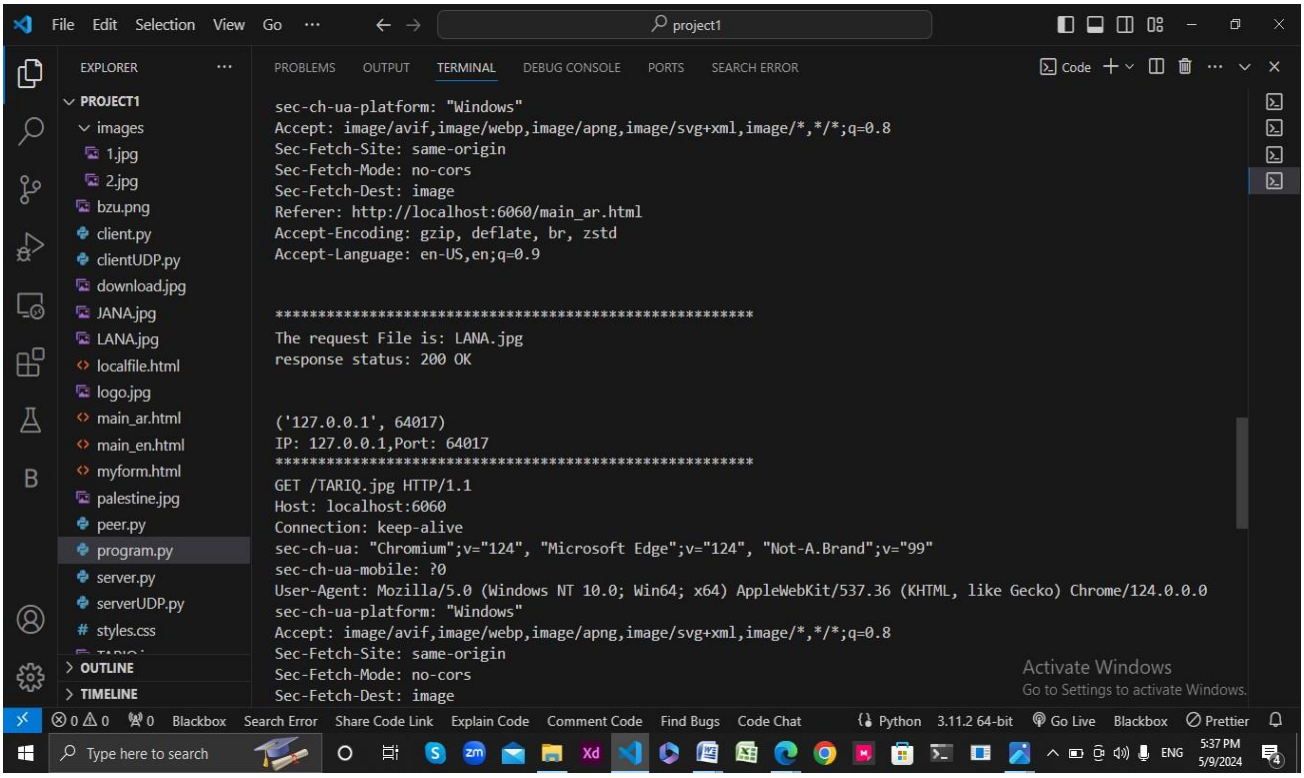
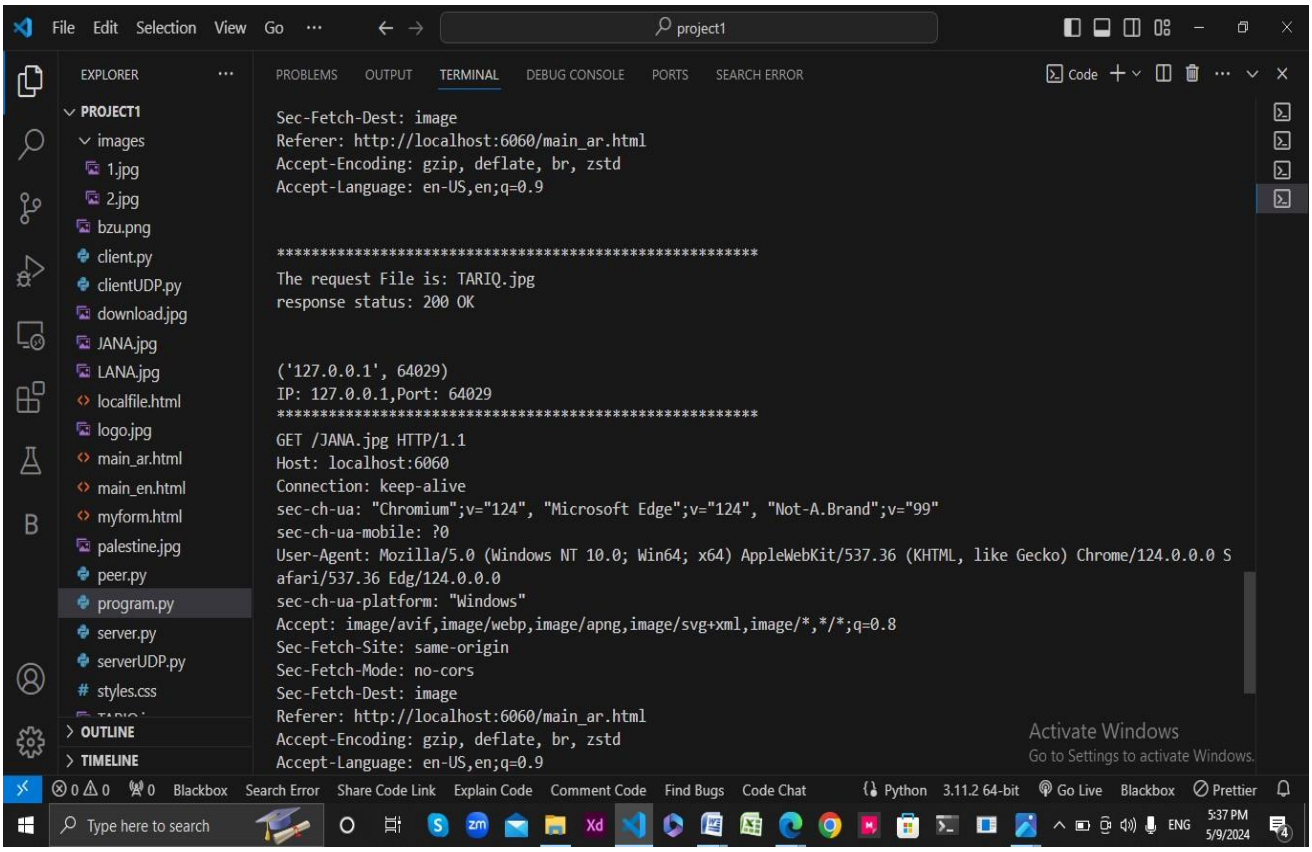
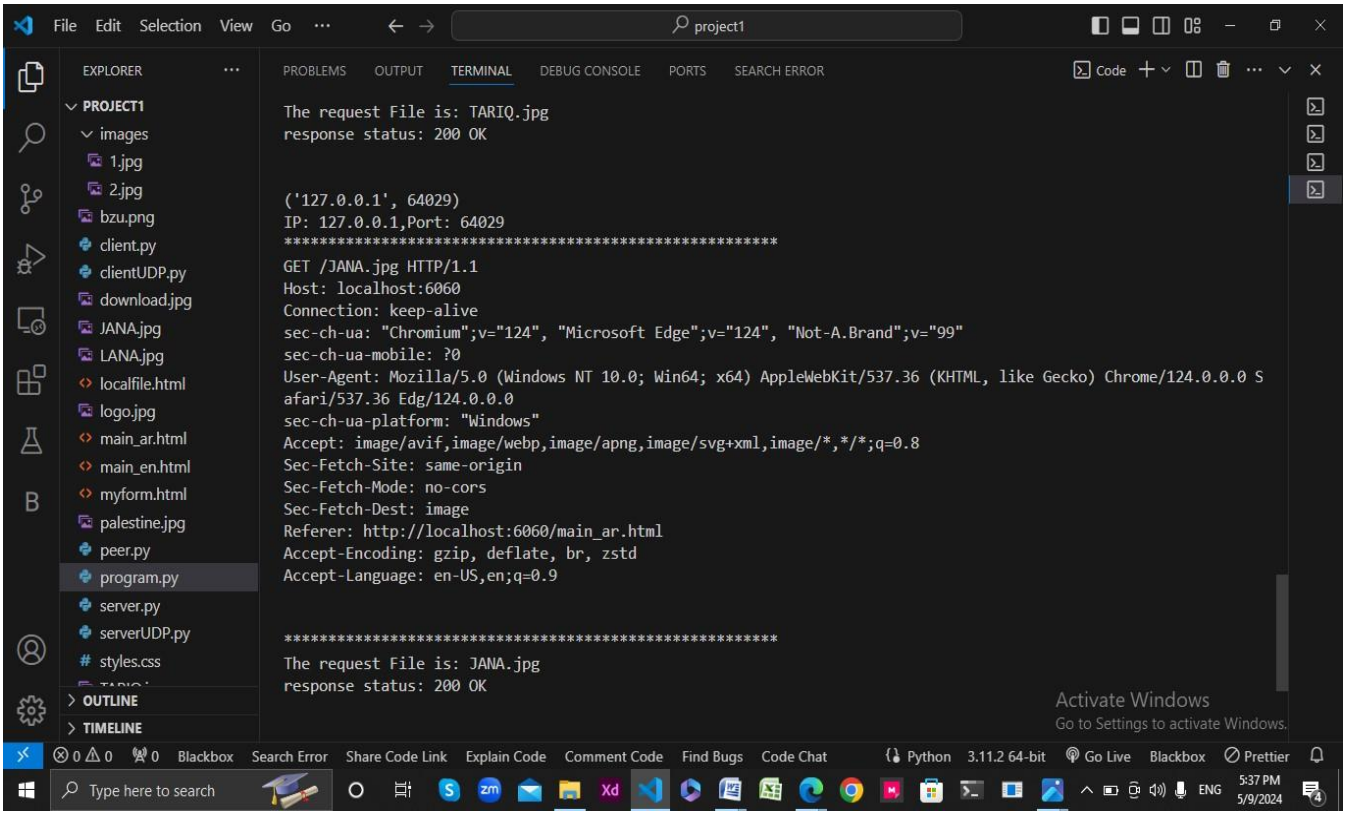
Python 3.11.2 64-bit Go Live Blackbox Prettier
Type here to search
ENG 5:36 PM 5/9/2024


File Edit Selection View Go ···
project1
EXPLORER
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS SEARCH ERROR
Code
PROJECT1
images
1.jpg
2.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
myform.html
palestine.jpg
peer.py
program.py
server.py
serverUDP.py
styles.css
OUTLINE
TIMELINE
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/124.0.0.0
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6060/main_ar.html
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
****
The request File is: bzu.png
response status: 200 OK
('127.0.0.1', 64026)
IP: 127.0.0.1,Port: 64026
****
GET /LANA.jpg HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/124.0.0.0
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Activate Windows
Go to Settings to activate Windows.
Blackbox Search Error Share Code Link Explain Code Comment Code Find Bugs Code Chat
Python 3.11.2 64-bit Go Live Blackbox Prettier
Type here to search
ENG 5:37 PM 5/9/2024

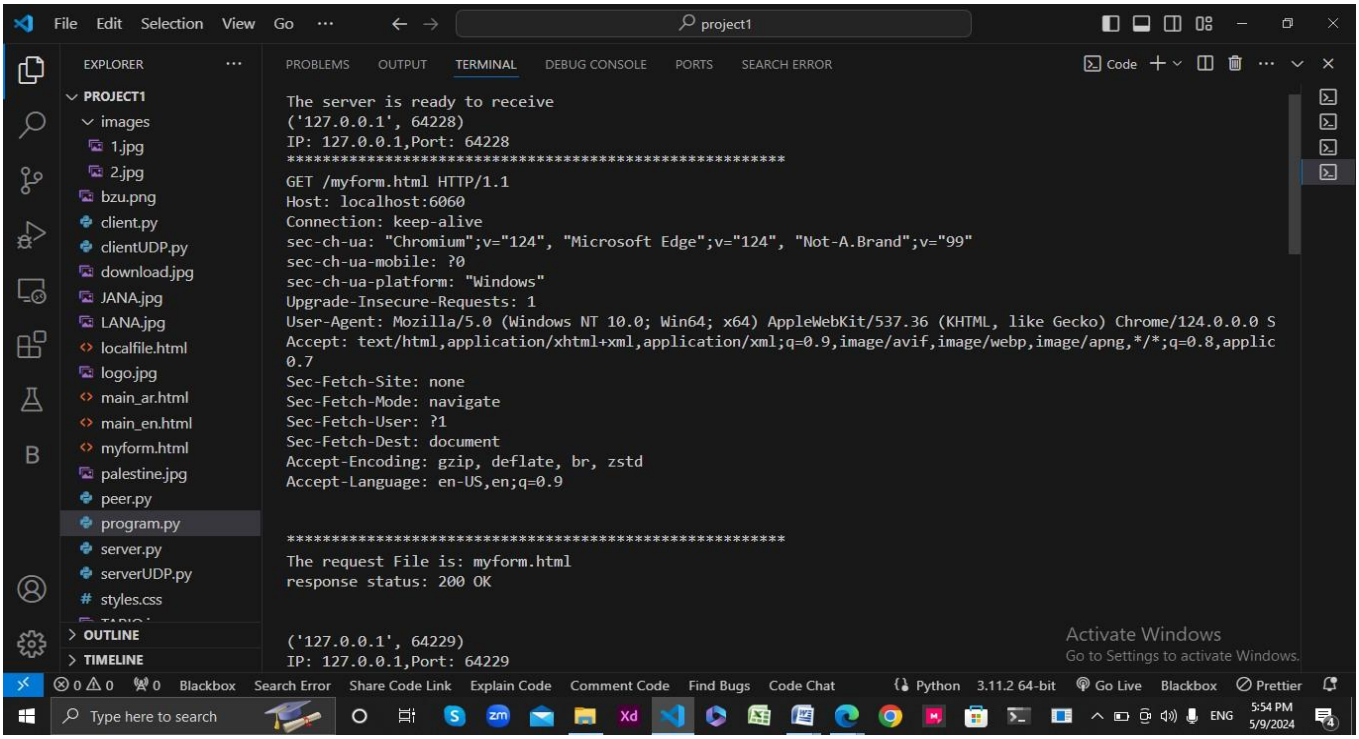

File Edit Selection View Go
project1
EXPLORER
PROJECT1
images
1.jpg
2.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
myform.html
palestine.jpg
peer.py
program.py
server.py
serverUDP.py
styles.css
OUTLINE
TIMELINE
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS SEARCH ERROR
Code
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6060/main_ar.html
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
****
The request File is: LANA.jpg
response status: 200 OK
('127.0.0.1', 64017)
IP: 127.0.0.1,Port: 64017
****
GET /TARIQ.jpg HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/124.0.0.0
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Activate Windows
Go to Settings to activate Windows.
Blackbox Search Error Share Code Link Explain Code Comment Code Find Bugs Code Chat
Python 3.11.2 64-bit
Go Live Blackbox Prettier
Type here to search
ENG
5:37 PM
5/9/2024

