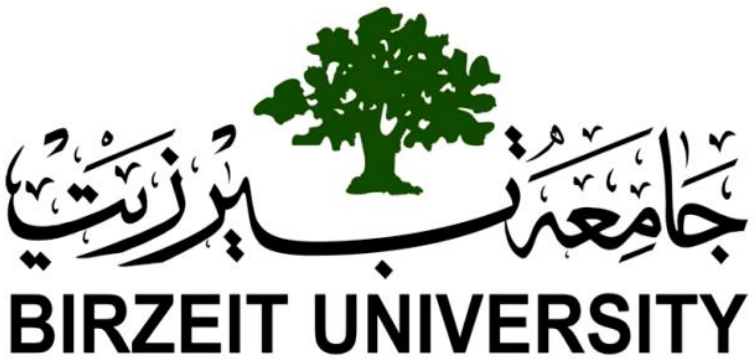

Faculty of Engineering & Technology

Electrical & Computer Engineering Department

Computer Networks ENCS3320

Project 1

Socket Programming and Web Development

Group Members

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Instructor's: AbdelKarim Awwad, Mohammed Jubran

Date: 28/11/2023

Abstract

In this project we are supposed to learn many different things, we are going to run different commands on “Command Prompt” app to track packets, and also to read different DNS messages using Wireshark.

Then, we will use socket programming to implement a simple client-server system, since they contact with each other using TCP connections.

Finally, we are going to create a web server (using socket programming) to handle different HTTP requests from the client, and to handle several files. In addition to creating a web page using HTML and CSS, which contains the group member’s information.

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Part 1:

1- In your own words, what are ping, tracert, nslookup, and telnet (write one sentence for each one)

- **Ping:** Internet Package Grouper. it's the most widely used utility tool to troubleshooting. help to test the Host/server reachability, Internet connection, Network interface card and to test DNS issues.

- **Traceroute:** It is used to see the exact path the data is taking on its way the destination by sending Internet Control Message Protocol (ICMP) echo packets to the destination.

- **NSLOOKUP:** it's a utility used to find the Ip address or DNS record of a given host name, and to find the attached domain for an IP address.

- **Telnet:** a Network protocol that provides a two-way collaborative abd text-based communication between two machines, and allows to connect to remote computers over a TCP/IP Network.

2- Make sure that your computer is connected to the internet and then run the following commands:

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

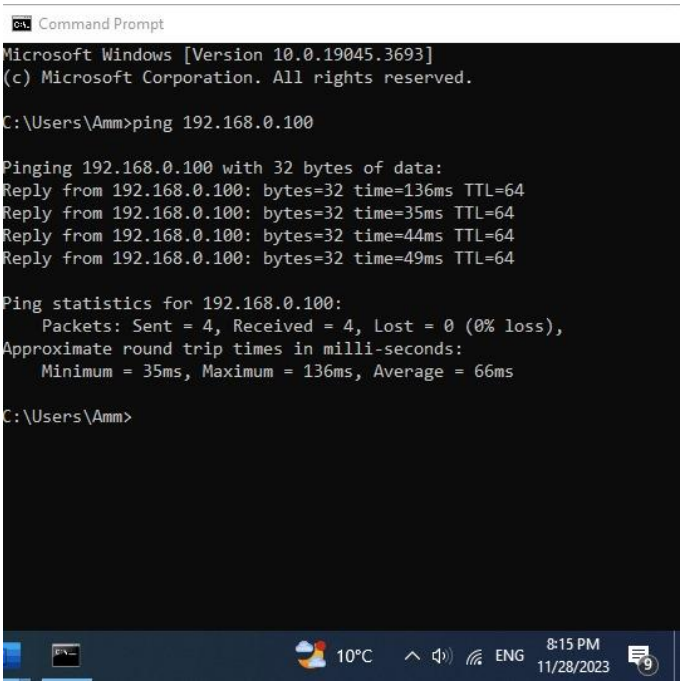


Figure 1: Part 1, part 2.1.

We used cmd to test the ping command by sending four data packets to the targeted Ip address (we used the Ip of a cell phone) the output of this command contained the bytes of the data packets we sent which it was (32 bytes).
each one of the packets we sent had three parameters to describe it:

1- Size of each Packet: measured by bytes.
2- Time needed for each packet to send and received measured by milliseconds.
3- Time To Live (TTL): number of hops the packet is permitted to travel before being discarded.

In the above screenshot you can see that all the four packets we sent was successfully sent and received, the average round-trip time was 66 milliseconds.

2- ping www.cornell.edu

We used Cmd to preform ping www.cornell.edu , we saw the round-trip time (in

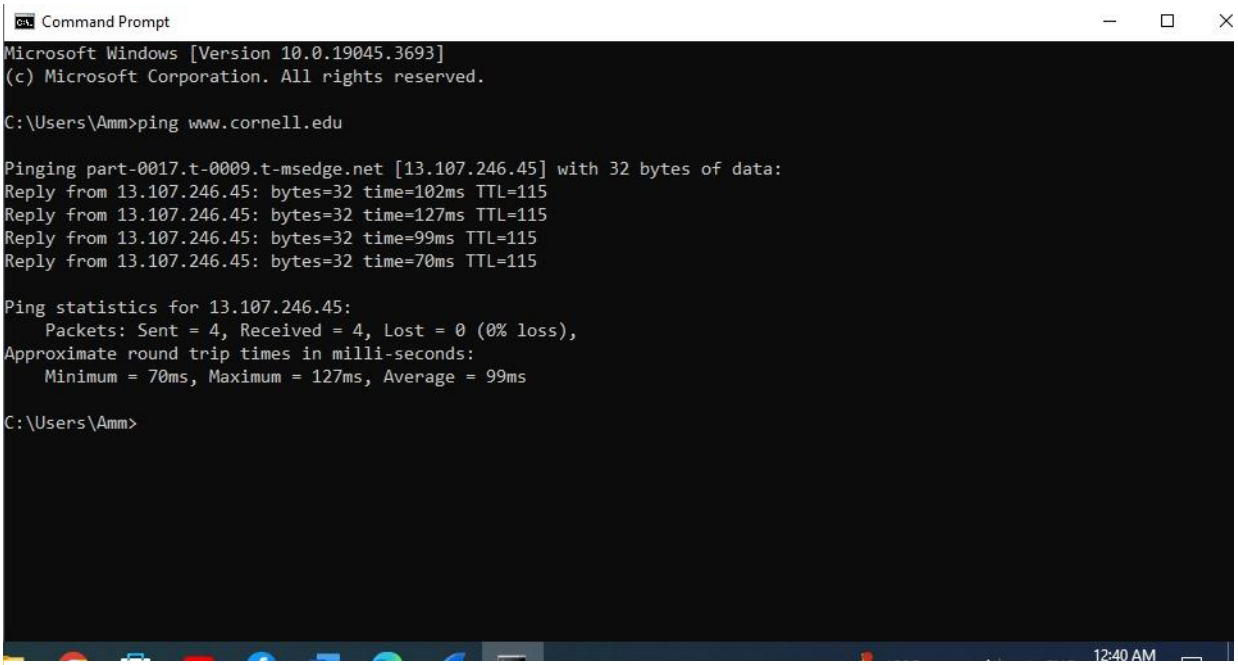


Figure 2: Part 1, part 2.2.

milliseconds) for each packet , the Ip address of "part-0017.t-0009.t-msedge.net" is 13.107.246.45 . it also shows the replay of each message containing the size of each packet in bytes, the time from sending to receiving this packet and TTL which is the number of nods each packet has to pass through.

3- racert www.cornell.edu

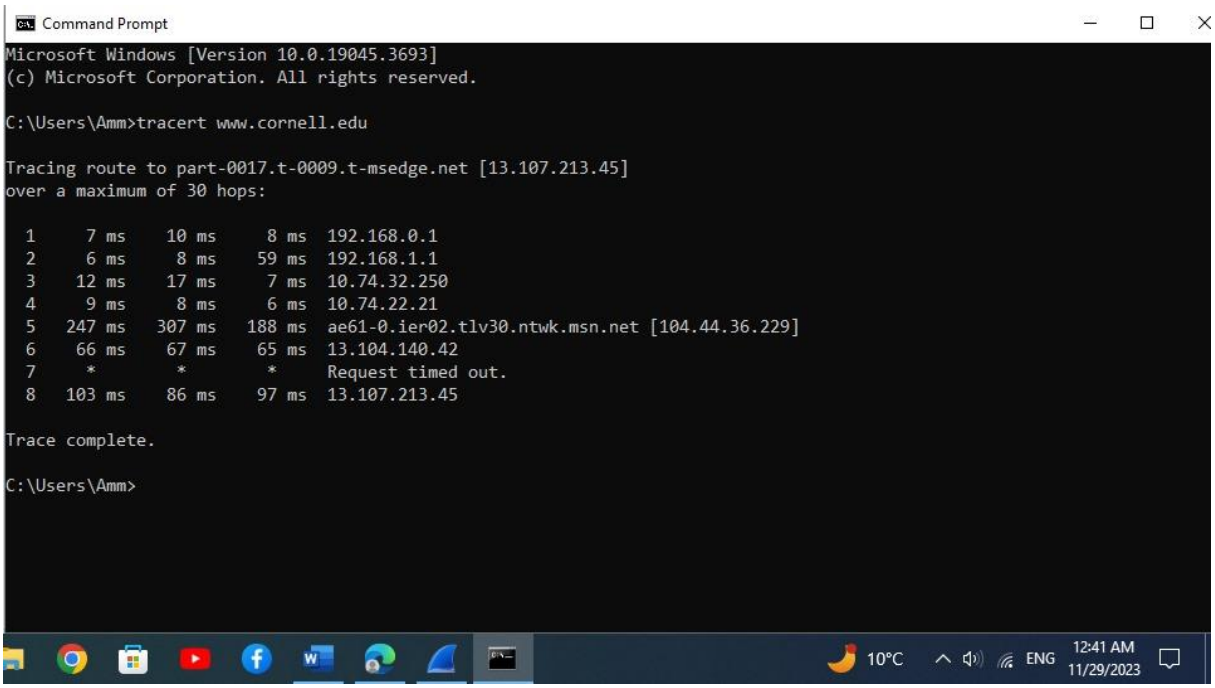


Figure 3: Part 1, part 2.3.

We used Cmd to preform tracert, the first line shows the target IP address or domain being traced and its corresponding IP address. The Column Headers:
Hop: The number of the hop in the route.
Hostname (or IP address): The IP address or hostname of the router at that hop.
Time (ms): Round-trip time in milliseconds for the packet to reach that hop and back.
Rows represents a hop along the route. The first hop is typically our local router or gateway. Subsequent hops are intermediate routers or switches that the packet passes through. Times in milliseconds represent the round-trip time for a packet to reach that hop and return. The three times shown are the result of sending three separate packets to that hop.

4- nslookup www.cornell.edu

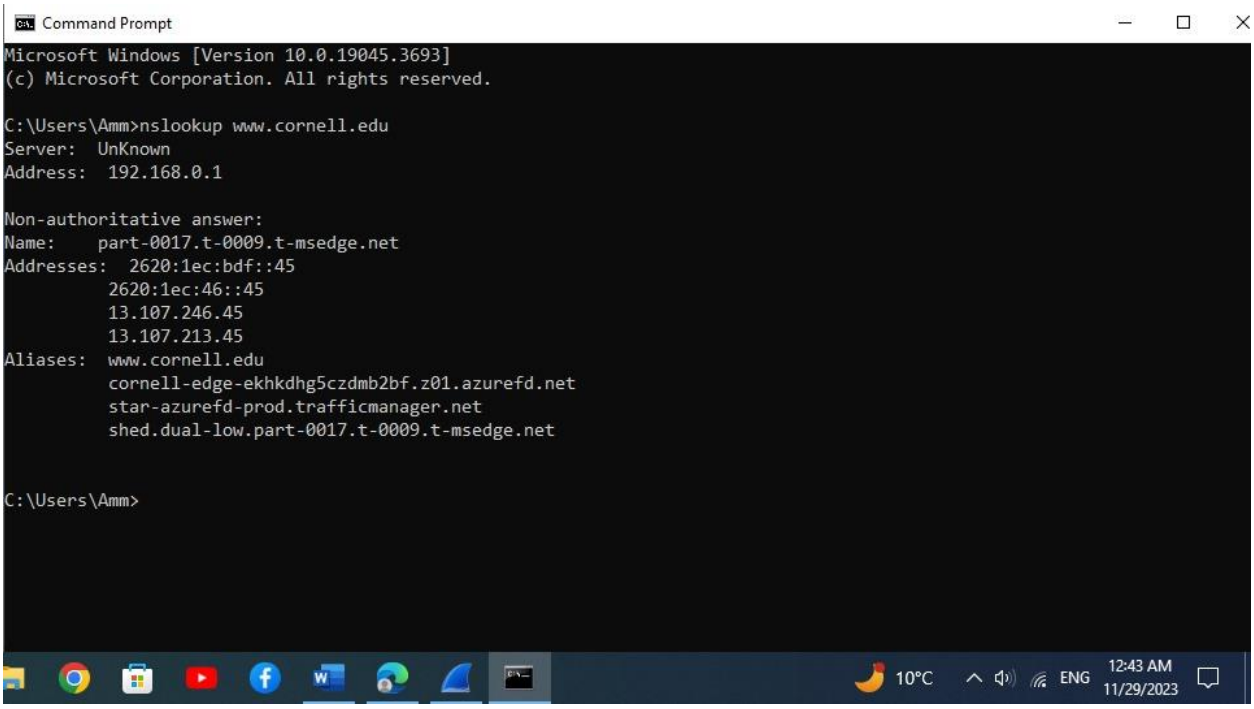


Figure 4:Part 1, part 2.4.

We used Cmd to preform nslookup command, the output was shown as follow:
Server: The DNS server that provided the resolution. In this example, it's "UnKnown" with an IP address of "192.168.0.1,".
Non-authoritative answer: This indicates that the information was obtained from a DNS server that is not the ultimate authority for the domain.
Name: The resolved domain name. In this case, "www.cornell.edu" resolves to "part-0017.t-0009.t-msedge.net".
Addresses: The IP addresses associated with the resolved domain.
Aliases: Additional domain names associated with the resolved IP addresses.

3- use wireshark to capture some DNS messages.