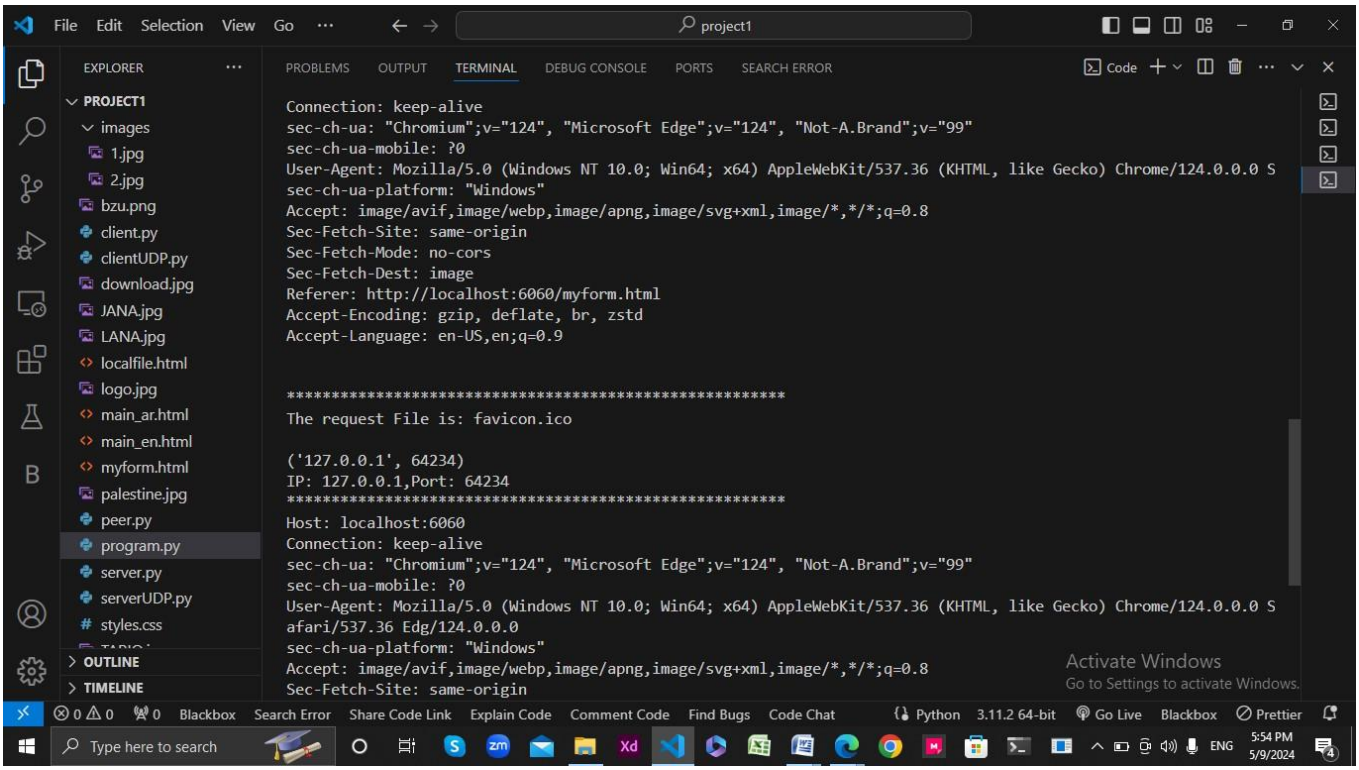

File Edit Selection View Go
project1
EXPLORER
PROJECT1
images
1.jpg
2.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
myform.html
palestine.jpg
peer.py
program.py
server.py
serverUDP.py
styles.css
OUTLINE
TIMELINE
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS SEARCH ERROR
Code
Sec-Fetch-Dest: image
Referer: http://localhost:6060/main_ar.html
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
****
The request File is: TARIQ.jpg
response status: 200 OK
('127.0.0.1', 64029)
IP: 127.0.0.1,Port: 64029
****
GET /JANA.jpg HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/124.0.0.0 S
afari/537.36 Edg/124.0.0.0
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6060/main_ar.html
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
Activate Windows
Go to Settings to activate Windows.
Blackbox Search Error Share Code Link Explain Code Comment Code Find Bugs Code Chat
Python 3.11.2 64-bit
Go Live Blackbox Prettier
Type here to search
ENG
5:37 PM
5/9/2024

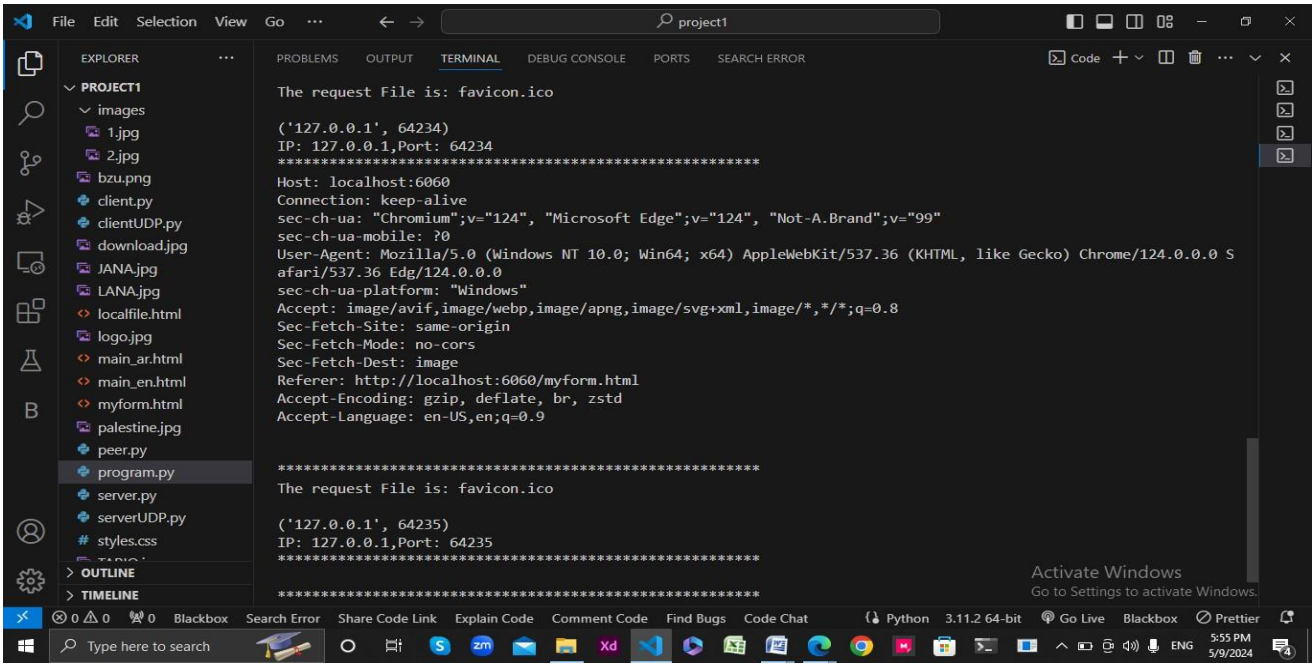


3. if the request is an .html file then the server should send the requested html file with Content-Type: text/html. You can use any html file. Make it general (not only for specific file name)

we requested myform.html page, and this is the HTTP request on the terminal window:

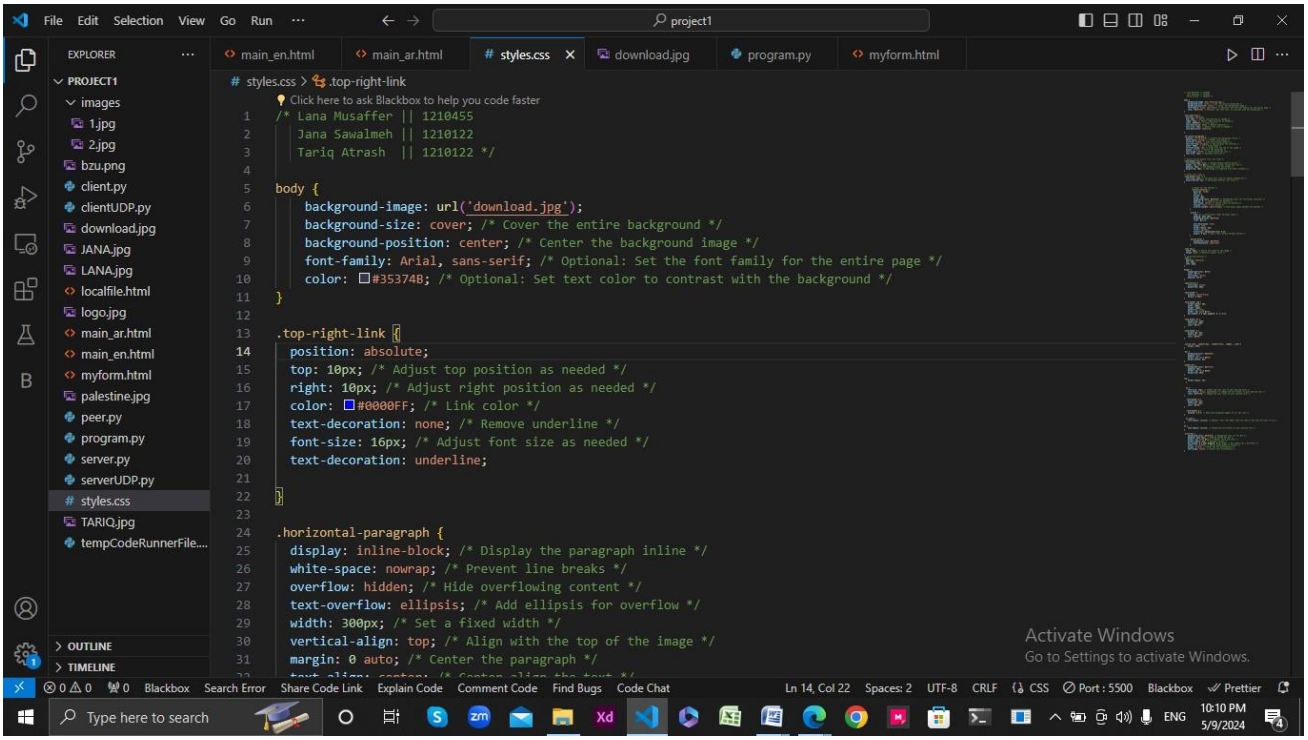

File Edit Selection View Go ··· project1
EXPLORER
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS SEARCH ERROR
Code
PROJECT1
images
1.jpg
2.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
myform.html
palestine.jpg
peer.py
program.py
server.py
serverUDP.py
styles.css
OUTLINE
TIMELINE
The server is ready to receive
('127.0.0.1', 64228)
IP: 127.0.0.1,Port: 64228
****
GET /myform.html HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99"
sec-ch-ua-mobile: ?0
sec-ch-ua-platform: "Windows"
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/124.0.0.0 S
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,applic
0.7
Sec-Fetch-Site: none
Sec-Fetch-Mode: navigate
Sec-Fetch-User: ?1
Sec-Fetch-Dest: document
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
****
The request File is: myform.html
response status: 200 OK
('127.0.0.1', 64229)
IP: 127.0.0.1,Port: 64229
Activate Windows
Go to Settings to activate Windows.
Blackbox Search Error Share Code Link Explain Code Comment Code Find Bugs Code Chat
Python 3.11.2 64-bit Go Live Blackbox Prettier
Type here to search
ENG 5:54 PM 5/9/2024