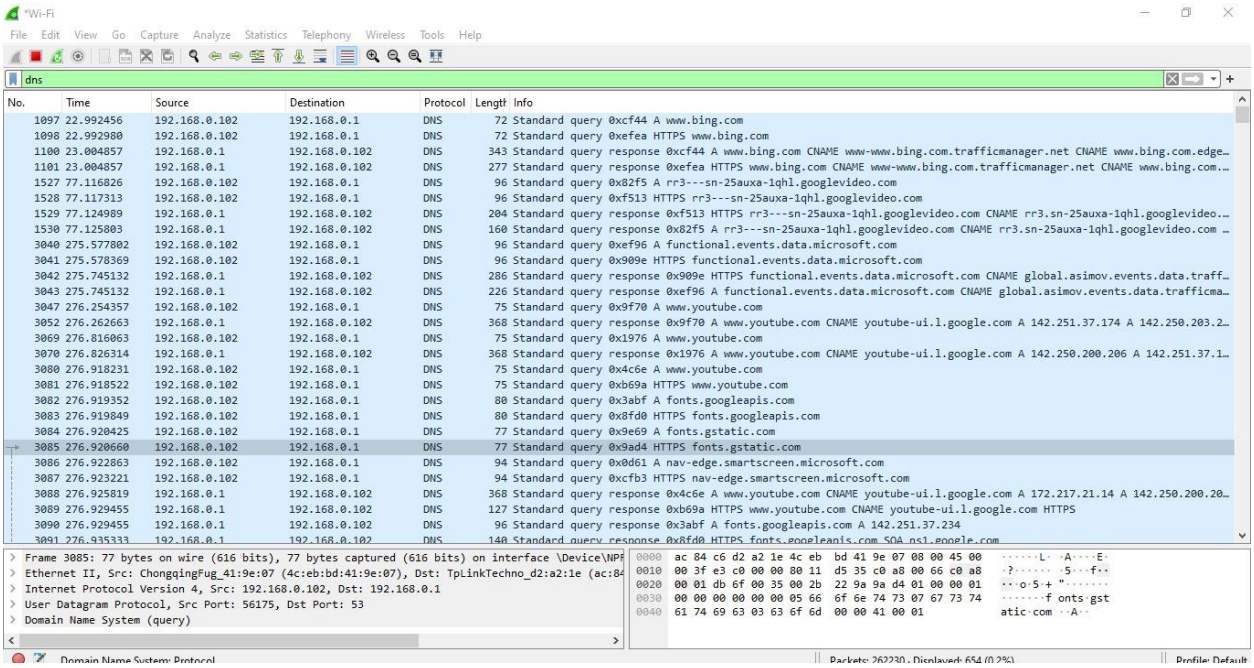


Figure 5: Part 1, part 3.

When capturing DNS (Domain Name System) messages in Wireshark, we can see DNS request and response packets, DNS record types, DNS Queries for local domains, DNS flags, etc.

DNS protocol translates human readable domain names into IP addresses.

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

The ping results alone, which measure Round Trip Time and network latency, do not provide information about the geographical location of the server associated with "www.cornell.edu." Determining the server's location requires additional methods such as geolocation services or querying the IP address using WHOIS services. By extracting the IP address (13.107.246.62) from the CMD prompt window and checking its approximate location on websites like iplocation.net or ipinfo.io, the results suggest a potential association with the USA, specifically Washington, or Canada, more precisely Quebec. However, it's crucial to emphasize that these findings offer a possible location, and the exact source cannot be definitively verified solely based on the ping results.

Part 2: Socket programming

Using socket programming, implement TCP client and server applications in go, python, java or C. The server should listen on port 9955. The server waits for a message from a client.
If the message is with one of the students ID, the sever should do the following:

1. display a message on the server side that the OS will lock screen after 10 seconds
2. send a message to the client that the sever will lock screen after 10 seconds
3. then wait 10 seconds
4. then call a function lock the screen of the operating system (windows or Linux or MAC).

Any student ID of the group member should work. Any other student number or any text should display an error message on the server side and no lock screen should be done.

- **Server Code**

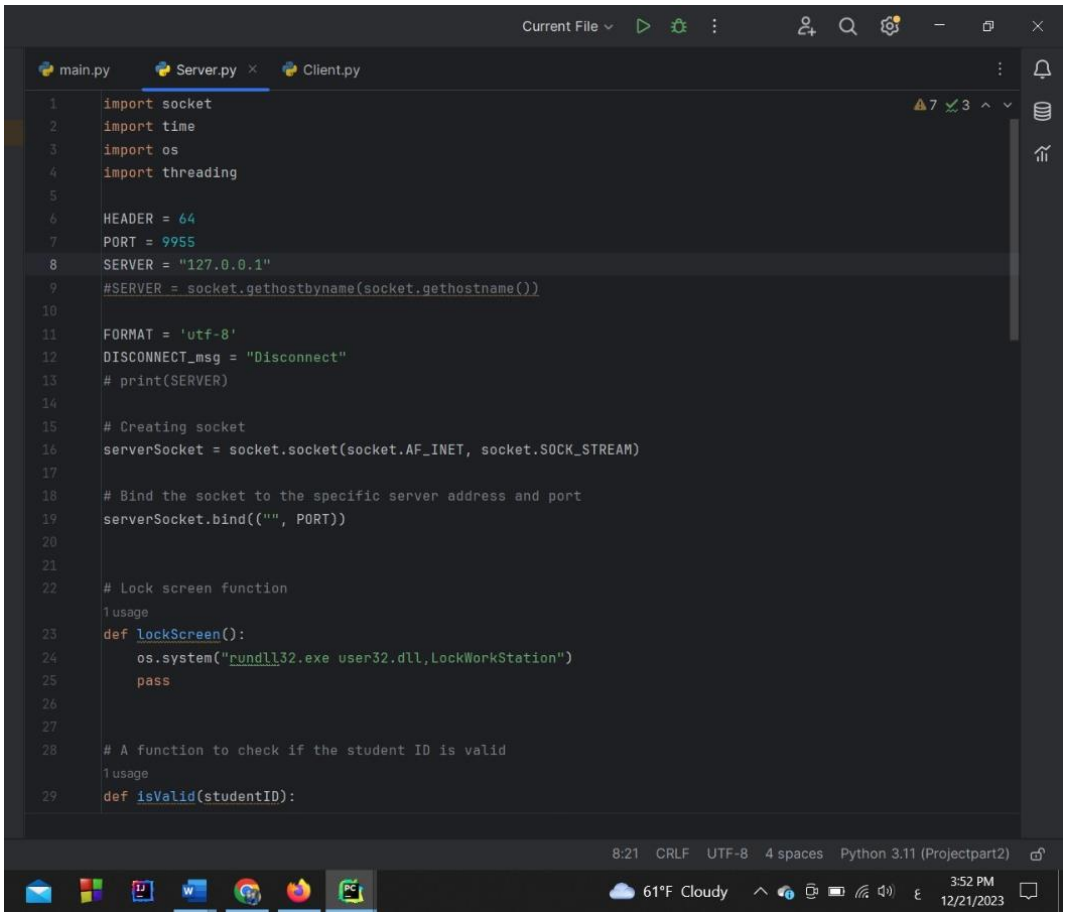
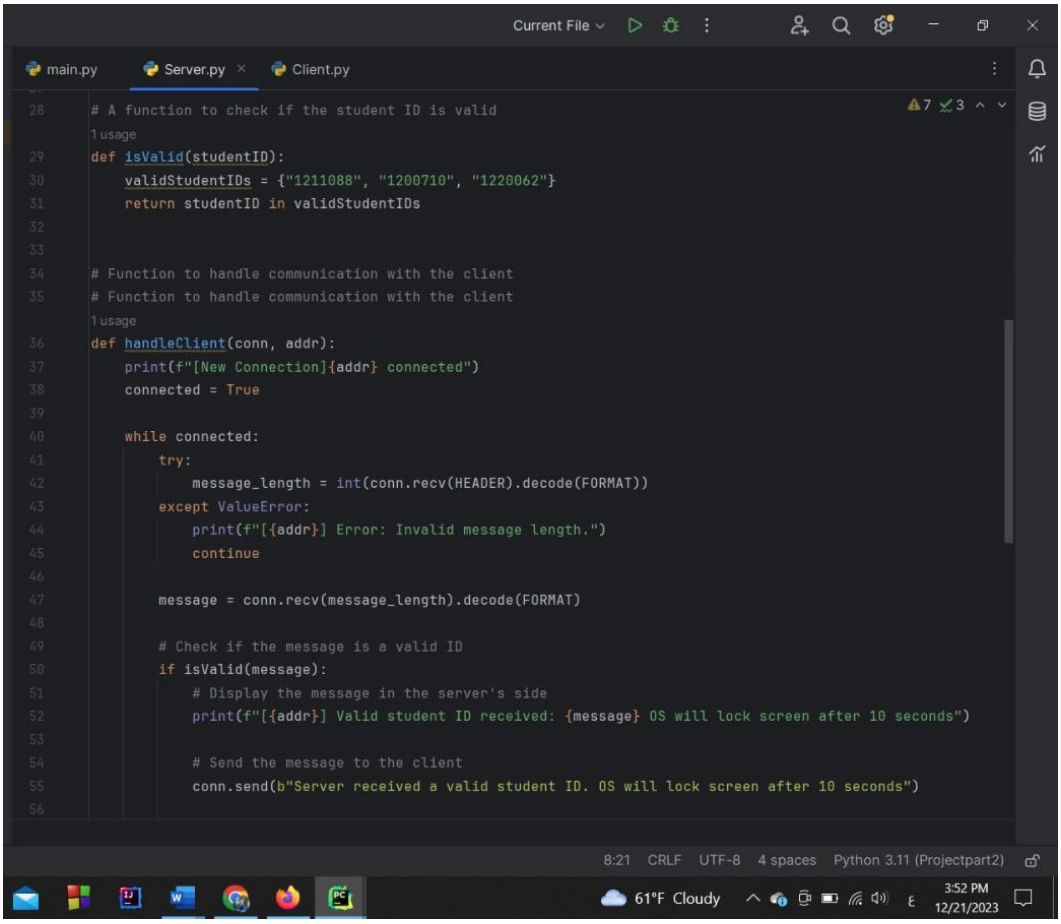
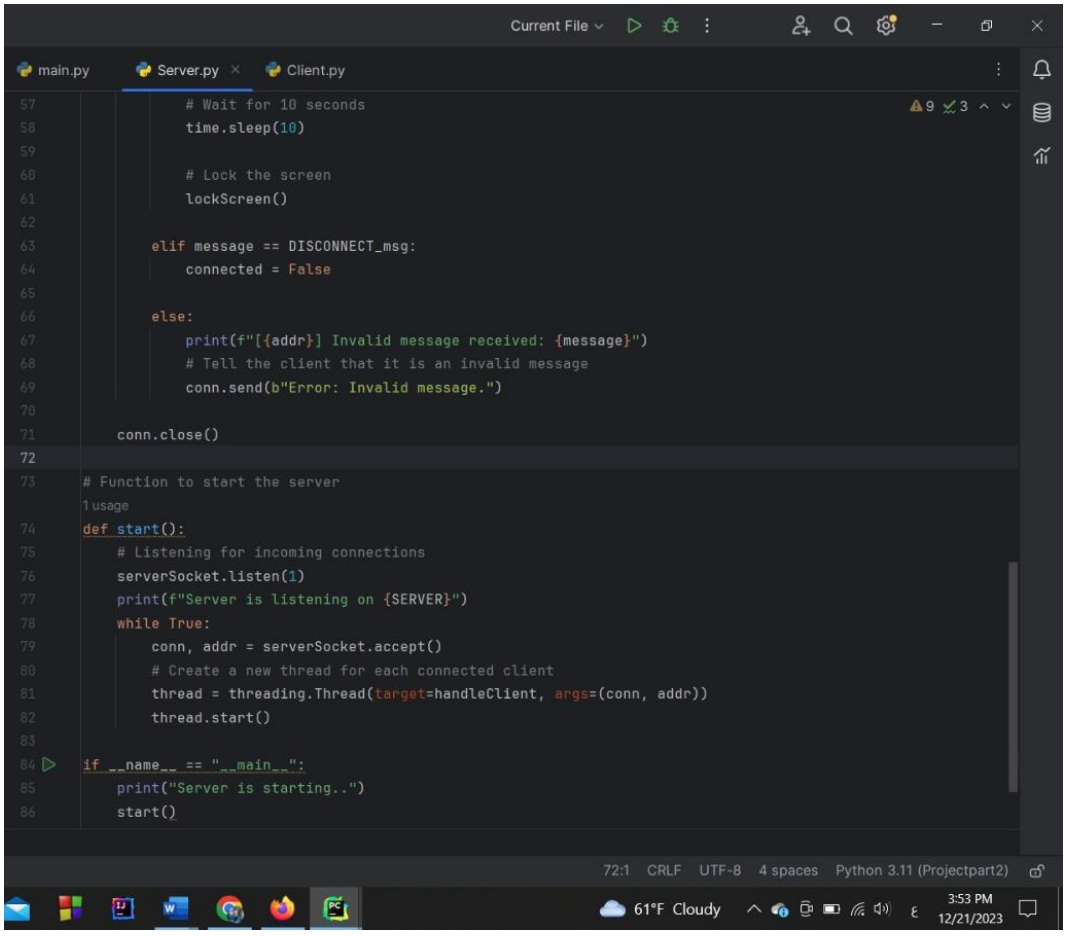


Figure 6:Part2, Server code.


Current File
main.py
Server.py
Client.py
A function to check if the student ID is valid
1 usage
def isValid(studentID):
validStudentIDs = {"1211088", "1200710", "1220062"}
return studentID in validStudentIDs
Function to handle communication with the client
Function to handle communication with the client
1 usage
def handleClient(conn, addr):
print(f"[New Connection]{addr} connected")
connected = True
while connected:
try:
message_length = int(conn.recv(HEADER).decode(FORMAT))
except ValueError:
print(f"[{addr}] Error: Invalid message length.")
continue
message = conn.recv(message_length).decode(FORMAT)
# Check if the message is a valid ID
if isValid(message):
# Display the message in the server's side
print(f"[{addr}] Valid student ID received: {message} OS will lock screen after 10 seconds")
# Send the message to the client
conn.send(b"Server received a valid student ID. OS will lock screen after 10 seconds")
8:21 CRLF UTF-8 4 spaces Python 3.11 (Projectpart2)
61°F Cloudy
3:52 PM
12/21/2023


Current File
main.py
Server.py
Client.py
# Wait for 10 seconds
time.sleep(10)
# Lock the screen
lockScreen()
elif message == DISCONNECT_msg:
connected = False
else:
print(f"[{addr}] Invalid message received: {message}")
# Tell the client that it is an invalid message
conn.send(b"Error: Invalid message.")
conn.close()
# Function to start the server
1 usage
def start():
# Listening for incoming connections
serverSocket.listen(1)
print(f"Server is listening on {SERVER}")
while True:
conn, addr = serverSocket.accept()
# Create a new thread for each connected client
thread = threading.Thread(target=handleClient, args=(conn, addr))
thread.start()
if __name__ == "__main__":
print("Server is starting..")
start()
72:1 CRLF UTF-8 4 spaces Python 3.11 (Projectpart2)
61°F Cloudy
3:53 PM
12/21/2023

Explanation:

In this code, we implemented a simple server using socket programming in python that listens on port 9955, and accepts connections from client (using handleClient() function, the server will tell that it is connected to the client, this is called Handshaking, since we are using TCP connection). The server will take the client message and check if it is a valid student id (one of the 3 ids of us) or not using isValid() function, if yes, it will send a message to the client that the operating system will lock the screen after 10 seconds, if not, it will tell the client that it is an invalid id, so no event will occur.
For each connected client, a thread will be created, so we imported the thread library.