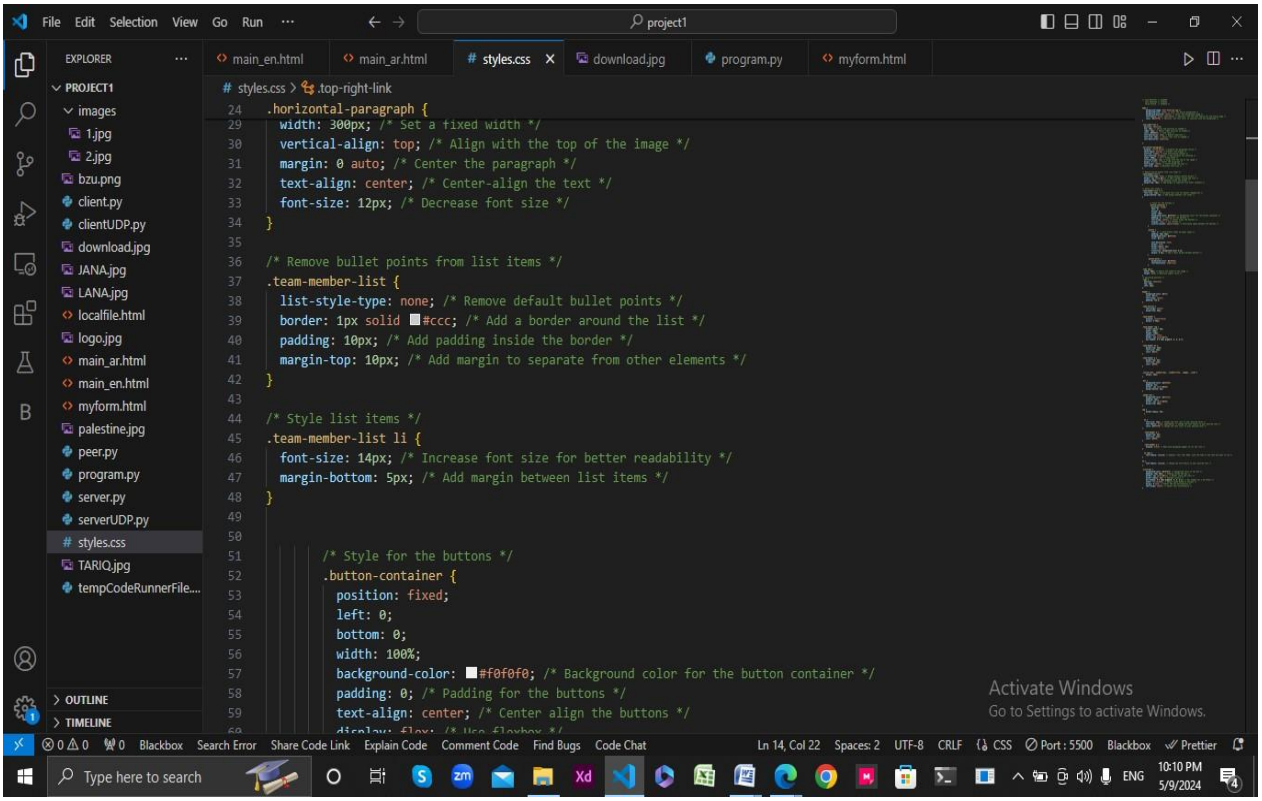

File Edit Selection View Go ··· project1
EXPLORER
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS SEARCH ERROR
Code
PROJECT1
images
1.jpg
2.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
myform.html
palestine.jpg
peer.py
program.py
server.py
serverUDP.py
styles.css
OUTLINE
TIMELINE
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/124.0.0.0 S
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6060/myform.html
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
****
The request File is: favicon.ico
('127.0.0.1', 64234)
IP: 127.0.0.1,Port: 64234
****
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/124.0.0.0 S
afari/537.36 Edg/124.0.0.0
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Activate Windows
Go to Settings to activate Windows.
Blackbox Search Error Share Code Link Explain Code Comment Code Find Bugs Code Chat
Python 3.11.2 64-bit Go Live Blackbox Prettier
Type here to search
ENG 5:54 PM 5/9/2024



4. **if the request is a.css file then the server should send the requested css file with Content-Type: text/css. You can use any CSS file. Make it general (not only for specific file name)**

styles.css code:




File Edit Selection View Go Run
project1
EXPLORER
main_en.html
main_ar.html
styles.css
download.jpg
program.py
myform.html
styles.css > .top-right-link
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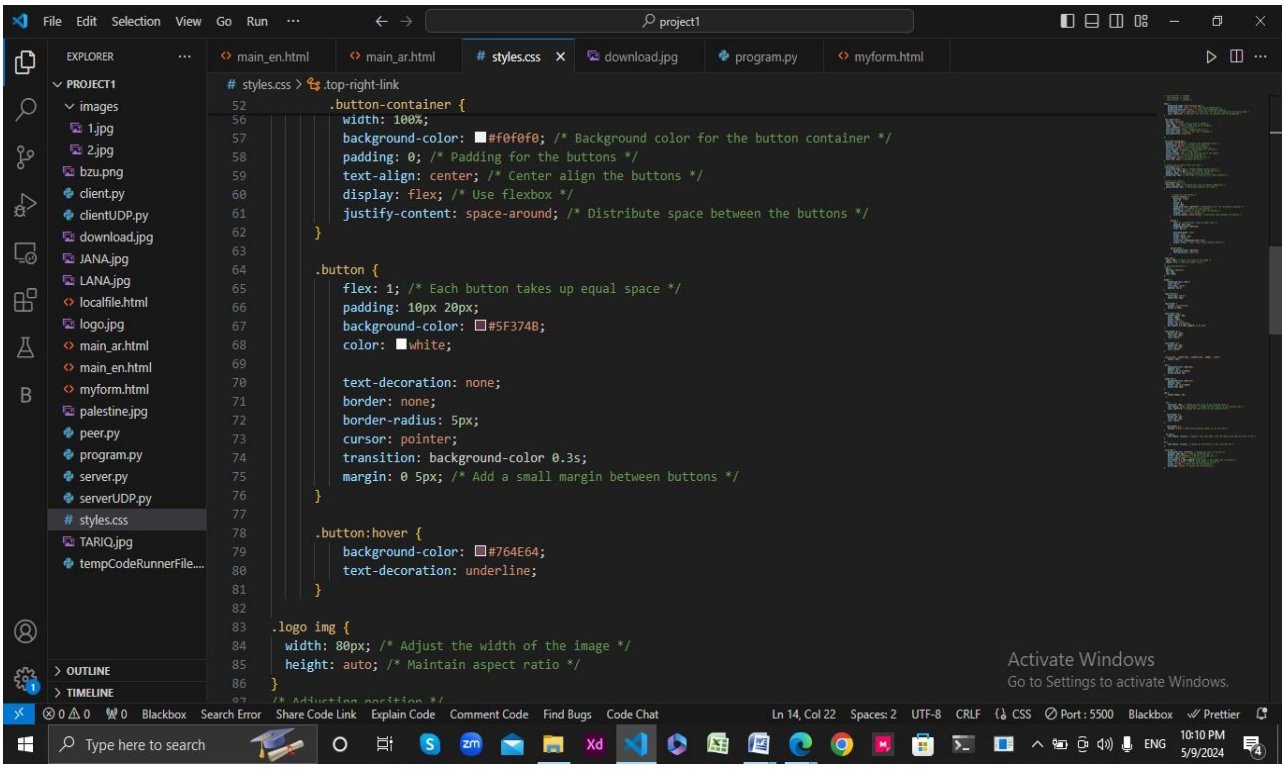
myform.html
palestine.jpg
peer.py
program.py
server.py
serverUDP.py
styles.css
TARIQ.jpg
tempCodeRunnerFile....
OUTLINE
TIMELINE
.horizontal-paragraph {
width: 300px; /* Set a fixed width */
vertical-align: top; /* Align with the top of the image */
margin: 0 auto; /* Center the paragraph */
text-align: center; /* Center-align the text */
font-size: 12px; /* Decrease font size */
}
/* Remove bullet points from list items */
.team-member-list {
list-style-type: none; /* Remove default bullet points */
border: 1px solid #ccc; /* Add a border around the list */
padding: 10px; /* Add padding inside the border */
margin-top: 10px; /* Add margin to separate from other elements */
}
/* Style list items */
.team-member-list li {
font-size: 14px; /* Increase font size for better readability */
margin-bottom: 5px; /* Add margin between list items */
}
/* Style for the buttons */
.button-container {
position: fixed;
left: 0;
bottom: 0;
width: 100%;
background-color: #f0f0f0; /* Background color for the button container */
padding: 0; /* Padding for the buttons */
text-align: center; /* Center align the buttons */
Activate Windows
Go to Settings to activate Windows.
Ln 14, Col 22 Spaces: 2 UTF-8 CRLF CSS Port : 5500 Blackbox Prettier
Type here to search
ENG
10:10 PM
5/9/2024


File Edit Selection View Go Run
project1
EXPLORER
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main_ar.html
styles.css
download.jpg
program.py
myform.html
styles.css > .top-right-link
PROJECT1
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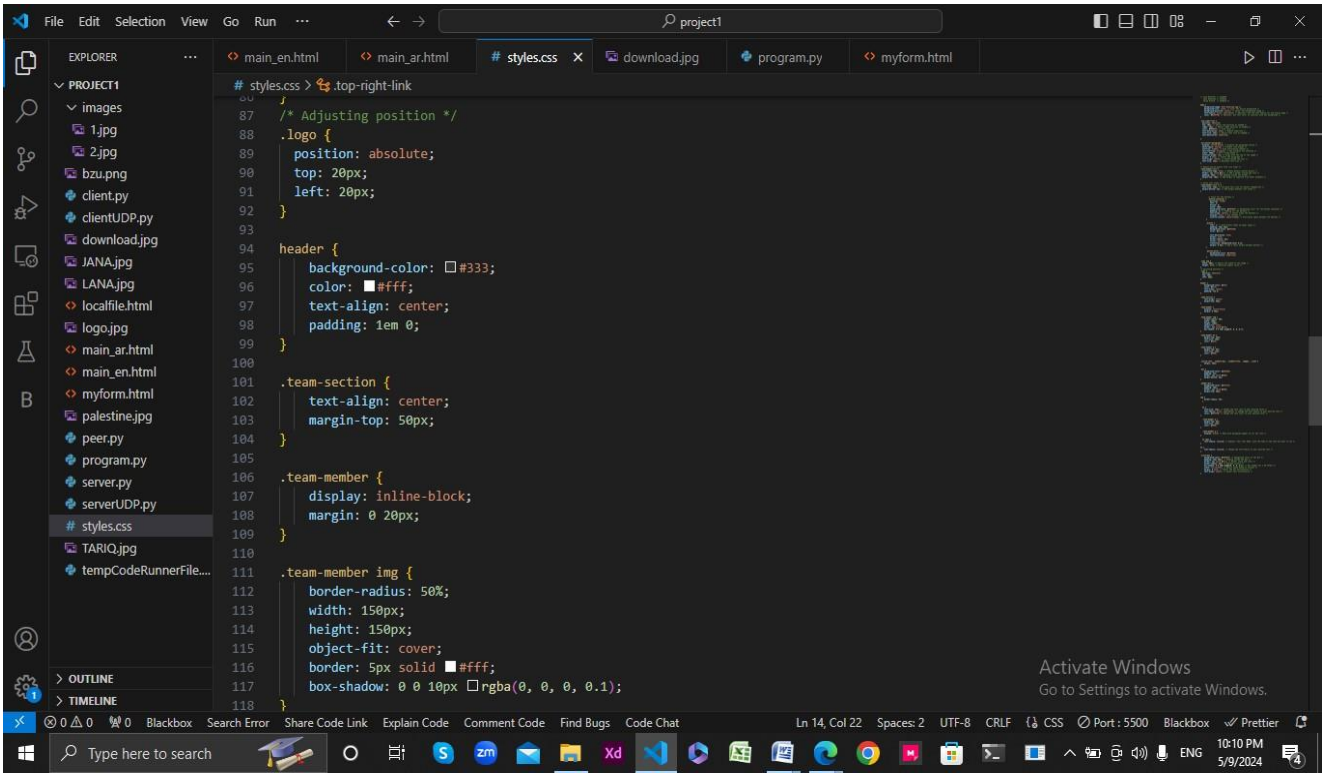
main_en.html
myform.html
palestine.jpg
peer.py
program.py
server.py
serverUDP.py
styles.css
TARIQ.jpg
tempCodeRunnerFile....
OUTLINE
TIMELINE
.button-container {
width: 100%;
background-color: #f0f0f0; /* Background color for the button container */
padding: 0; /* Padding for the buttons */
text-align: center; /* Center align the buttons */
display: flex; /* Use flexbox */
justify-content: space-around; /* Distribute space between the buttons */
}
.button {
flex: 1; /* Each button takes up equal space */
padding: 10px 20px;
background-color: #5F374B;
color: white;
text-decoration: none;
border: none;
border-radius: 5px;
cursor: pointer;
transition: background-color 0.3s;
margin: 0 5px; /* Add a small margin between buttons */
}
.button:hover {
background-color: #764E64;
text-decoration: underline;
}
.logo img {
width: 80px; /* Adjust the width of the image */
height: auto; /* Maintain aspect ratio */
}
Activate Windows
Go to Settings to activate Windows.
Ln 14, Col 22 Spaces: 2 UTF-8 CRLF CSS Port : 5500 Blackbox Prettier
Type here to search
ENG
10:10 PM
5/9/2024


File Edit Selection View Go Run
project1
EXPLORER
main_en.html
main_ar.html
styles.css
download.jpg
program.py
myform.html
styles.css > .top-right-link
PROJECT1
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clientUDP.py
download.jpg
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localfile.html
logo.jpg
main_ar.html
main_en.html
myform.html
palestine.jpg
peer.py
program.py
server.py
serverUDP.py
styles.css
TARIQ.jpg
tempCodeRunnerFile....
OUTLINE
TIMELINE
/* Adjusting position */
.logo {
position: absolute;
top: 20px;
left: 20px;
}
header {
background-color: #333;
color: #fff;
text-align: center;
padding: 1em 0;
}
.team-section {
text-align: center;
margin-top: 50px;
}
.team-member {
display: inline-block;
margin: 0 20px;
}
.team-member img {
border-radius: 50%;
width: 150px;
height: 150px;
object-fit: cover;
border: 5px solid #fff;
box-shadow: 0 0 10px rgba(0, 0, 0, 0.1);
}
Activate Windows
Go to Settings to activate Windows.
Blackbox Search Error Share Code Link Explain Code Comment Code Find Bugs Code Chat
Ln 14, Col 22 Spaces: 2 UTF-8 CRLF CSS Port : 5500 Blackbox Prettier
Type here to search
ENG
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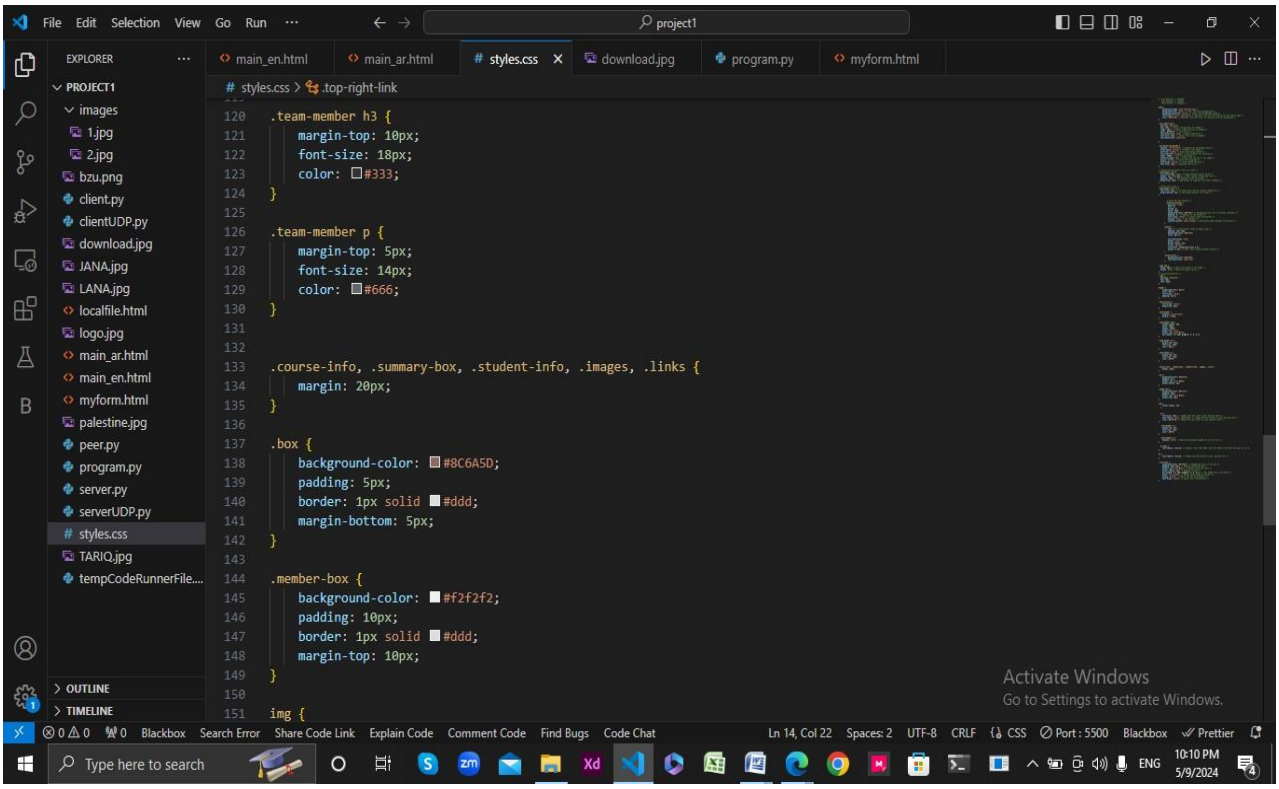
File Edit Selection View Go Run
project1
EXPLORER
main_en.html
main_ar.html
styles.css
download.jpg
program.py
myform.html
styles.css > .top-right-link
PROJECT1
images
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2.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
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logo.jpg
main_ar.html
main_en.html
myform.html
palestine.jpg
peer.py
program.py
server.py
serverUDP.py
styles.css
TARIQ.jpg
tempCodeRunnerFile....
OUTLINE
TIMELINE
.team-member h3 {
margin-top: 10px;
font-size: 18px;
color: #333;
}
.team-member p {
margin-top: 5px;
font-size: 14px;
color: #666;
}
.course-info, .summary-box, .student-info, .images, .links {
margin: 20px;
}
.box {
background-color: #8C6A5D;
padding: 5px;
border: 1px solid #ddd;
margin-bottom: 5px;
}
.member-box {
background-color: #f2f2f2;
padding: 10px;
border: 1px solid #ddd;
margin-top: 10px;
}
img {
Activate Windows
Go to Settings to activate Windows.
Blackbox Search Error Share Code Link Explain Code Comment Code Find Bugs Code Chat
Ln 14, Col 22 Spaces: 2 UTF-8 CRLF CSS Port : 5500 Blackbox Prettier
Type here to search
ENG
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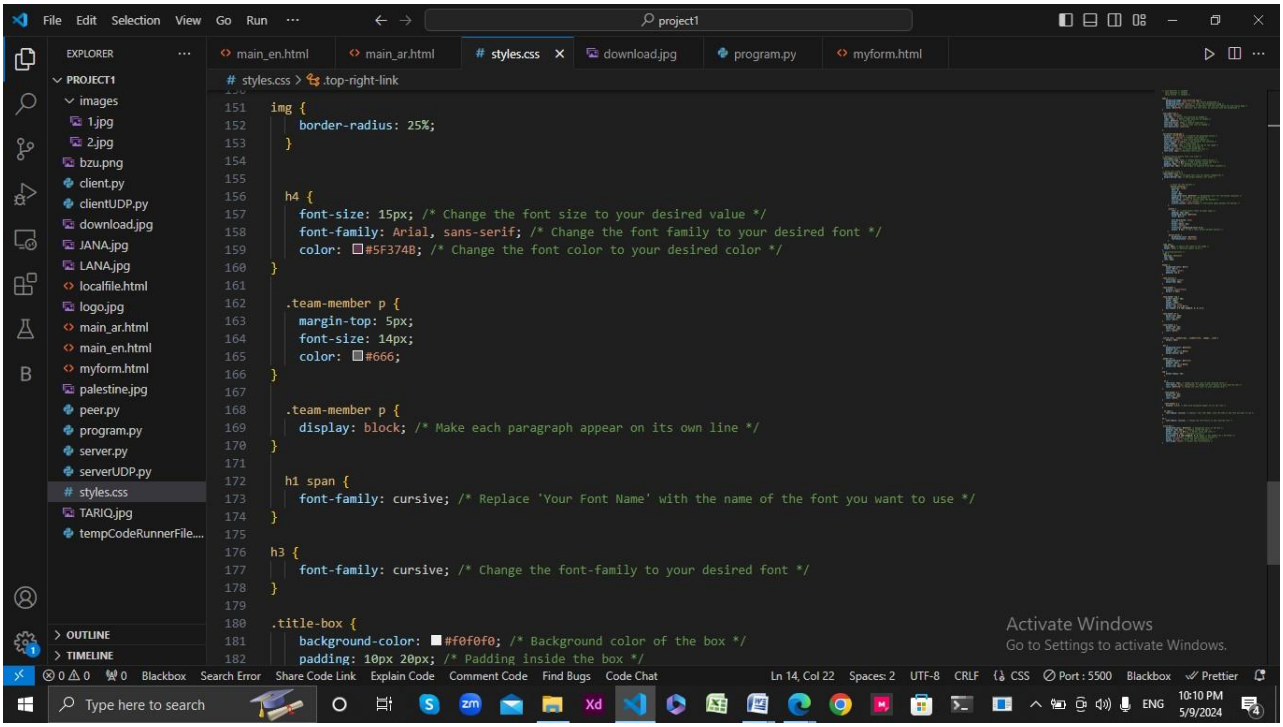
5/9/2024


File Edit Selection View Go Run
project1
EXPLORER
PROJECT1
images
1.jpg
2.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
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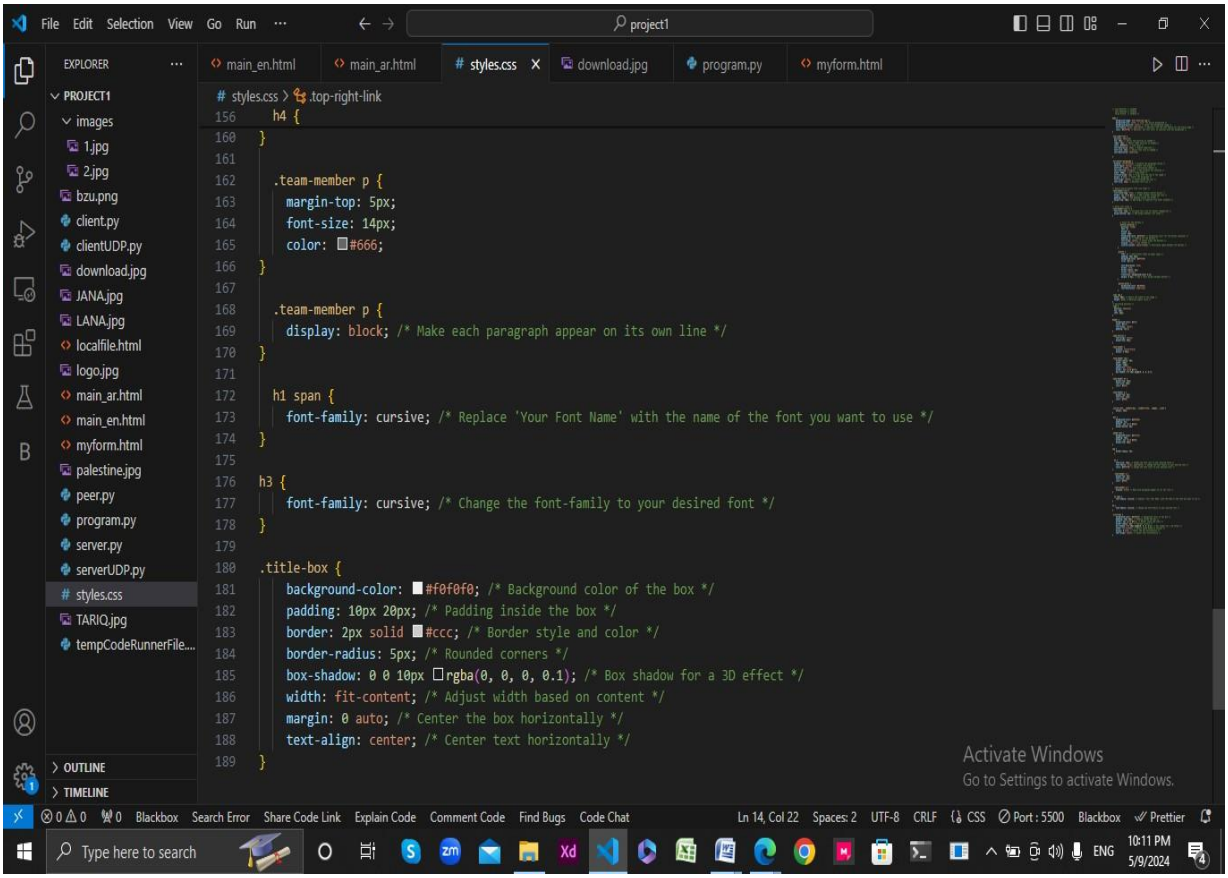
localfile.html
logo.jpg
main_ar.html
main_en.html
myform.html
palestine.jpg
peer.py
program.py
server.py
serverUDP.py
styles.css
TARIQ.jpg
tempCodeRunnerFile....
main_en.html
main_ar.html
styles.css
download.jpg
program.py
myform.html
styles.css > .top-right-link
img {
border-radius: 25%;
}
h4 {
font-size: 15px; /* Change the font size to your desired value */
font-family: Arial, sans-serif; /* Change the font family to your desired font */
color: #5F374B; /* Change the font color to your desired color */
}
.team-member p {
margin-top: 5px;
font-size: 14px;
color: #666;
}
.team-member p {
display: block; /* Make each paragraph appear on its own line */
}
h1 span {
font-family: cursive; /* Replace 'Your Font Name' with the name of the font you want to use */
}
h3 {
font-family: cursive; /* Change the font-family to your desired font */
}
.title-box {
background-color: #f0f0f0; /* Background color of the box */
padding: 10px 20px; /* Padding inside the box */
OUTLINE
TIMELINE
Activate Windows
Go to Settings to activate Windows.
Blackbox Search Error Share Code Link Explain Code Comment Code Find Bugs Code Chat
Ln 14, Col 22 Spaces: 2 UTF-8 CRLF CSS Port : 5500 Blackbox Prettier
Type here to search
ENG
10:10 PM
5/9/2024