- **Client Code**

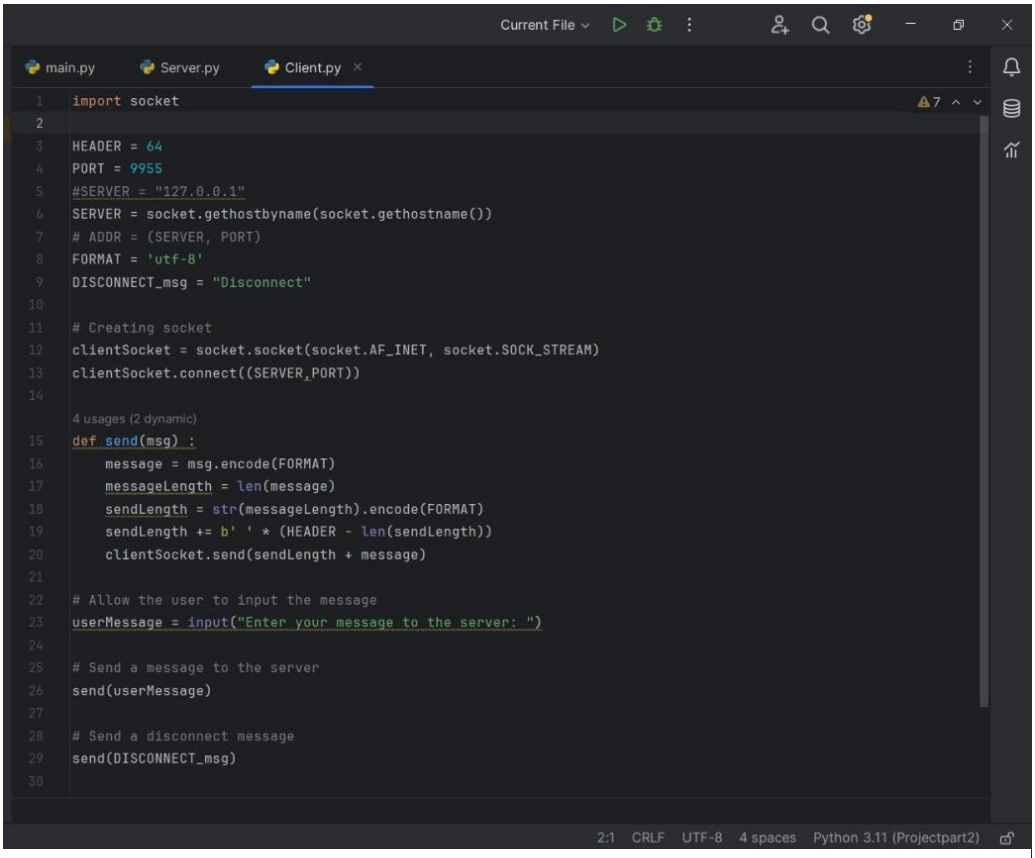


Figure 7:Part2, Client code.

Explanation:

In this code, we implemented a simple client that starts a TCP connection with the server using sockets. It contains a function that handles message sending, and determines the message length, it also allows the user to write the message to the server, then it closes the TCP connection.

Both client and server must be connected to the same port.

- **Running results**

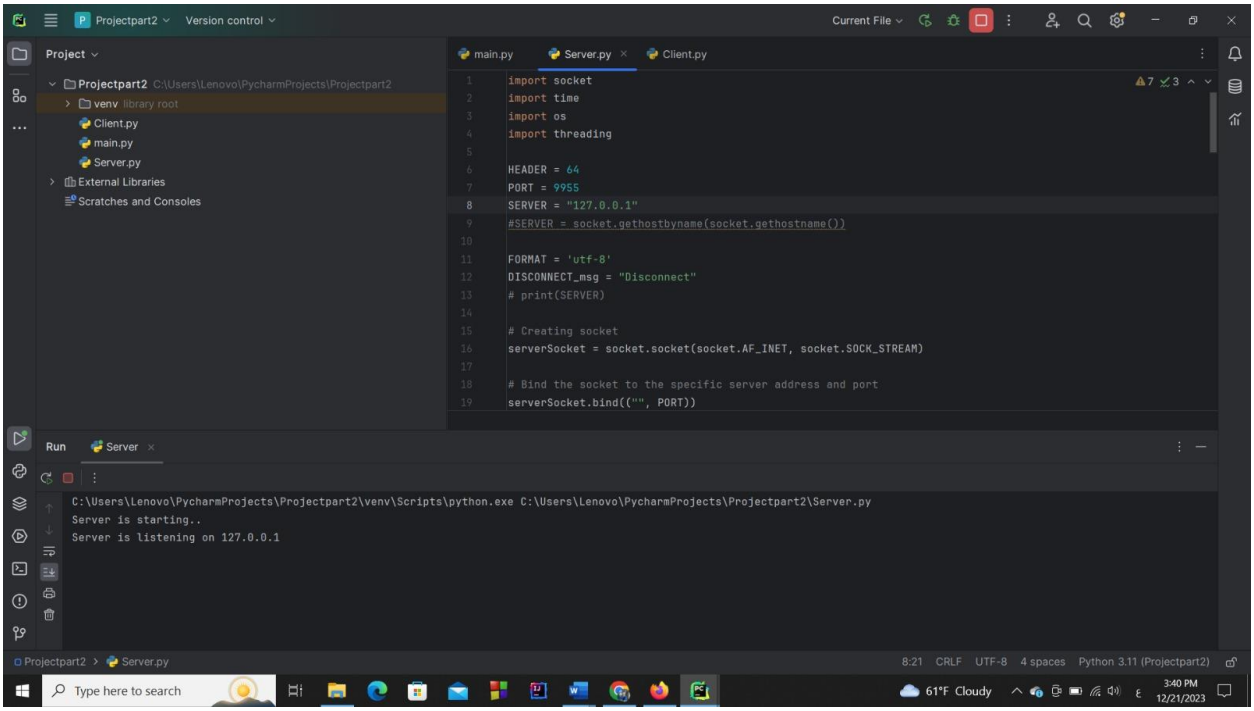


Figure 8: Part2, Running Server code.

When we run the server the code, it prints that the server is starting, after it accepts the connection, it prints that the server is listening.

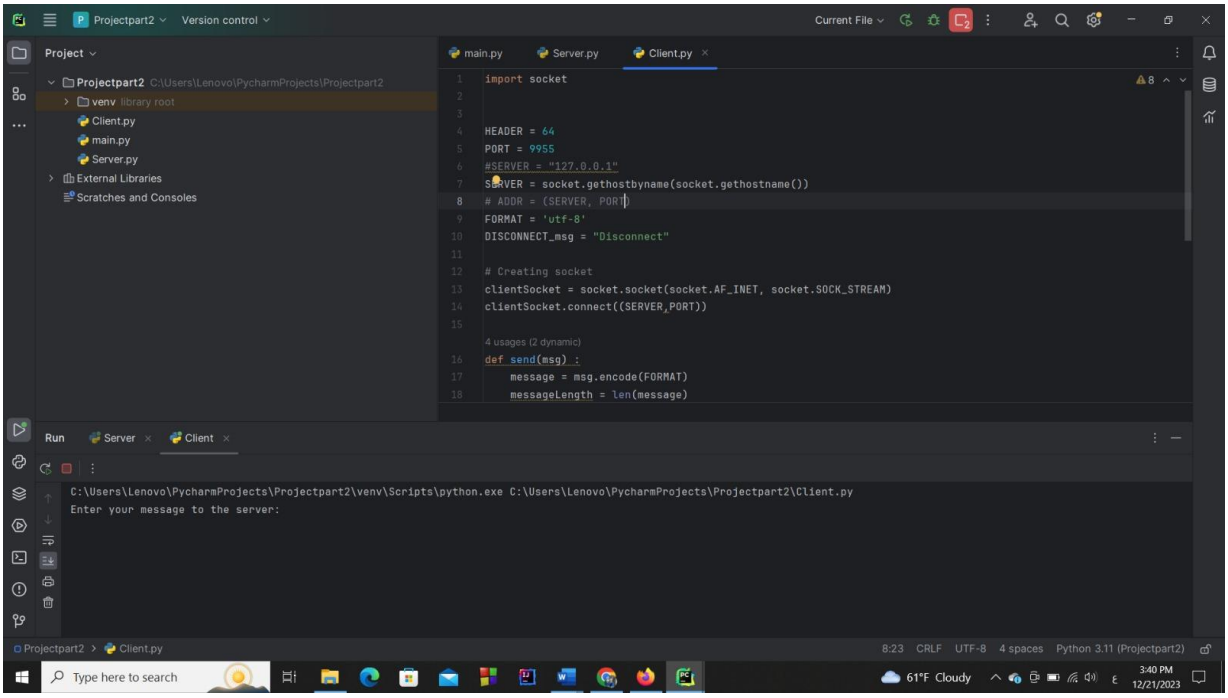


Figure 9:Part2, Running Client code.

When running the client code, it asks the user to enter the message to the server

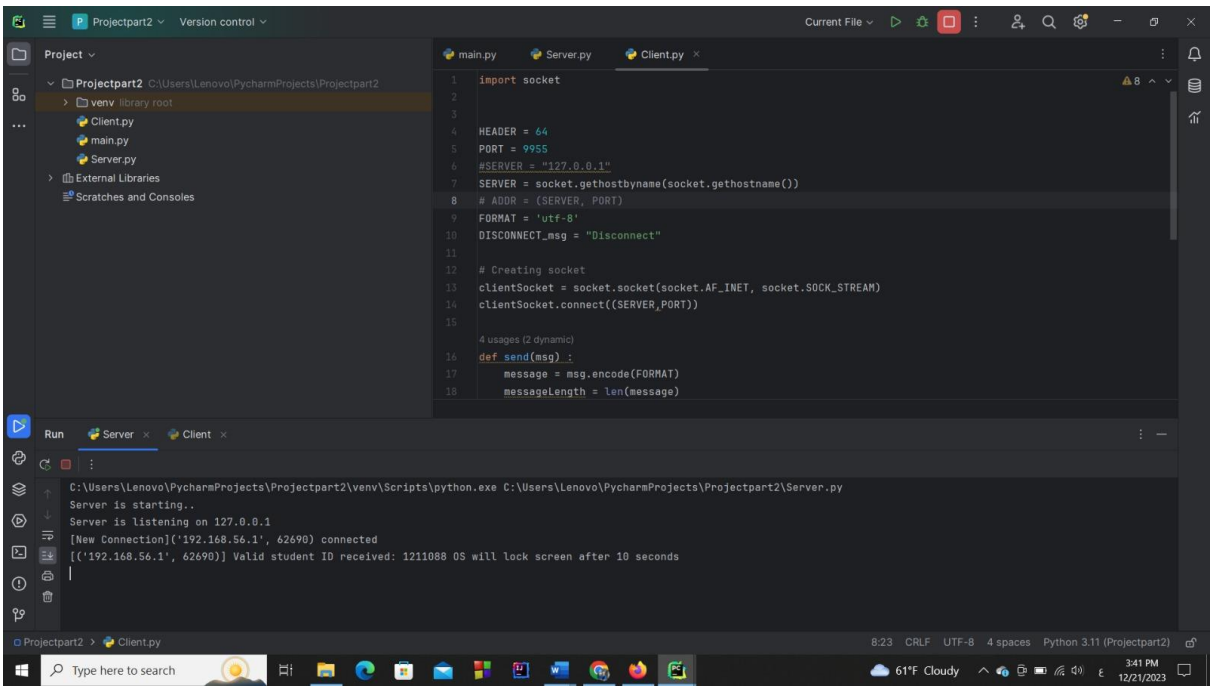


Figure 10: Part2, Entering Valid student ID.

When I entered one of our student IDs, the server says that I enter a valid student ID so it will lock the screen after 10 seconds. This happens after the server accepts the client connection (connected).