File Edit Selection View Go Run
project1
EXPLORER
PROJECT1
images
1.jpg
2.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
myform.html
palestine.jpg
peer.py
program.py
server.py
serverUDP.py
styles.css
TARIQ.jpg
tempCodeRunnerFile....
main_en.html
main_ar.html
styles.css
download.jpg
program.py
myform.html
styles.css > .top-right-link
h4 {
}
.team-member p {
margin-top: 5px;
font-size: 14px;
color: #666;
}
.team-member p {
display: block; /* Make each paragraph appear on its own line */
}
h1 span {
font-family: cursive; /* Replace 'Your Font Name' with the name of the font you want to use */
}
h3 {
font-family: cursive; /* Change the font-family to your desired font */
}
.title-box {
background-color: #f0f0f0; /* Background color of the box */
padding: 10px 20px; /* Padding inside the box */
border: 2px solid #ccc; /* Border style and color */
border-radius: 5px; /* Rounded corners */
box-shadow: 0 0 10px rgba(0, 0, 0, 0.1); /* Box shadow for a 3D effect */
width: fit-content; /* Adjust width based on content */
margin: 0 auto; /* Center the box horizontally */
text-align: center; /* Center text horizontally */
}
OUTLINE
TIMELINE
Activate Windows
Go to Settings to activate Windows.
Blackbox Search Error Share Code Link Explain Code Comment Code Find Bugs Code Chat
Ln 14, Col 22 Spaces: 2 UTF-8 CRLF CSS Port : 5500 Blackbox Prettier
Type here to search
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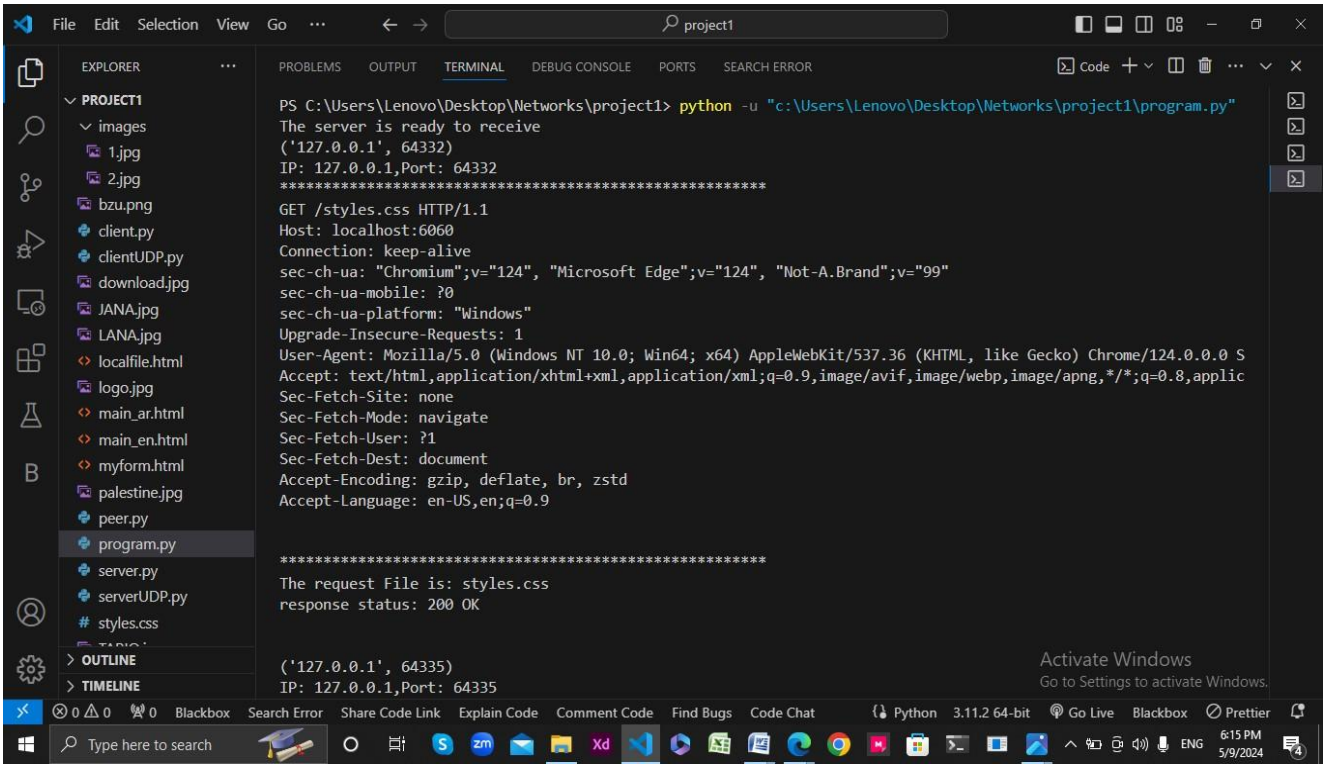
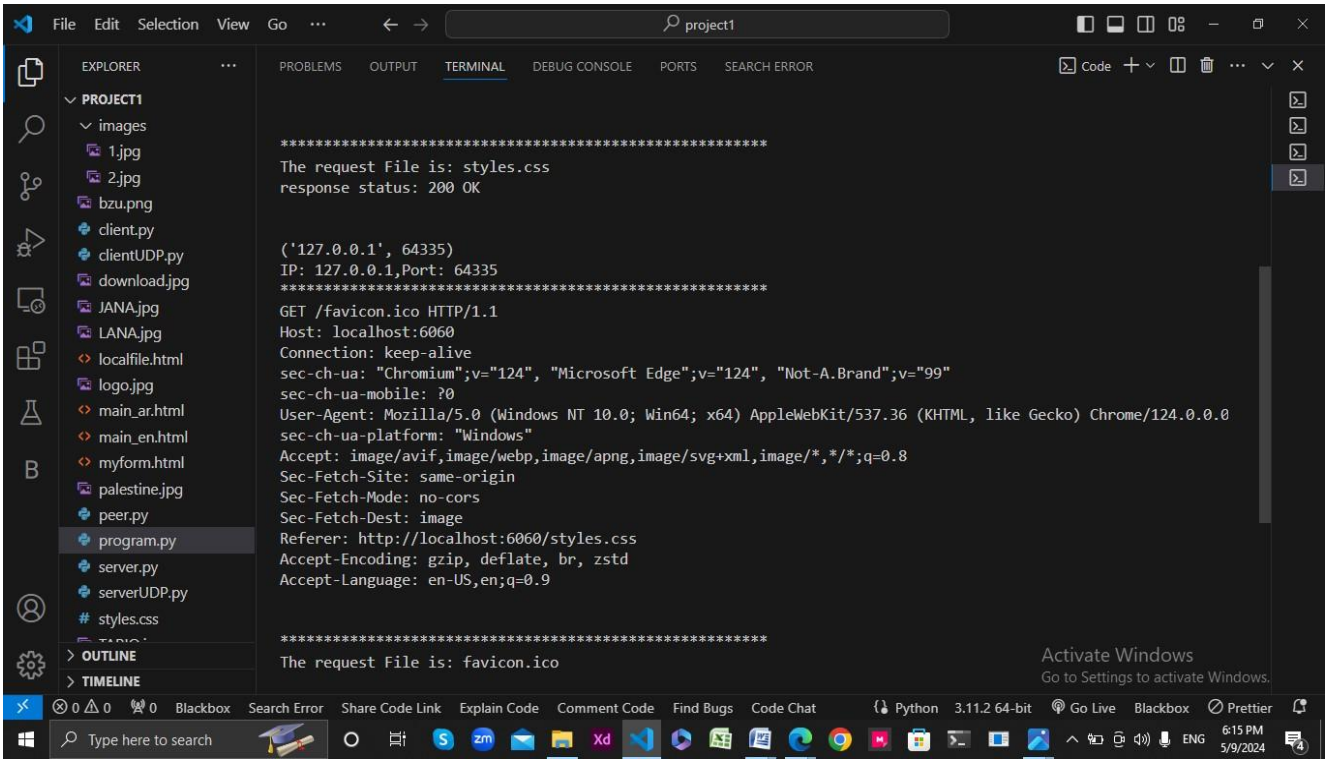
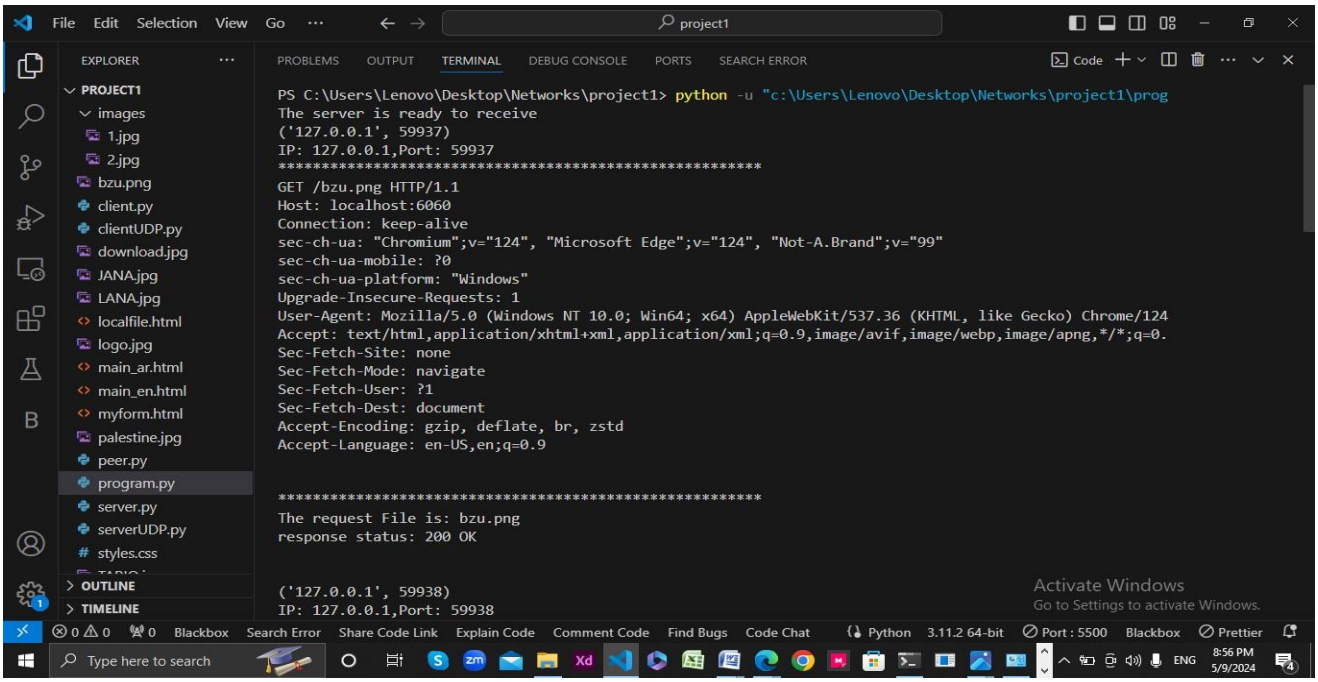
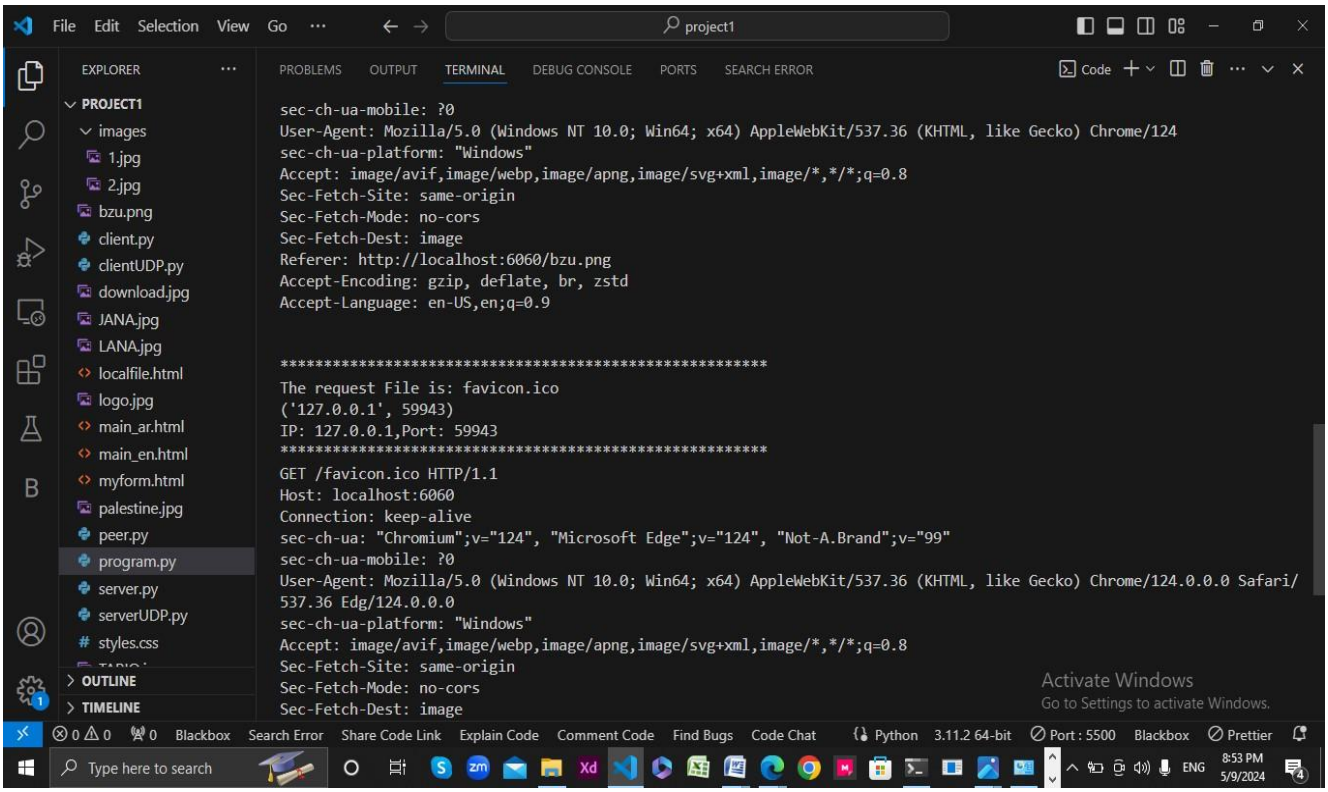
Styles.css HTTP request on the terminal window:

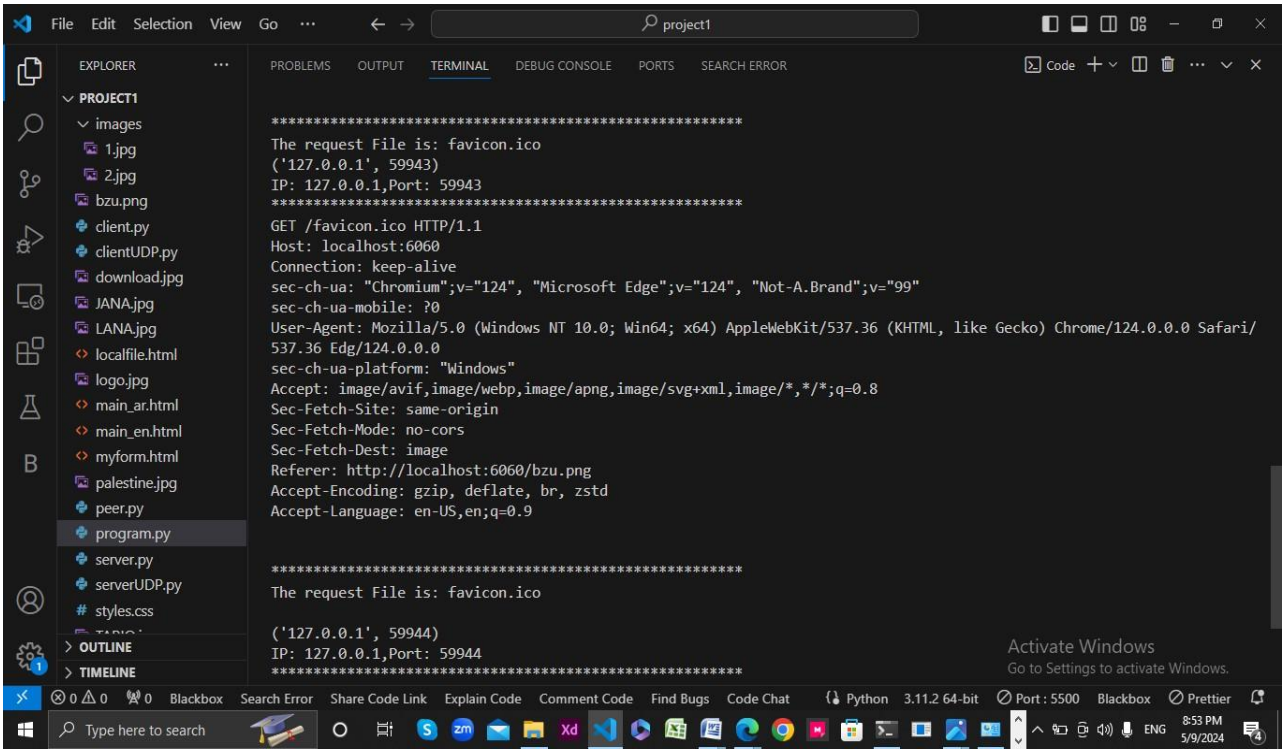




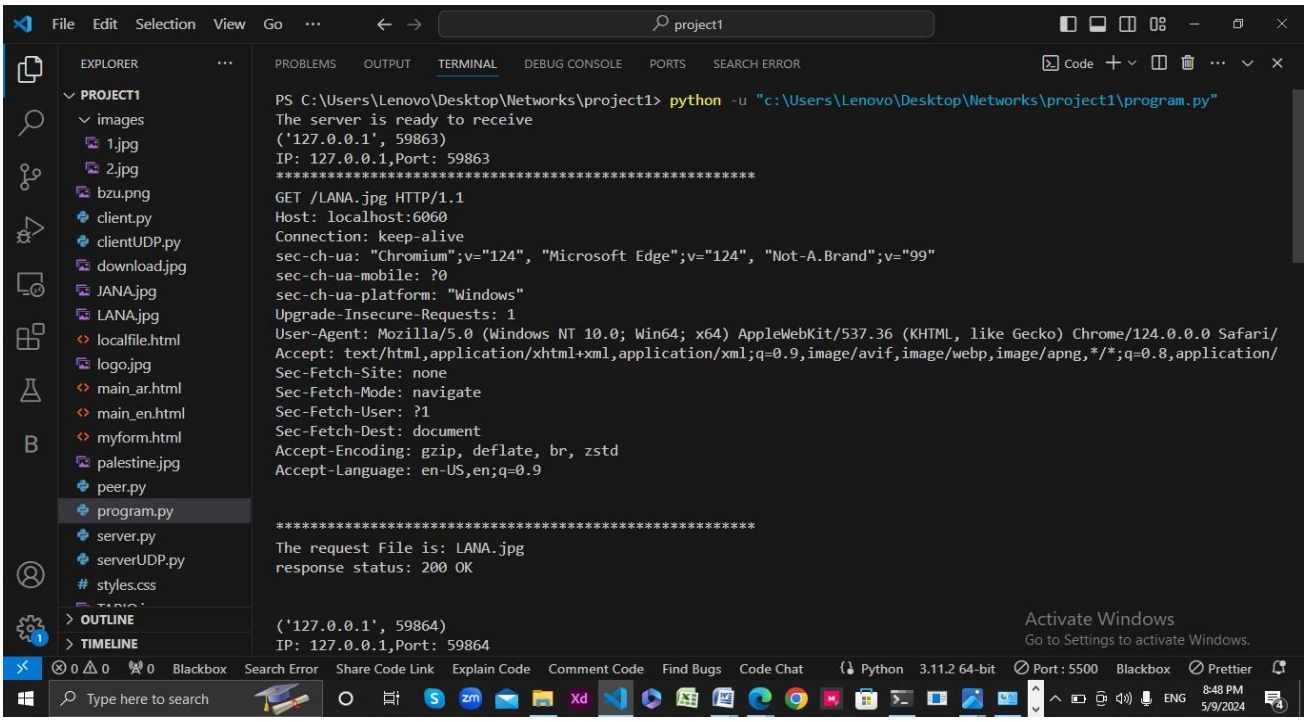
5. **if the request is a .png then the server should send the png image with Content-Type: image/png. You can use any image. Make it general (not only for specific file name)**

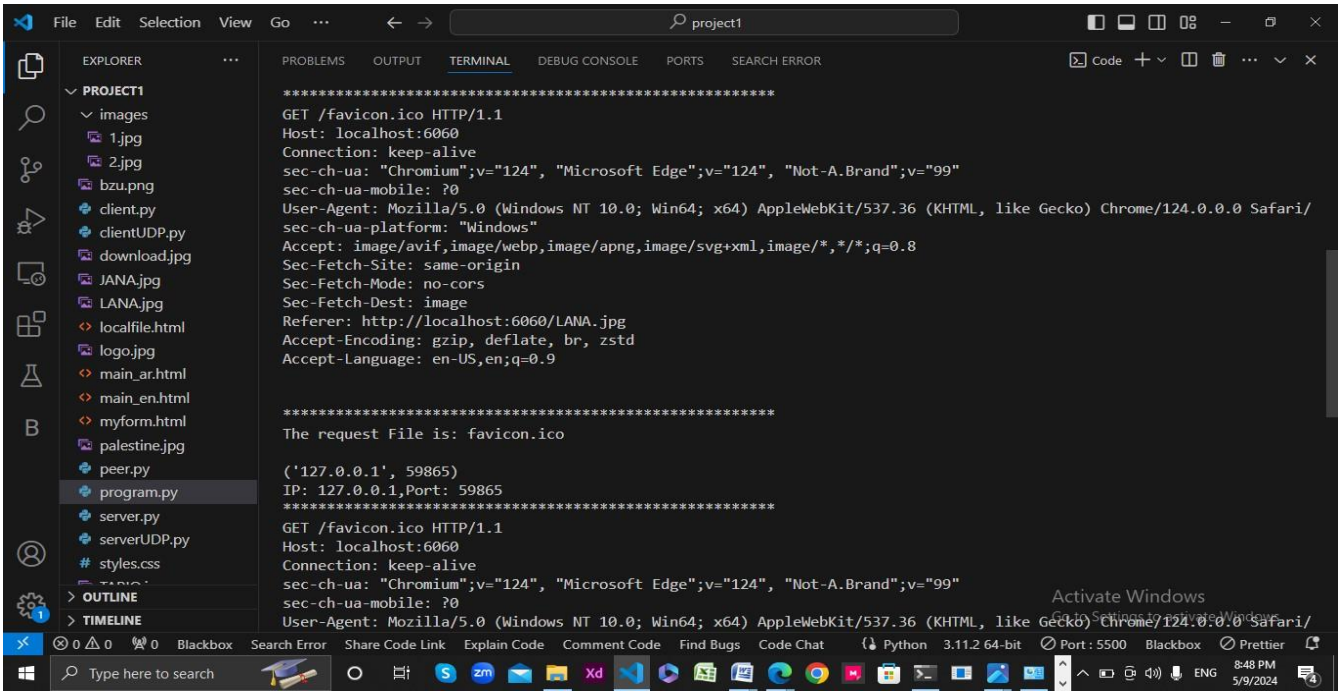






6. if the request is a.jpg then the server should send the jpg image with Content-Type: image/jpeg. You can use any image. Make it general (not only for specific file name)




File Edit Selection View Go ···
project1
EXPLORER
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS SEARCH ERROR
Code
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images
1.jpg
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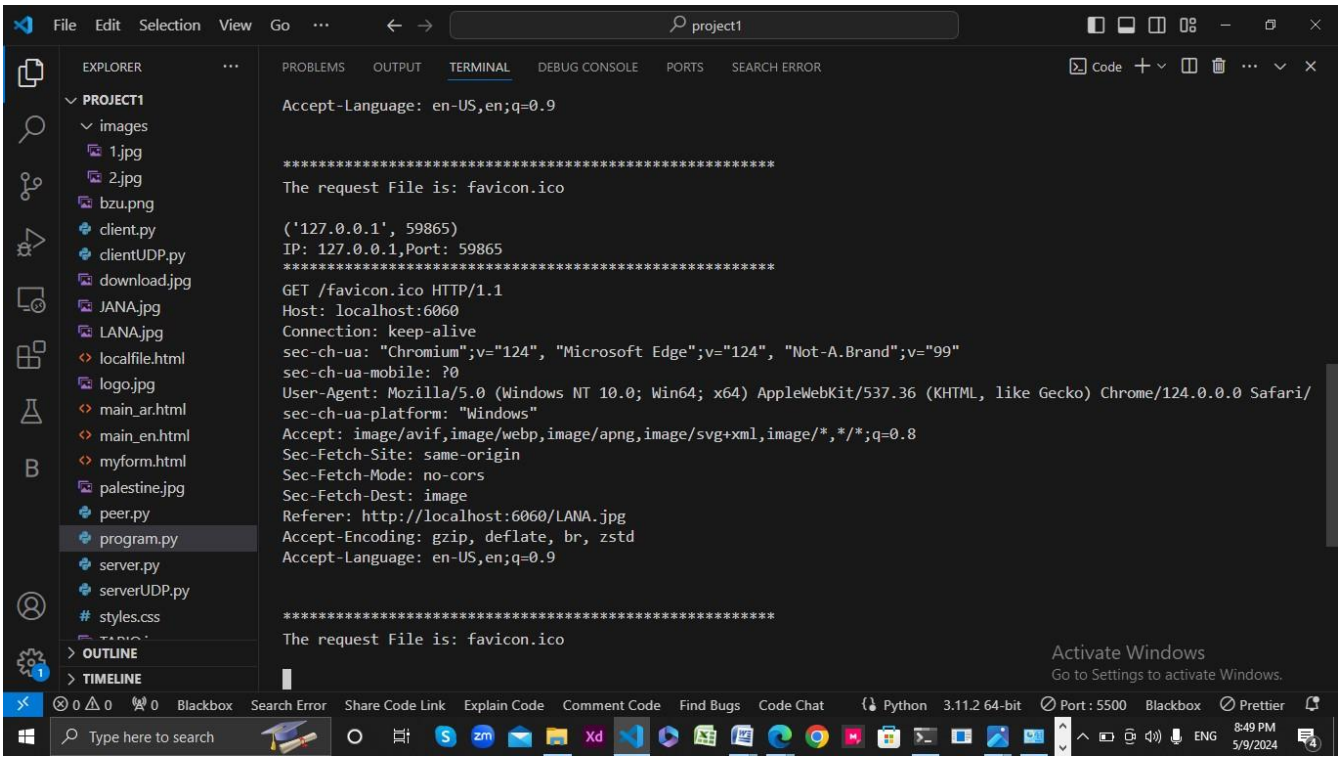
main_en.html
myform.html
palestine.jpg
peer.py
program.py
server.py
serverUDP.py
styles.css
OUTLINE
TIMELINE
****
GET /favicon.ico HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/124.0.0.0 Safari/
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6060/LANA.jpg
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
****
The request File is: favicon.ico
('127.0.0.1', 59865)
IP: 127.0.0.1,Port: 59865
****
GET /favicon.ico HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/124.0.0.0 Safari/
Activate Windows
Go to Settings to activate Windows.
Blackbox Search Error Share Code Link Explain Code Comment Code Find Bugs Code Chat
Python 3.11.2 64-bit Port : 5500 Blackbox Prettier
Type here to search
ENG
8:48 PM
5/9/2024


File Edit Selection View Go ···
project1
EXPLORER
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS SEARCH ERROR
Code
PROJECT1
images
1.jpg
2.jpg
bzu.png
client.py
clientUDP.py
download.jpg
JANA.jpg
LANA.jpg
localfile.html
logo.jpg
main_ar.html
main_en.html
myform.html
palestine.jpg
peer.py
program.py
server.py
serverUDP.py
styles.css
OUTLINE
TIMELINE
Accept-Language: en-US,en;q=0.9
****
The request File is: favicon.ico
('127.0.0.1', 59865)
IP: 127.0.0.1,Port: 59865
****
GET /favicon.ico HTTP/1.1
Host: localhost:6060
Connection: keep-alive
sec-ch-ua: "Chromium";v="124", "Microsoft Edge";v="124", "Not-A.Brand";v="99"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/124.0.0.0 Safari/
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6060/LANA.jpg
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
****
The request File is: favicon.ico
Activate Windows
Go to Settings to activate Windows.
Blackbox Search Error Share Code Link Explain Code Comment Code Find Bugs Code Chat
Python 3.11.2 64-bit Port : 5500 Blackbox Prettier
Type here to search
ENG
8:49 PM
5/9/2024