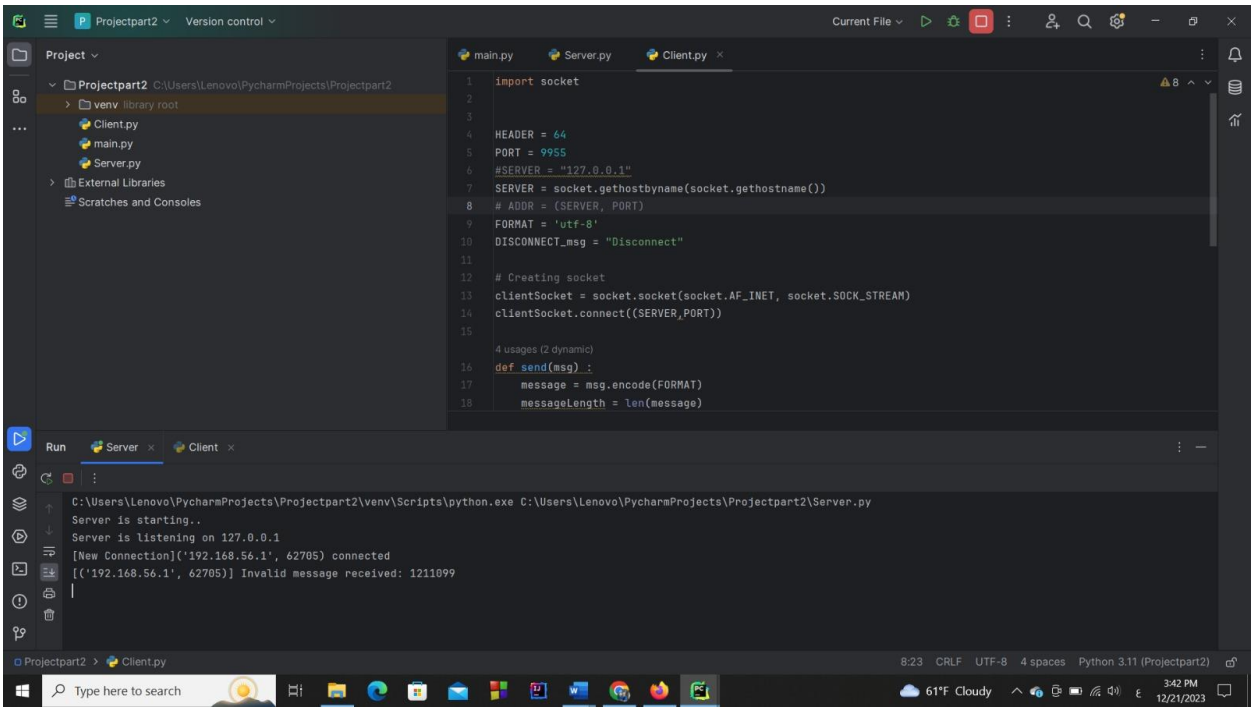


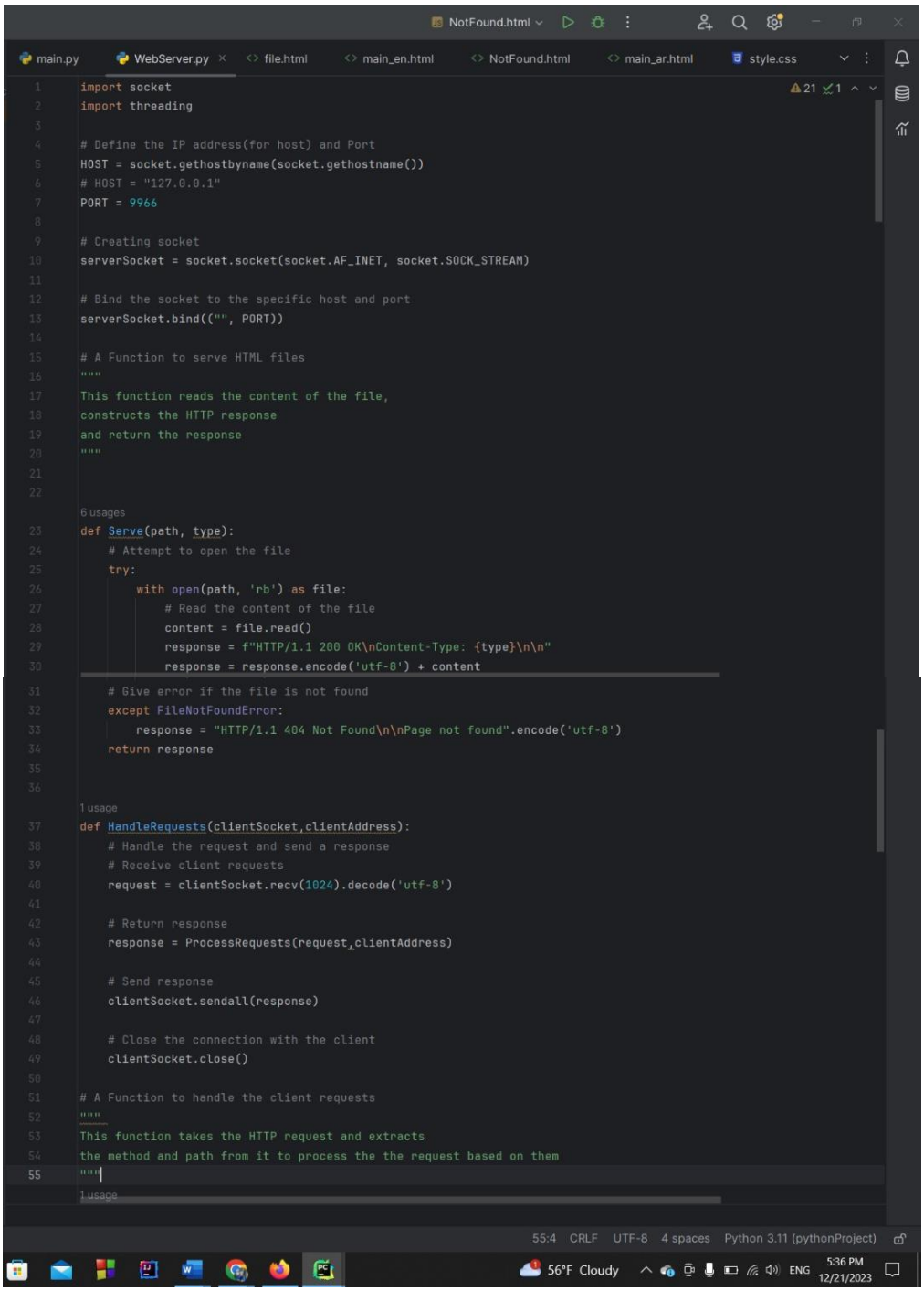
Figure 11: Part2, Entering Invalid student ID.

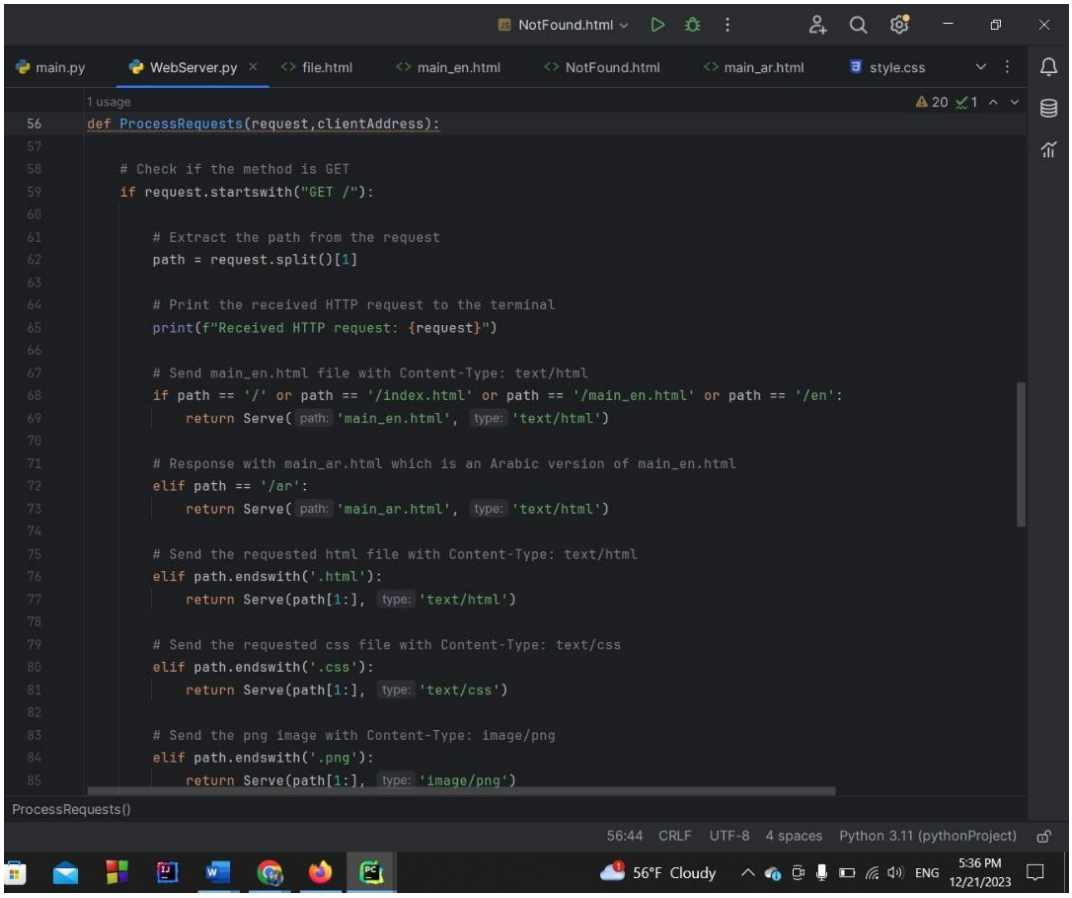
When I entered an invalid student ID from the client, the server will give a message that the message received is invalid.

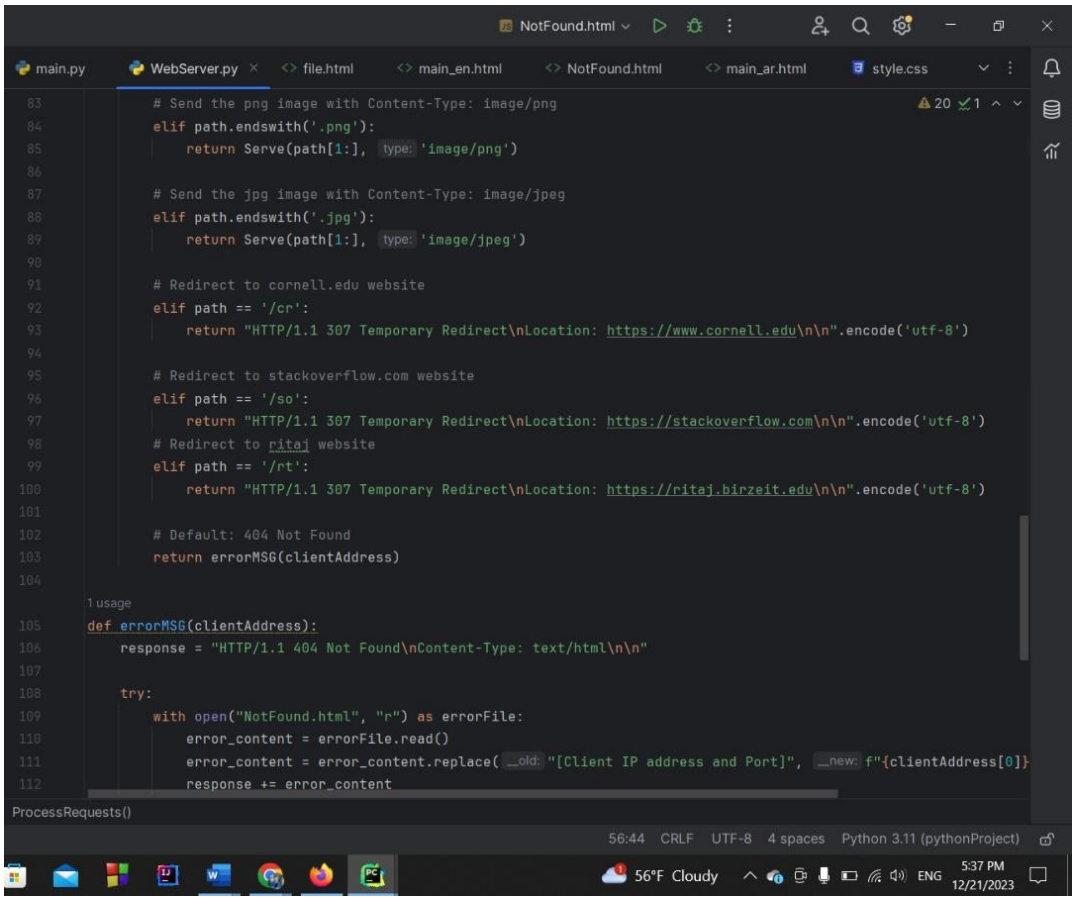
Part 3: Web Server

Using socket programming, implement a simple but a complete web server in go, python, java or C that is listening on port 9966.

- **Web Server Code**




NotFound.html
main.py
WebServer.py
file.html
main_en.html
NotFound.html
main_ar.html
style.css
1 usage
20 1
def ProcessRequests(request,clientAddress):
# Check if the method is GET
if request.startswith("GET /"):
# Extract the path from the request
path = request.split()[1]
# Print the received HTTP request to the terminal
print(f"Received HTTP request: {request}")
# Send main_en.html file with Content-Type: text/html
if path == '/' or path == '/index.html' or path == '/main_en.html' or path == '/en':
return Serve(path: 'main_en.html', type: 'text/html')
# Response with main_ar.html which is an Arabic version of main_en.html
elif path == '/ar':
return Serve(path: 'main_ar.html', type: 'text/html')
# Send the requested html file with Content-Type: text/html
elif path.endswith('.html'):
return Serve(path[1:], type: 'text/html')
# Send the requested css file with Content-Type: text/css
elif path.endswith('.css'):
return Serve(path[1:], type: 'text/css')
# Send the png image with Content-Type: image/png
elif path.endswith('.png'):
return Serve(path[1:], type: 'image/png')
ProcessRequests()
56:44 CRLF UTF-8 4 spaces Python 3.11 (pythonProject)
56°F Cloudy
ENG
5:36 PM
12/21/2023


NotFound.html
main.py
WebServer.py
file.html
main_en.html
NotFound.html
main_ar.html
style.css
20 1
# Send the png image with Content-Type: image/png
elif path.endswith('.png'):
return Serve(path[1:], type: 'image/png')
# Send the jpg image with Content-Type: image/jpeg
elif path.endswith('.jpg'):
return Serve(path[1:], type: 'image/jpeg')
# Redirect to cornell.edu website
elif path == '/cr':
return "HTTP/1.1 307 Temporary Redirect\nLocation: https://www.cornell.edu\n\n".encode('utf-8')
# Redirect to stackoverflow.com website
elif path == '/so':
return "HTTP/1.1 307 Temporary Redirect\nLocation: https://stackoverflow.com\n\n".encode('utf-8')
# Redirect to ritaj website
elif path == '/rt':
return "HTTP/1.1 307 Temporary Redirect\nLocation: https://ritaj.birzeit.edu\n\n".encode('utf-8')
Default: 404 Not Found
return errorMSG(clientAddress)
1 usage
def errorMSG(clientAddress):
response = "HTTP/1.1 404 Not Found\nContent-Type: text/html\n\n"
try:
with open("NotFound.html", "r") as errorFile:
error_content = errorFile.read()
error_content = error_content.replace(old: "[Client IP address and Port]", new: f"{clientAddress[0]}
response += error_content
ProcessRequests()
56:44 CRLF UTF-8 4 spaces Python 3.11 (pythonProject)
56°F Cloudy
ENG
5:37 PM
12/21/2023

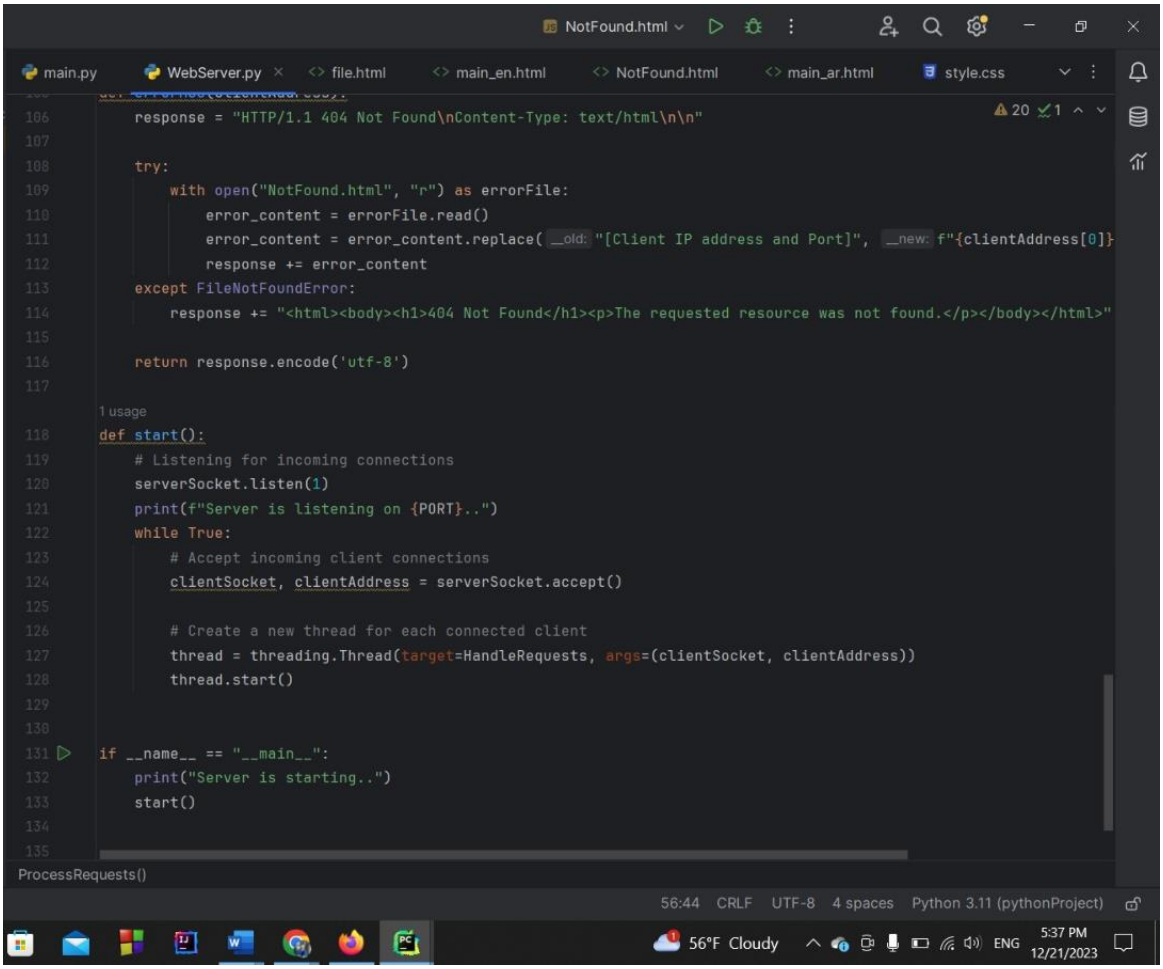


Figure 12:part 3,webserver code.

Explanation:

In this part, we created a web server that accepts connections, and listen on port 9966, then it takes requests from client, and gives responses according to these requests.

The serve() function reads the content of the file, constructs the HTTP request, then returns the HTTP response.

The HandleRequests() function receives client requests, returns the response(depending on the client address), and closes the connection.

The ProcessRequests() function checks the method (HTTP request message) if it is a GET(for sending data to server), extracts the path from the request, and responses with the requested file.

The errorMSG() function handles the error state, so if the request is wrong, or the file does not exist, it shows the Error page we have designed.

The start() function starts listens for incoming connections from the client, and creates a thread for each client.

0- From rfce2616, what is Content-Type in the HTTP request and why do we need it?

Content Type:

It is a header field that specifies the media type of the underlying data that specifies the entity format. We can obtain the referenced media type from decoding mechanisms done by Content-Encoding.

We need it in the HTTP request because:

the HTTP uses the Content-Type header fields to provide, open, and extensible data typing and type negotiation. Also, it is crucial because it helps the recipient (client or server) to understand how to parse and process the content.

1- If the request is / or /index.html or /main_en.html or /en (for example localhost:9966/ or localhost:9966/en) then the server should send main_en.html file with Content-Type: text/html.

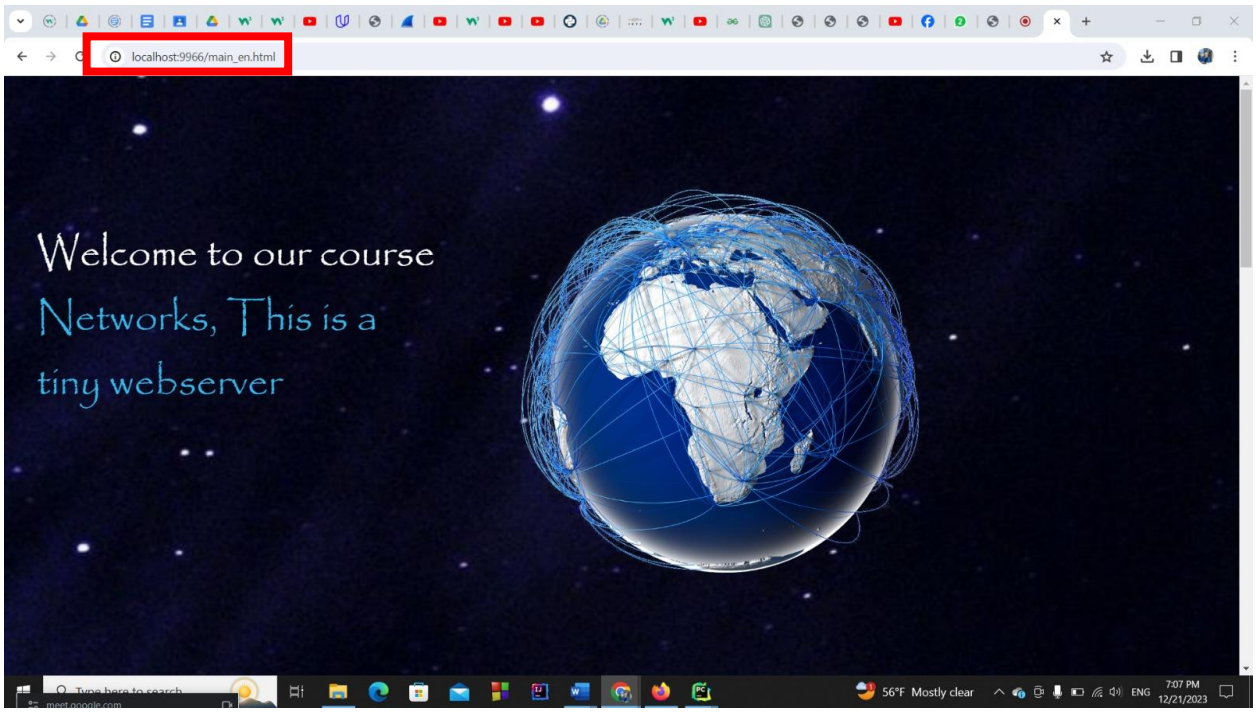
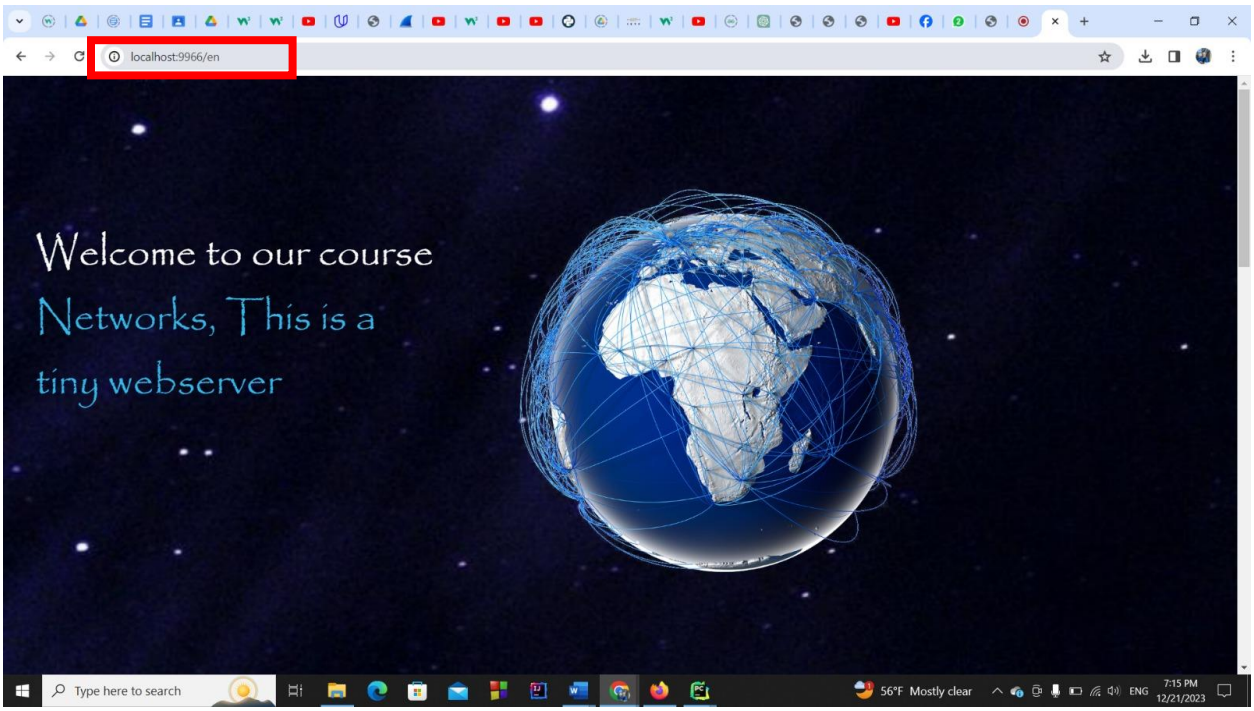
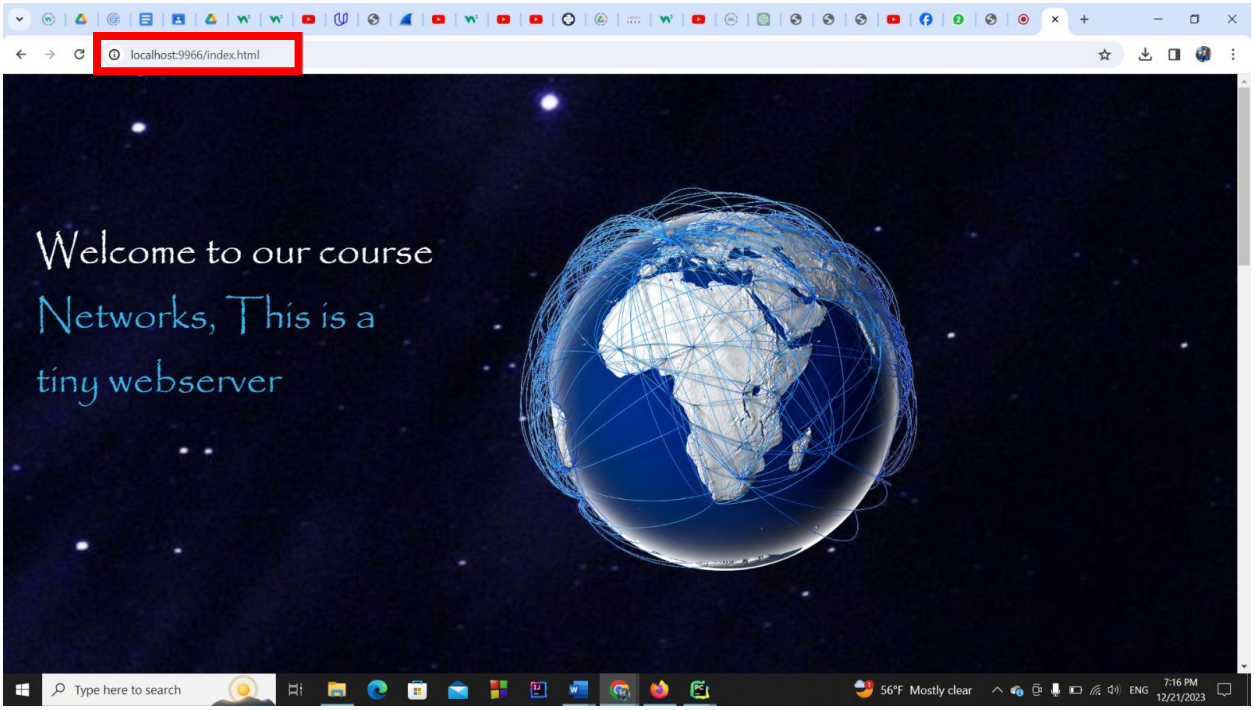


Figure 13:main_en.

The HTTP request '/main_en.html' redirects the client to our webpage.



The HTTP request '/en' redirects the client to our webpage.



The HTTP request '/index.html' redirects the client to our webpage.