7. **You can also visit our local page for getting images from a folder and display them:**

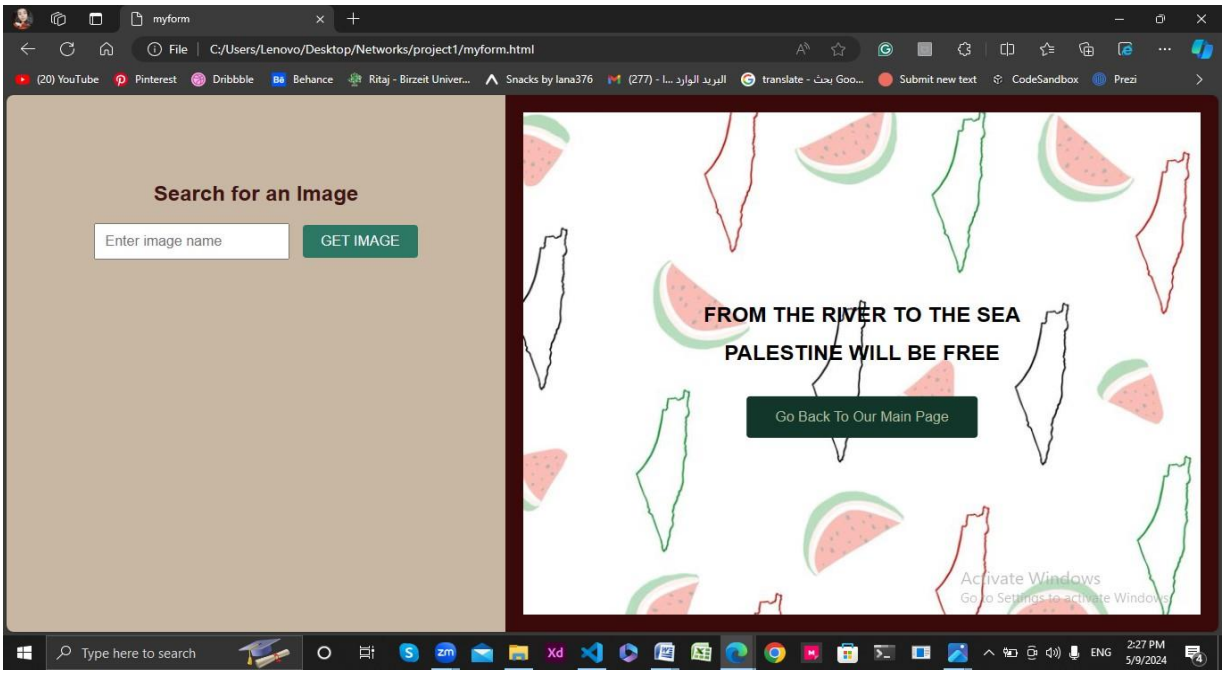


Figure 1.16

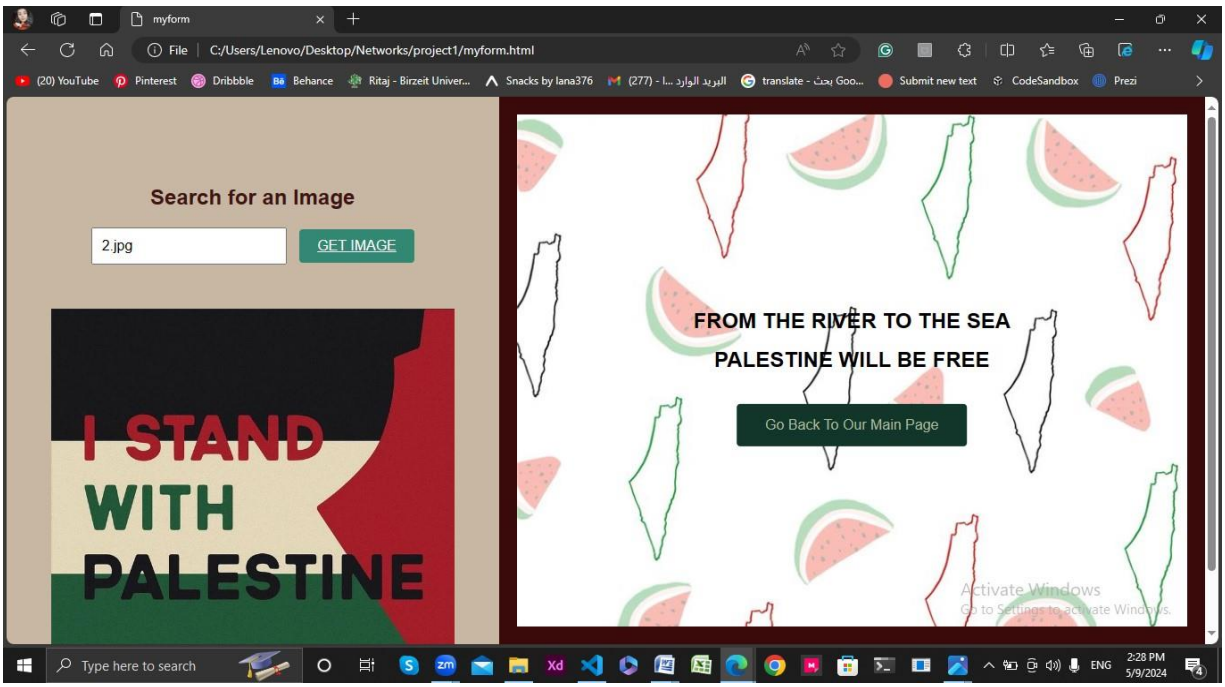


Figure 1.17

8. **Use the status code 307 Temporary Redirect to redirect the following**
   a. **If the request is /sothen redirect to stackoverflow.com website**

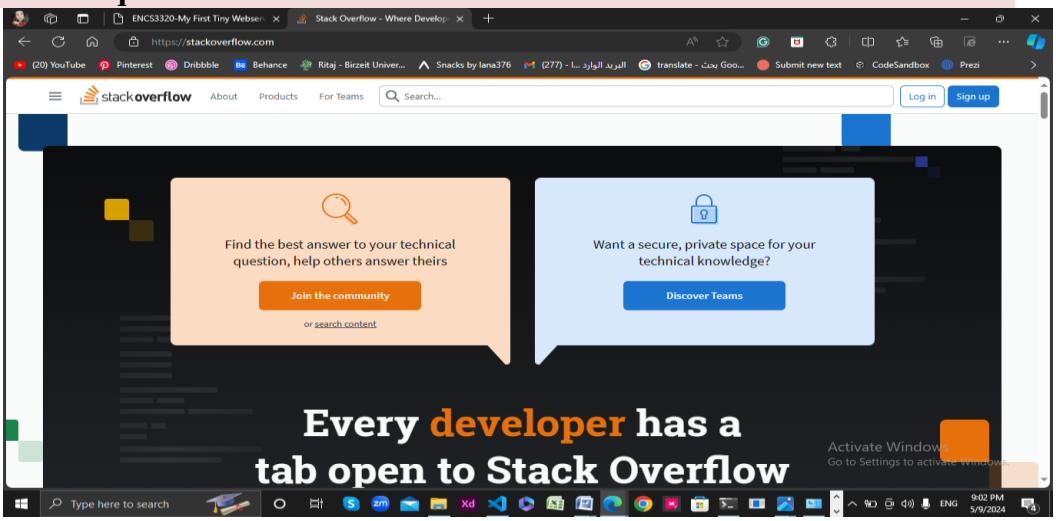
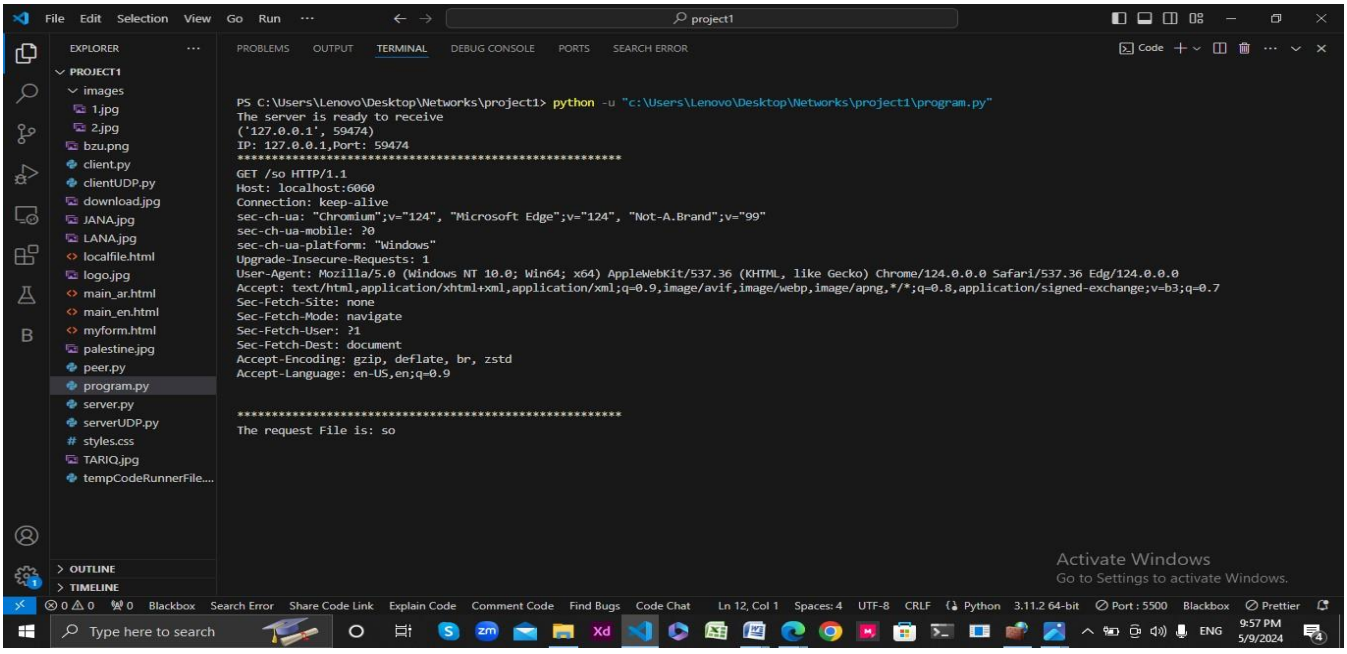


Figure 1.18

/so HTTP request on the terminal window:



   b. **If the request is /itcthen redirect to itc.birzeit.edu website**

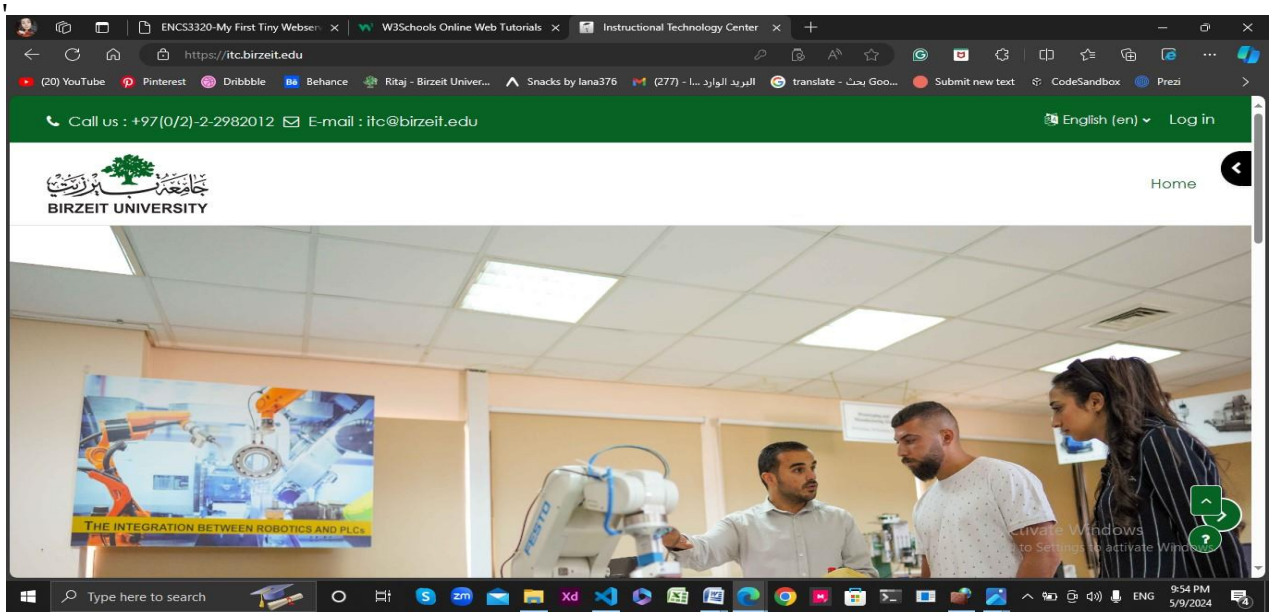
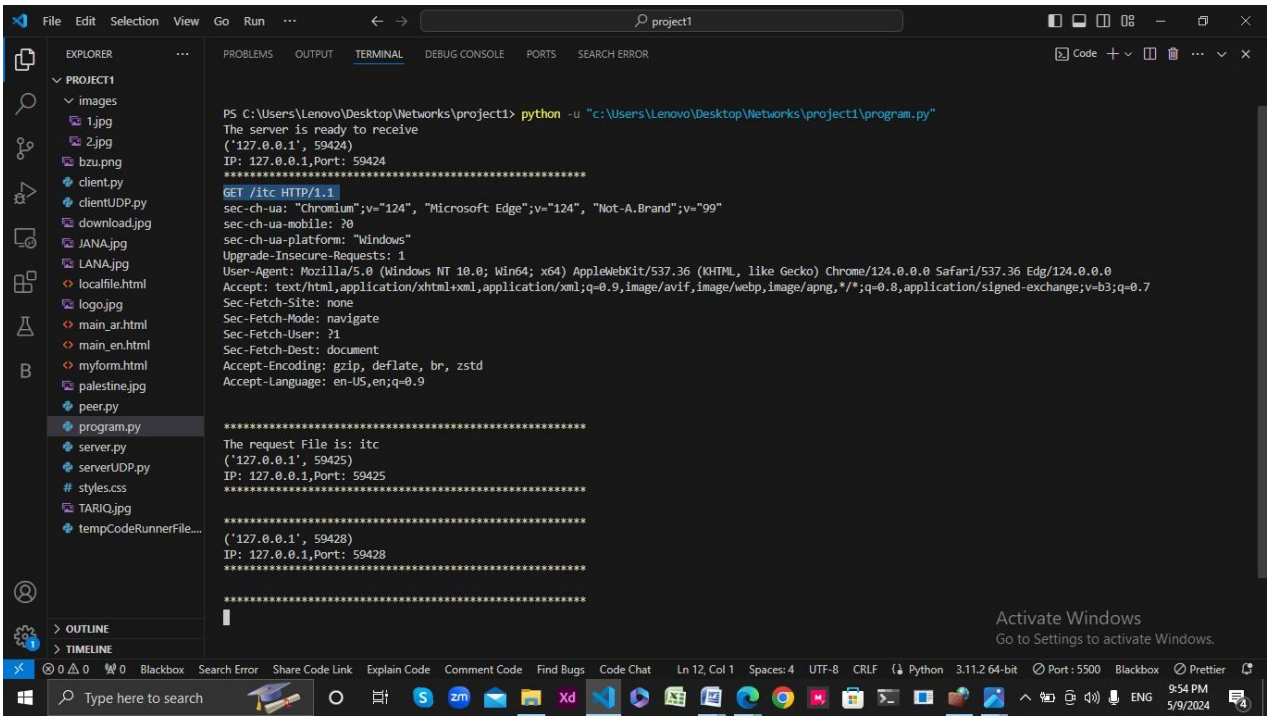