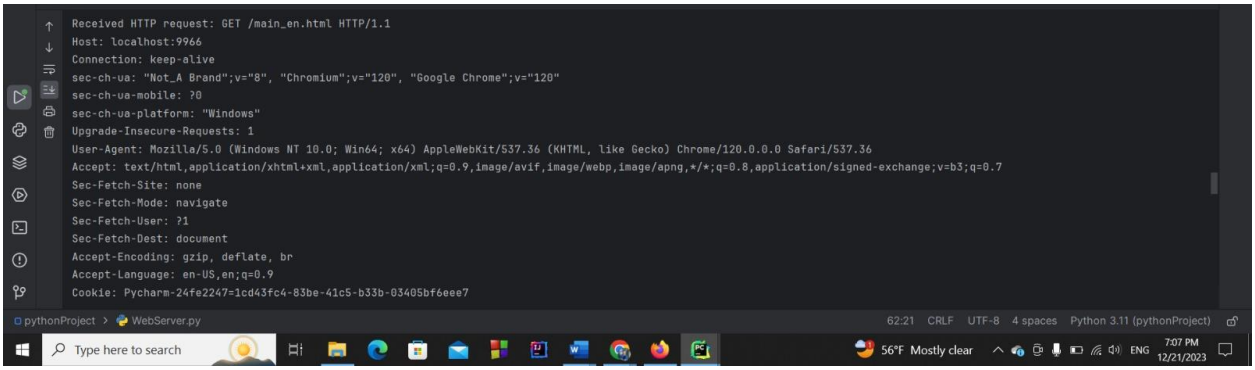
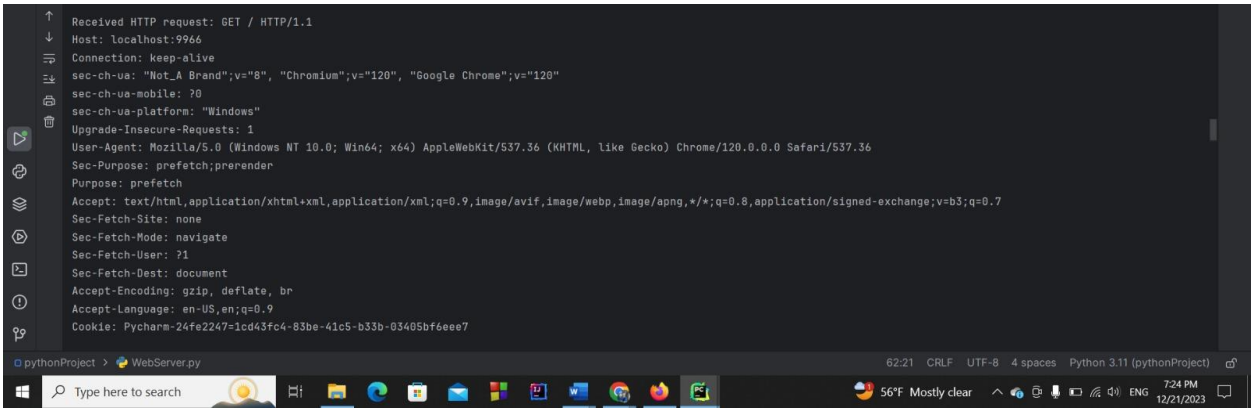
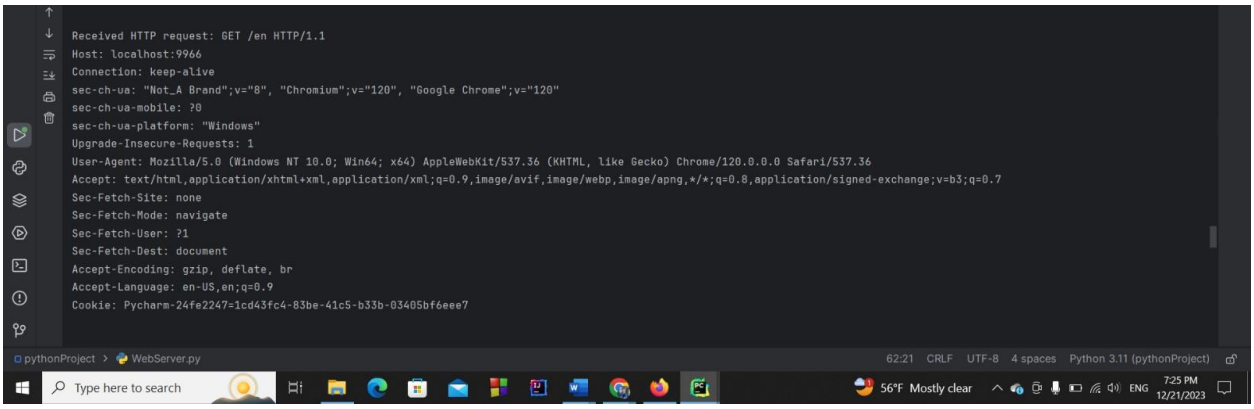
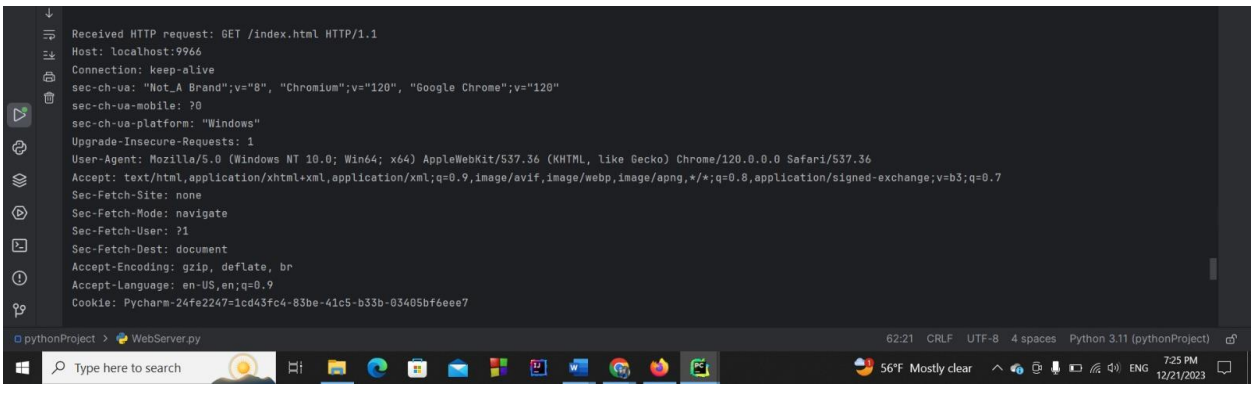


Figure 14:HTTP request for english







Explanation:

The previous HTTP request messages: (taking main_en.html as an example)

- The request line: “GET /main_en.html HTTP/1.1”.

GET: The method for sending data to server.

/main_en.html: The URL of the HTML file requested by the client.

HTTP/1.1: The version of the protocol used by the client.

- **The next line** in the terminal shows the IP address and the port number: ('127.0.0.1', 9966)
- **The header lines:** the rest of the request message are header lines each with a header field name and a value.
- **The body:** the body is empty.

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

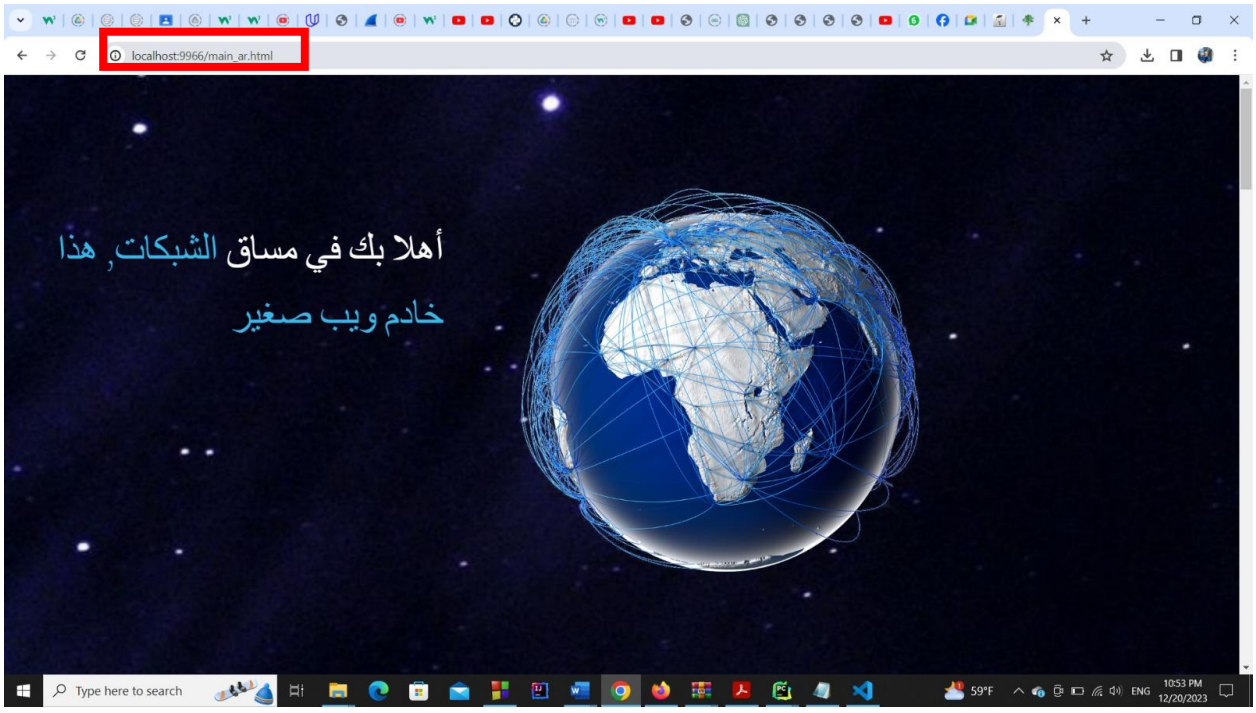


Figure 15:main_ar

The HTTP request ‘/main_ar.html’ redirects the client to our webpage.

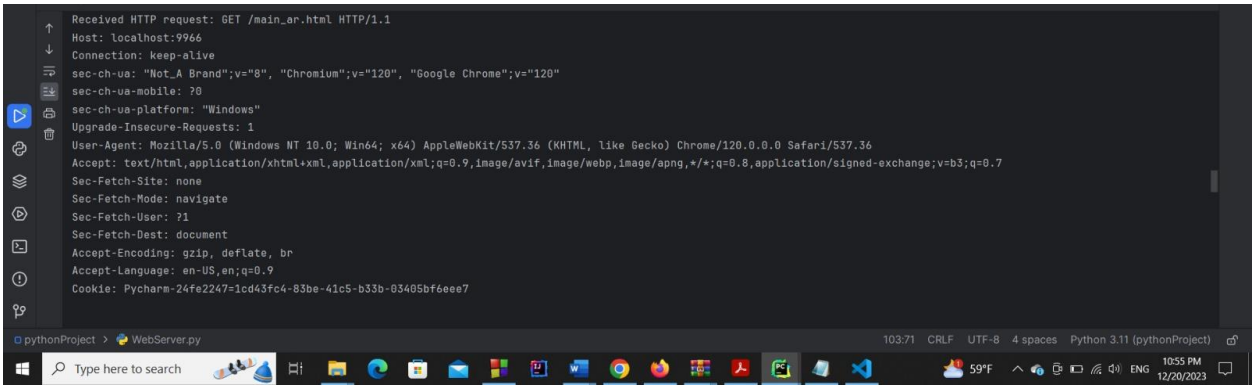


Figure 16:HTTP request for arabic

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.

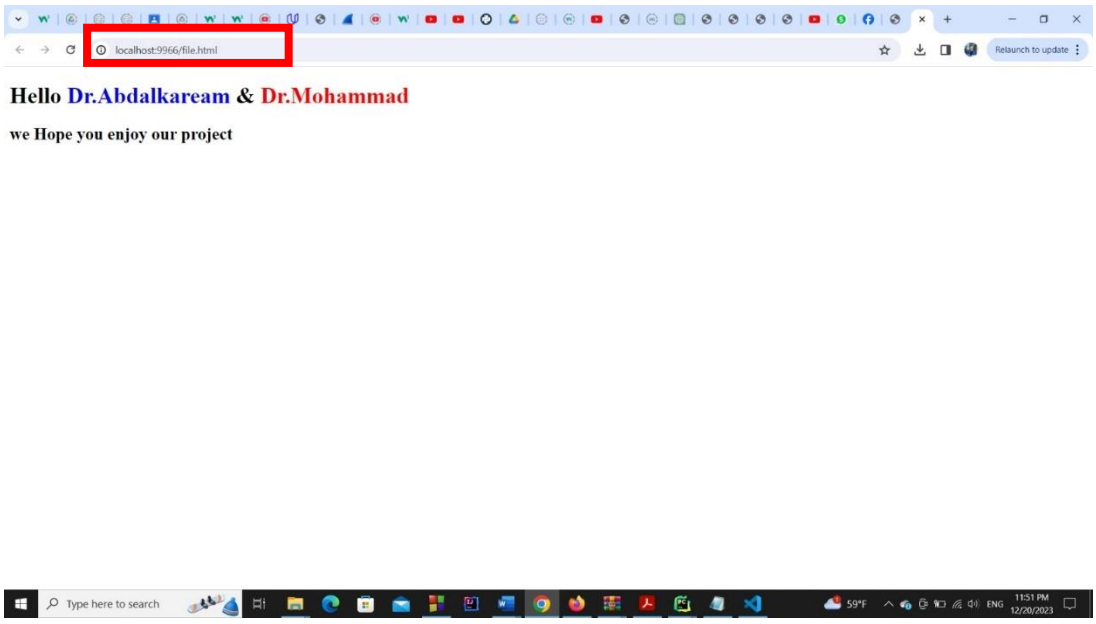


Figure 17: English html file

The HTTP request '/file.html' redirects the client to a webpage designed by html.

Figure 18:HTTP request

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

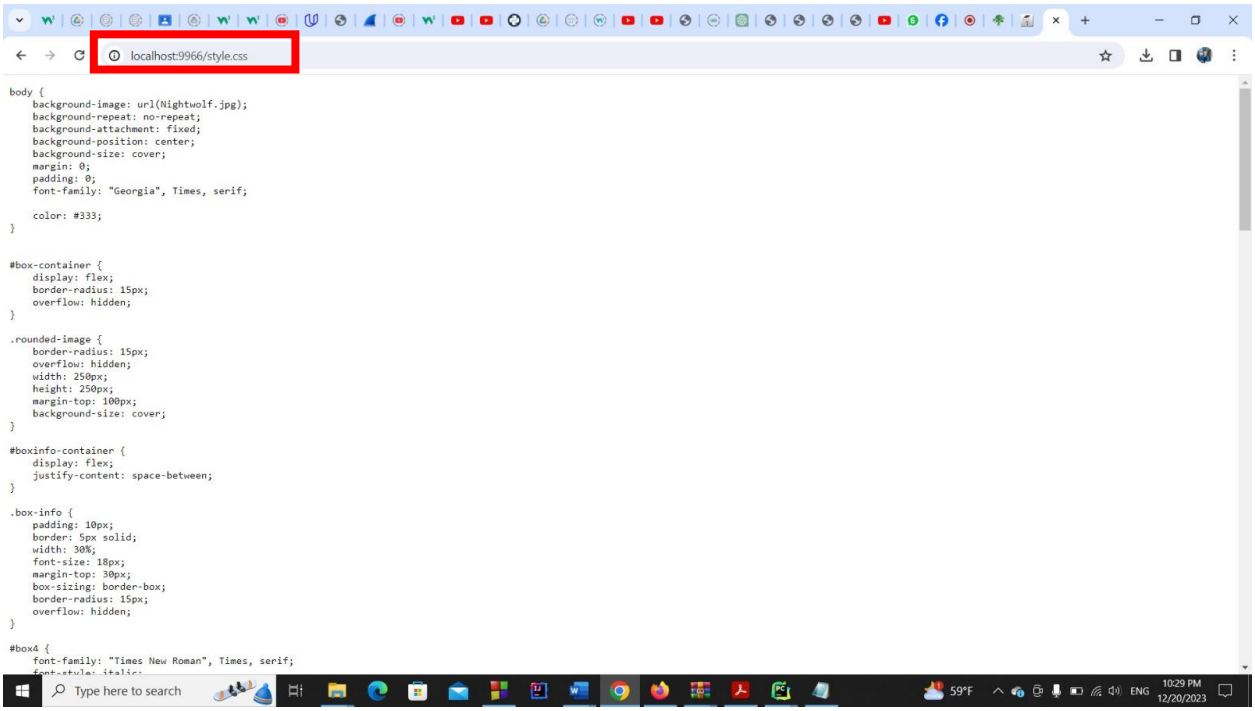


Figure 19: Style code

Figure 20:Style HTTP request

The HTTP request '/style.css' redirects the client to the css file stored on the computer (The same path as the web server).

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.

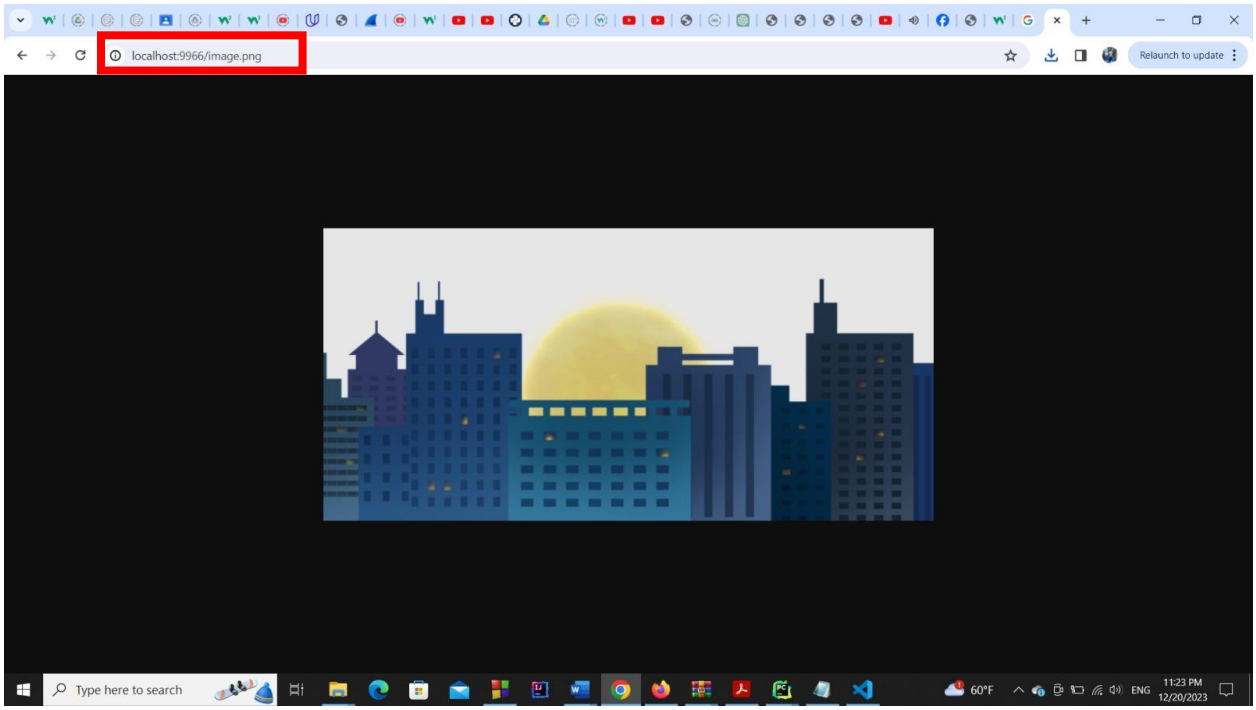


Figure 21:png image

Figure 22:HTTP request for png

The HTTP request '/image.png' redirects the client to a png image stored on the computer (The same path as the web server).

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.

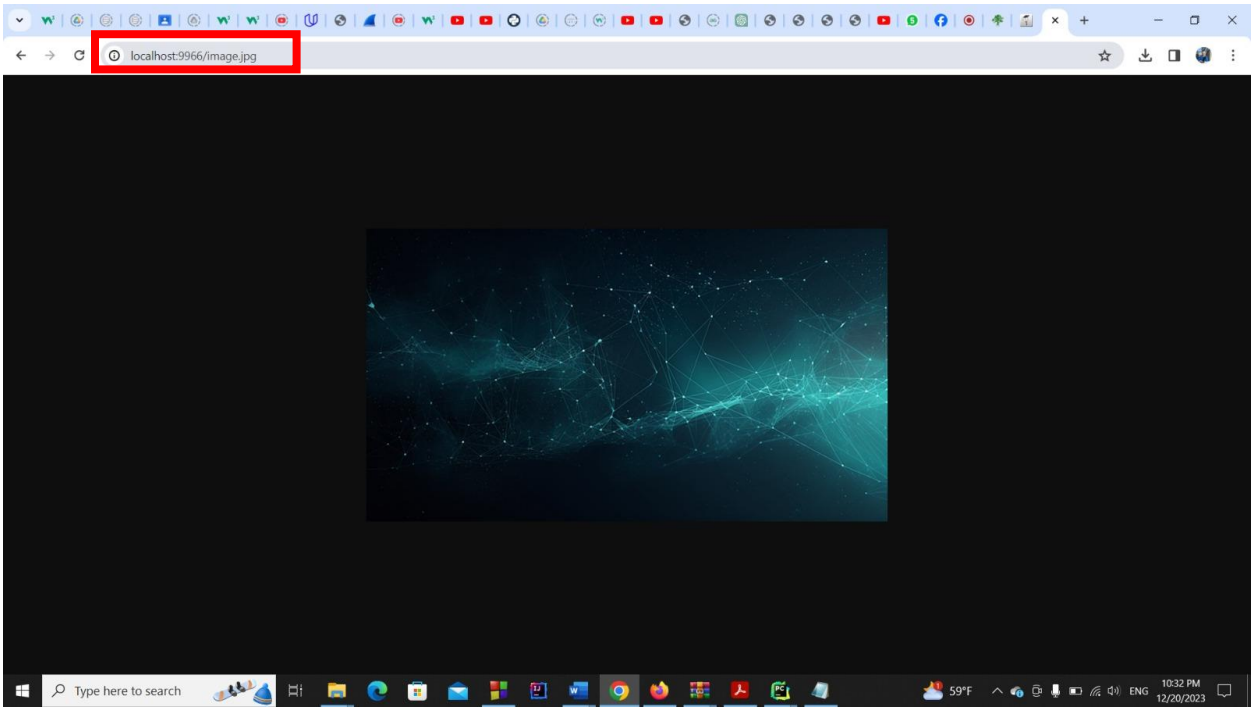


Figure 23:jpg image

Figure 24:HTTP request for jpg

The HTTP request '/image.jpg' redirects the client to a jpg image stored on the computer (The same path as the web server).

7- Use the status code 307 Temporary Redirect to redirect the following

- **If the request is /cr then redirect to cornell.edu website**

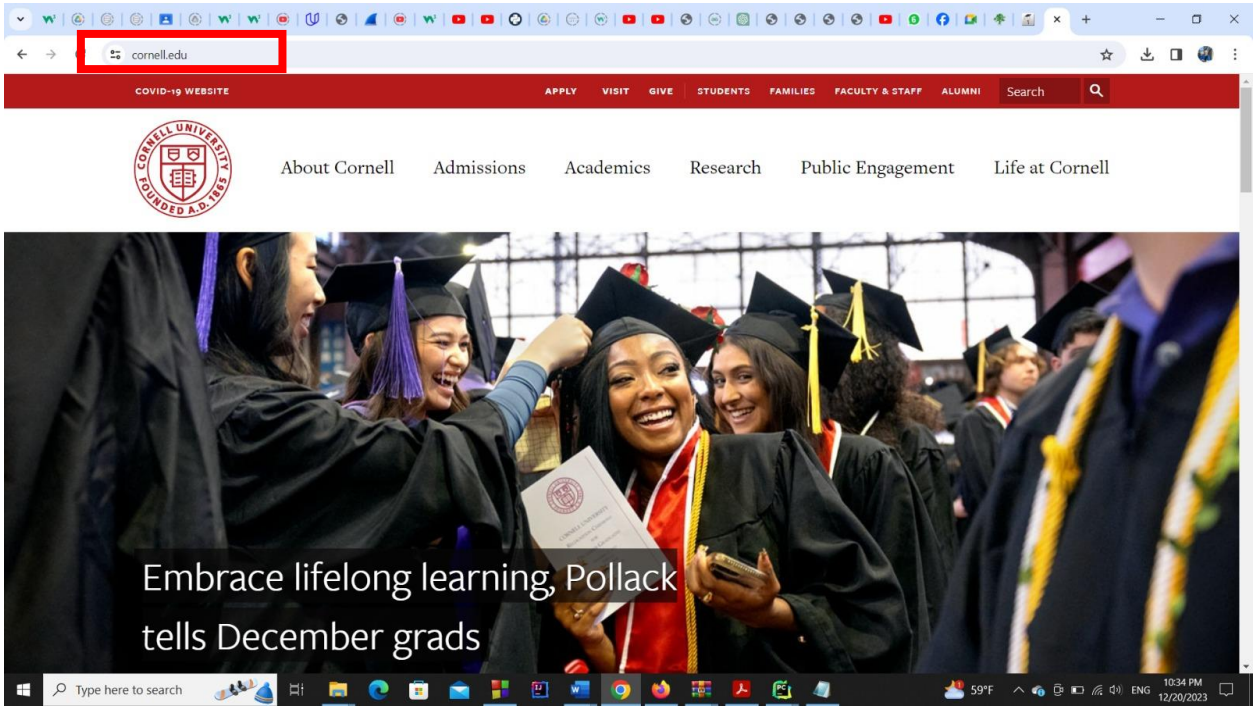


Figure 26:cornell.edu

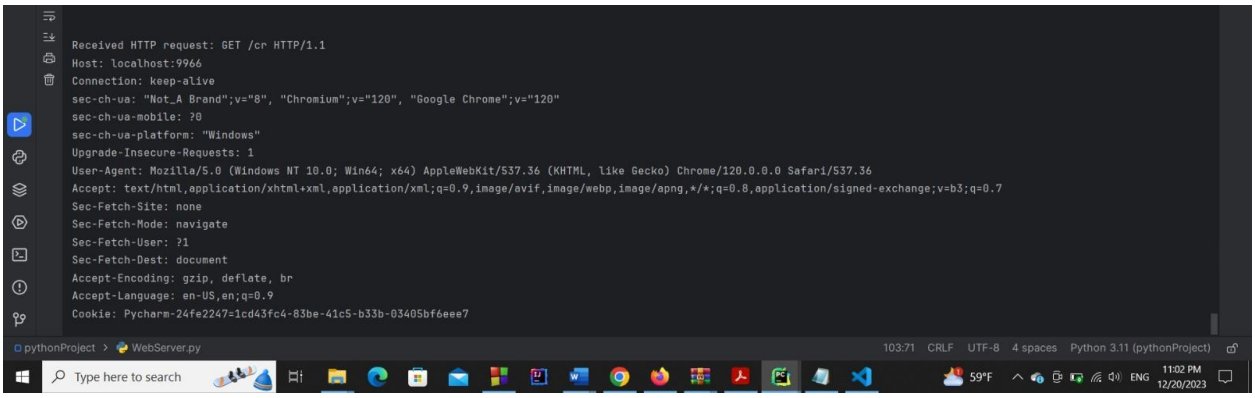


Figure 25:HTTP request for cornell

The HTTP request '/cr' redirects the client to cornell.edu website.