Figure 1.19

/itc HTTP request on the terminal window:



9. **If the request is wrong or the file doesn't exist the server should return a simple HTML webpage that contains (Content-Type: text/html)**
   1- **"HTTP/1.1 404 Not Found" in the response status**
   2- **"Error 404" in the title**
   3- **"The file is notfound" in the body in red**
   4- **Your names and IDs in Bold**
   5- **The IP and port number of the client**

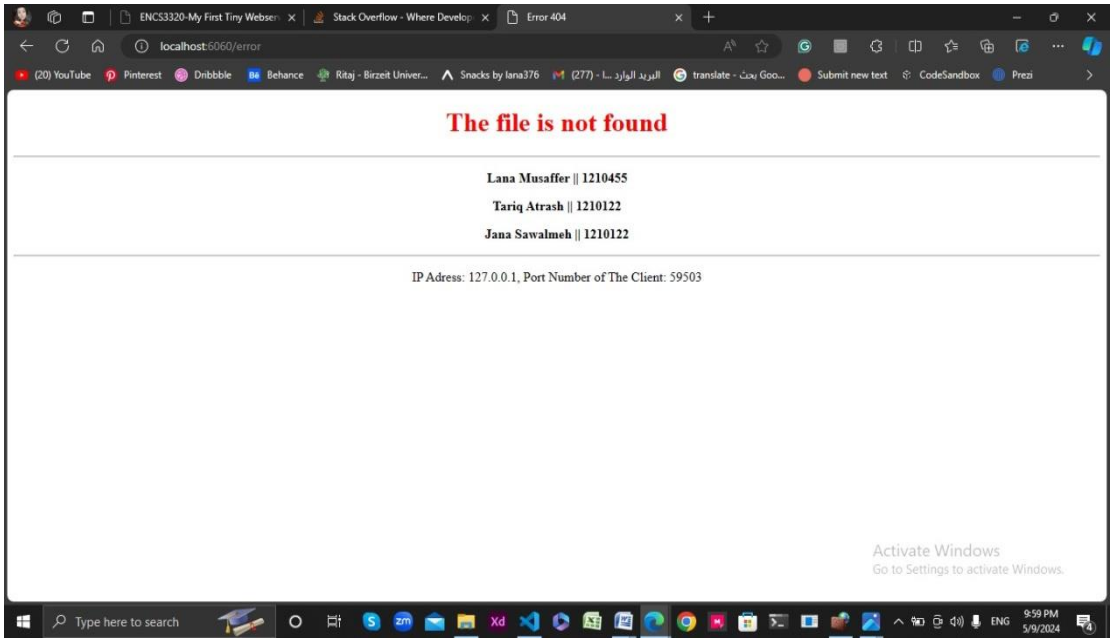
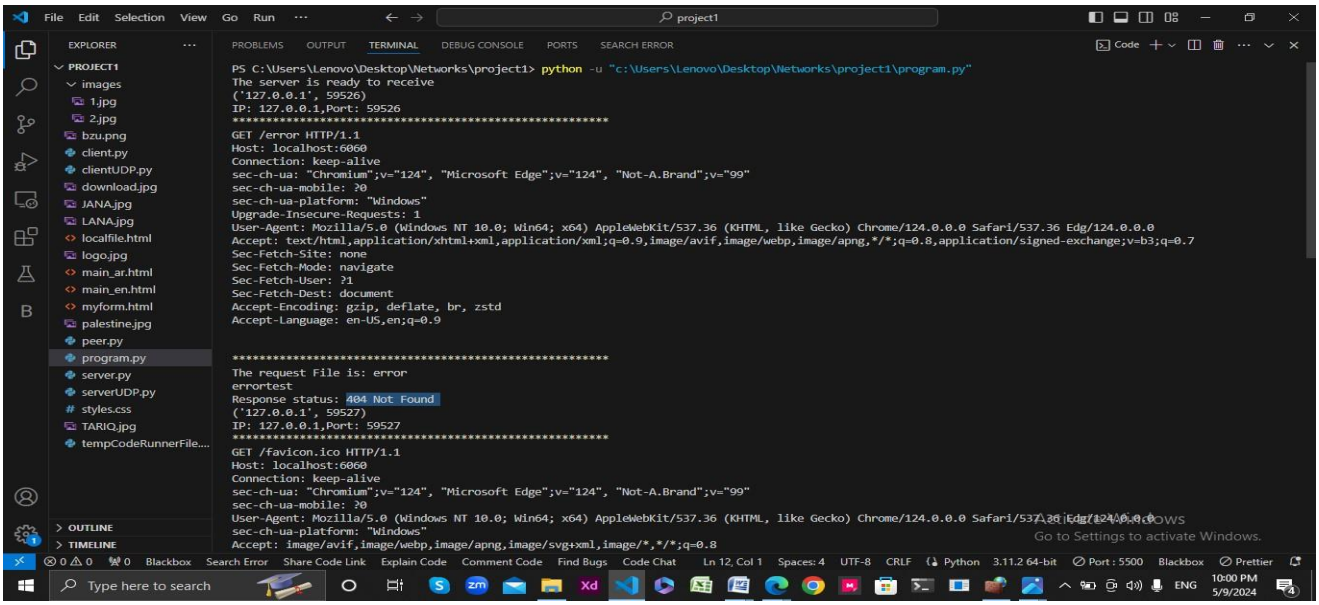
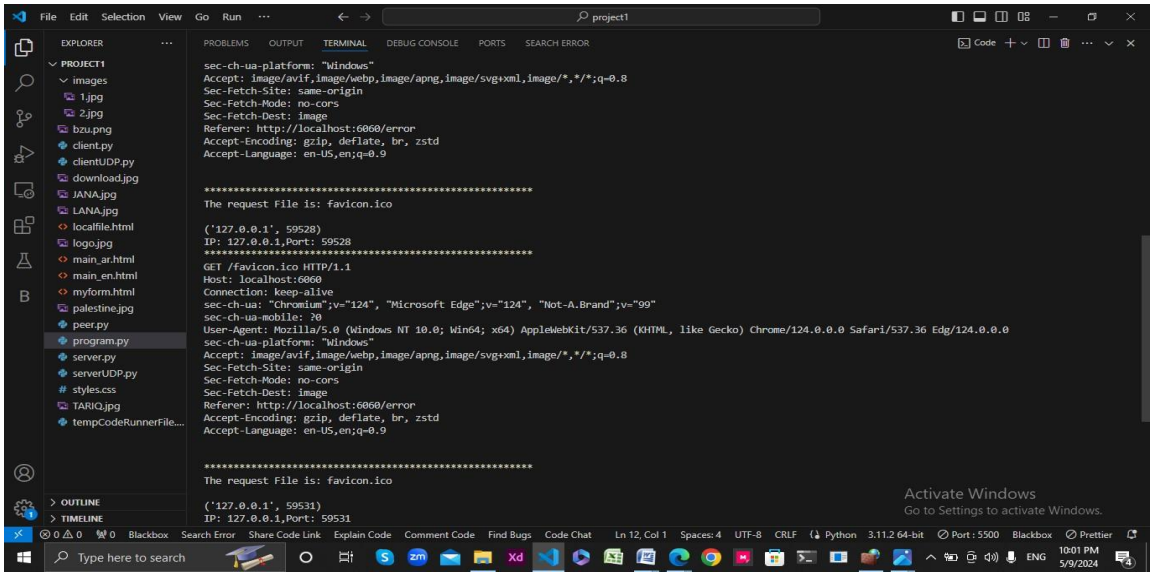
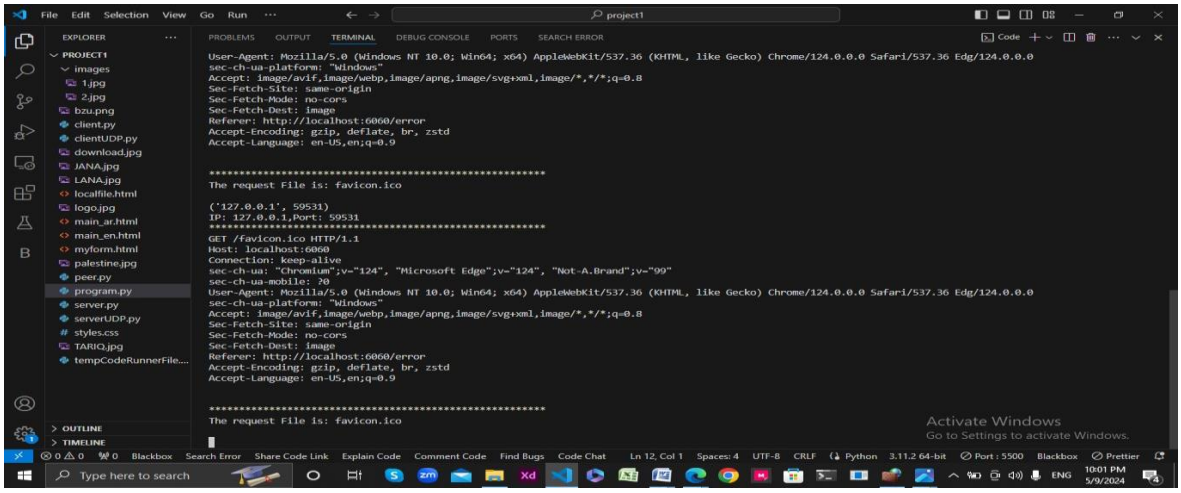


Figure 1.20

HTTP request on the terminal window:







We tested from different laptop:

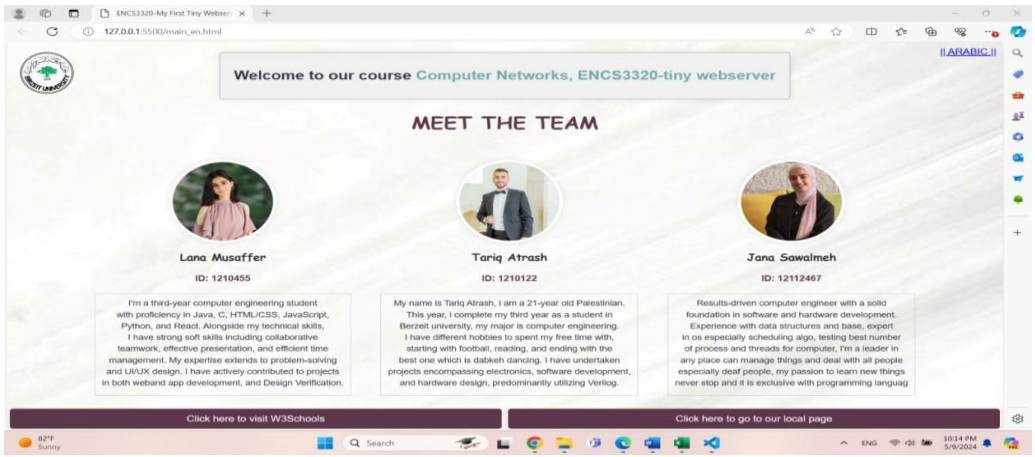


Figure 1.21

Conclusion

Through the use of socket programming, the project successfully created a flexible web server that can handle a variety of content kinds and client requests. It showcased effective file management for HTML, CSS, PNG, and JPG, reliable error handling with educational 404 pages, and dynamic content distribution via forms that users could fill out. The server's reliability and compatibility were validated by testing on various devices, underscoring its preparedness for practical uses. The practical understanding of network communications has been enhanced by this experience, providing a solid basis for the advancement of network applications in the future.

References

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[3] https://www.cloudflare.com/learning/network-layer/what-is-a-router/

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[5] https://en.wikipedia.org/wiki/Network_socket