• If the request is /so then redirect to stackoverflow.com website

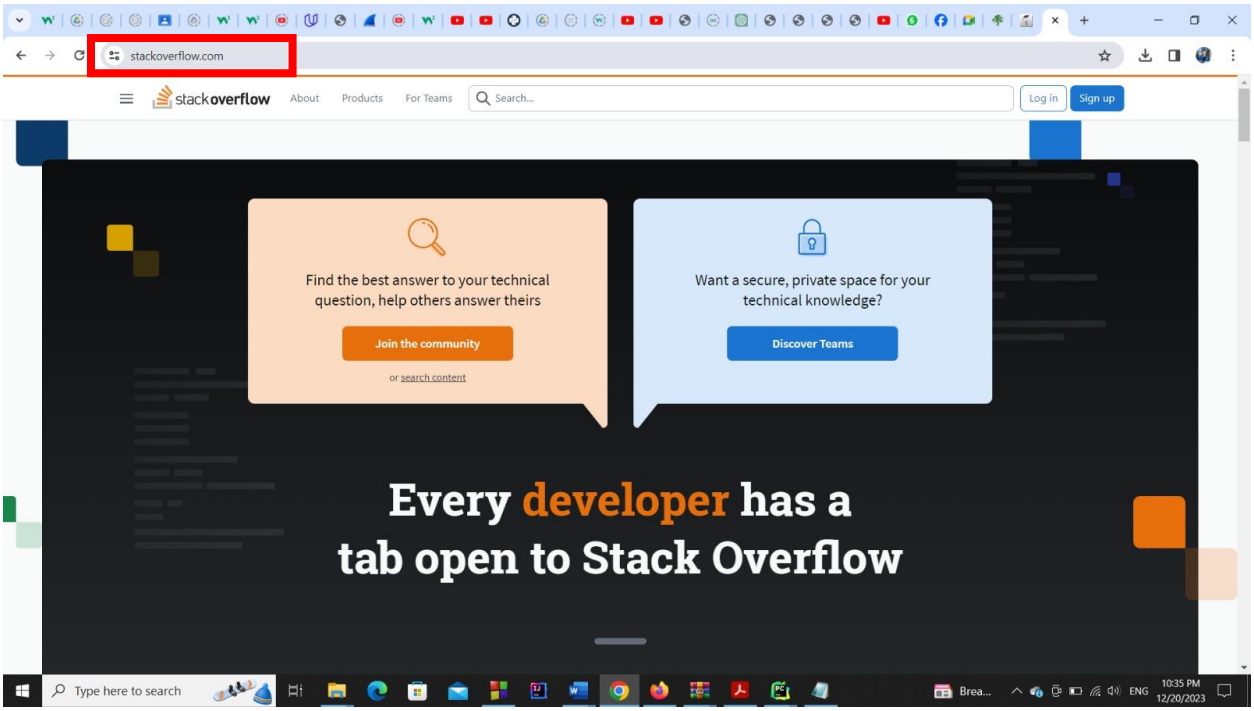


Figure 27:stachoverflow.com

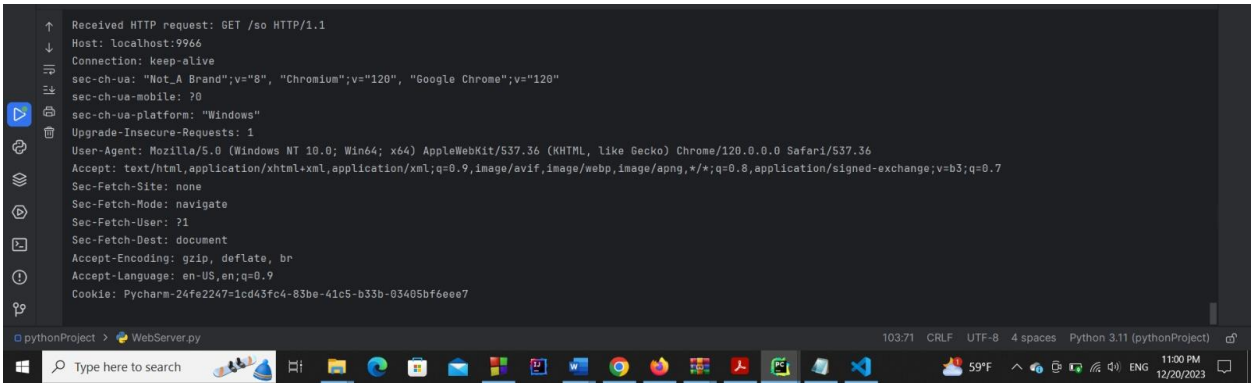


Figure 28:HTTP request for stackoverflow

- **If the request is /rt then redirect to ritaj website**

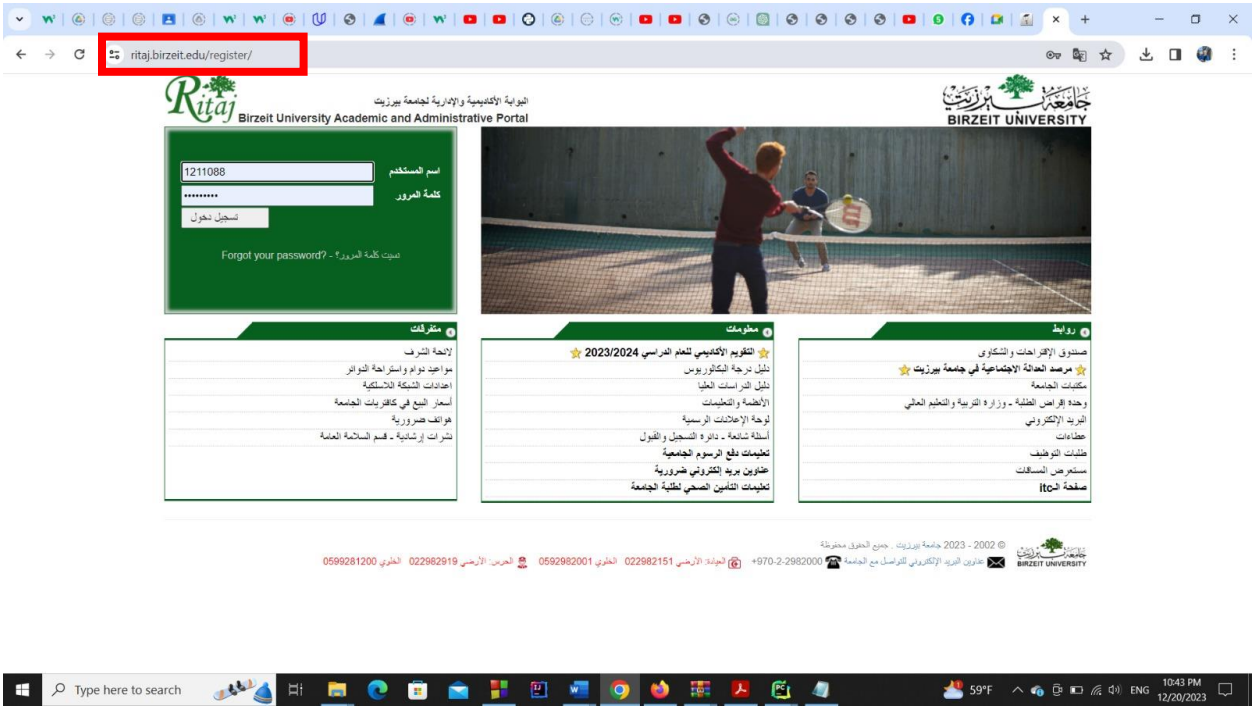


Figure 29:ritaj.edu

The HTTP request '/rt' redirects the client to ritaj.edu website

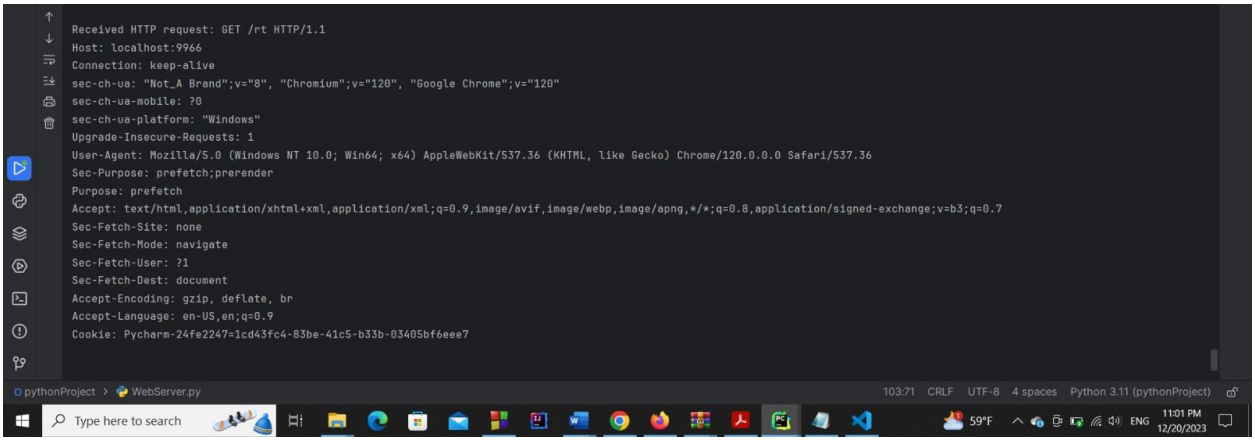


Figure 30:HTTP request for ritaj

8- 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)

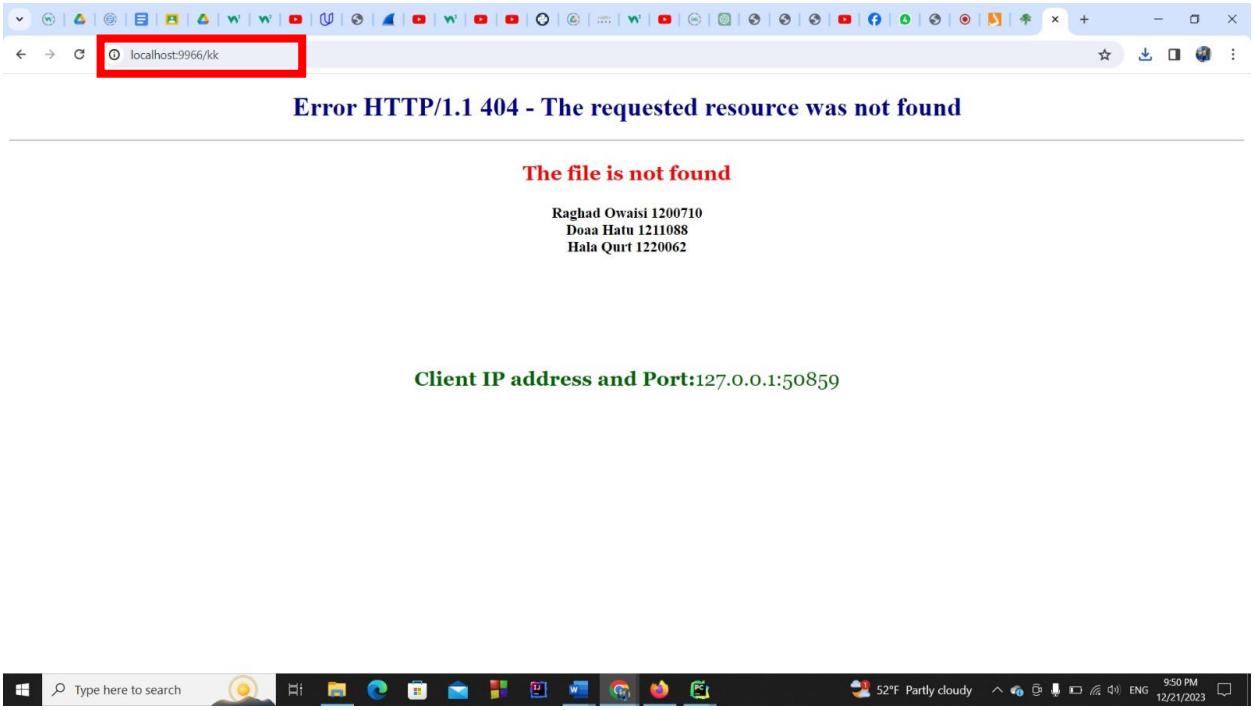


Figure 31:request is wrong or the file doesn't exist

The wrong HTTP request redirects the client to an Erro page, indicates that the requested file is not found. It contains the client IP address and port, and our info.

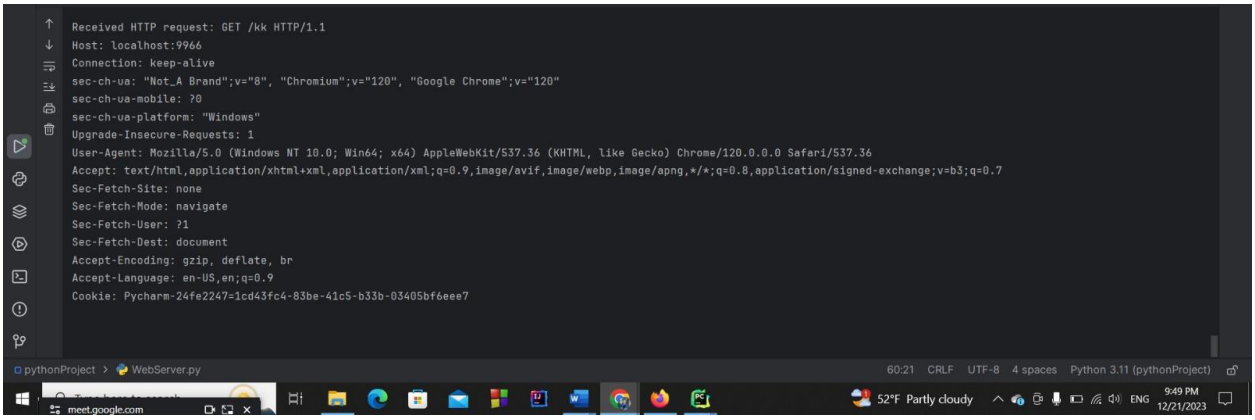


Figure 32:wrong HTTP request

Codes:

English Version

HTML (main_en.html)

network | NetWork_Proj1.html | style.css | page2.html | main_en.html C:\...\Downloads | main_en.html .\ X | style2.css | Settings

main_en.html > html > body

```
<!DOCTYPE html>
<html>
<head>
    <!--This meta tag defines the character encoding for the HTML document-->
    <meta charset="UTF-8">
    <!--This meta tag is used to control the viewport behavior on different devices-->
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <!--setting the title as it was requsted-->
    <title>ENCS3320-My Tiny Webserver 23/24</title>
  <!--this line is very important to conect oue html file to the related css sheet -->
    <link rel="stylesheet" href="style2.css">
</head>
<body>
<!--we defined a container to help us alligen two boxes next to each other as well as to specify the common features of tow boxes without redundancy

    <div id="intro-container">
     <!--set a new id for the box0 to be able to control it's uniqe features in css sheet -->

    <div id="box0">
        <!--we used the elemnt span to control the color of specific text  -->

       Welcome to our course <span style="color: rgb(52, 186, 235);">Networks, This is a tiny webserver</span>
    </div>
        <!--set a new id for the box intro to be able to control it's uniqe features in css sheet -->

    <div id="intro">
    </div>
</div>
<!--we defined a container to help us alligen three boxes next to each other as well as to specify the common features of tow boxes without redundan
 <!--set a new id for each box to be able to control each of there uniqe features in css sheet -->

    <div id="box-container">
        <div class="rounded-image" id="box1"></div>
        <div class="rounded-image" id="box2"></div>
        <div class="rounded-image" id="box3"></div>
    </div>
```

Figure 33:English html code

network | NetWork_Proj1.html | style.css | page2.html | main_en.html C:\...\Downloads | main_en.html .\ X | style2.css | Settings

main_en.html > html > body > div#boxinfo-container > div#boxinfo1.box-info > h5

```
<!--we defined a container to help us alligen three boxes next to each other as well as to specify the common features of tow boxes without redundan
 <!--set a new id for each box to be able to control each of there uniqe features in css sheet -->

    <div id="boxinfo-container">
        <div class="box-info" id="boxinfo1">
            <!--we used two elments span for the colors and u to underline the desired text  -->
            <!--we used h4,h5,h6 to control the size of the text as the number goes higher the text get smaller  -->

            <h4><u><span style="color: rgb(161, 16, 115);"> Name</span></u> :Hala Qurt</h4>
            <h4><u><span style="color: rgb(161, 16, 115);"> ID</span></U>: 1220062</h4>

            <h4><u><span style="color: rgb(161, 16, 115);"> Hobbies</span></U> :</h4>
            <!--we ul and li to create a list in html and introduce each item indivdualy  -->

            <h5>
            <!--This is a list of Hala's hoobies  -->

                <ul>
                    <li>-Reading</li>
                    <li>-sport</li>
                    <li>-singing</li>
                    <li>-programming</li>
                </ul>
            </h5>

            <h4><u><span style="color: rgb(161, 16, 115);"> Project</span> </u>:</h4>
            <h5>
            <!--and this is a list of Hala's projects   -->

                <ol>
                    <li>
                        <h5>-A System for booking train tickets (Java1 course)</h5>
                    </li>
                    <li>
                        <h5>- a system for pizza ordering and delivery (Java 2 )</h5>
                    </li>
                    <li>
```


network
NetWork_Proj1.html
style.css
page2.html
main_en.html C:\...\Downloads
main_en.html .\
style2.css
Settings
main_en.html > html > body > div#boxinfo-container > div#boxinfo2.box-info > h5

<h5>- a system that show and modify the internt usege in countries (Data structures course)</h5>

<h5>-a system for Gaza electric sources (Data structures course)</h5>

</h5>

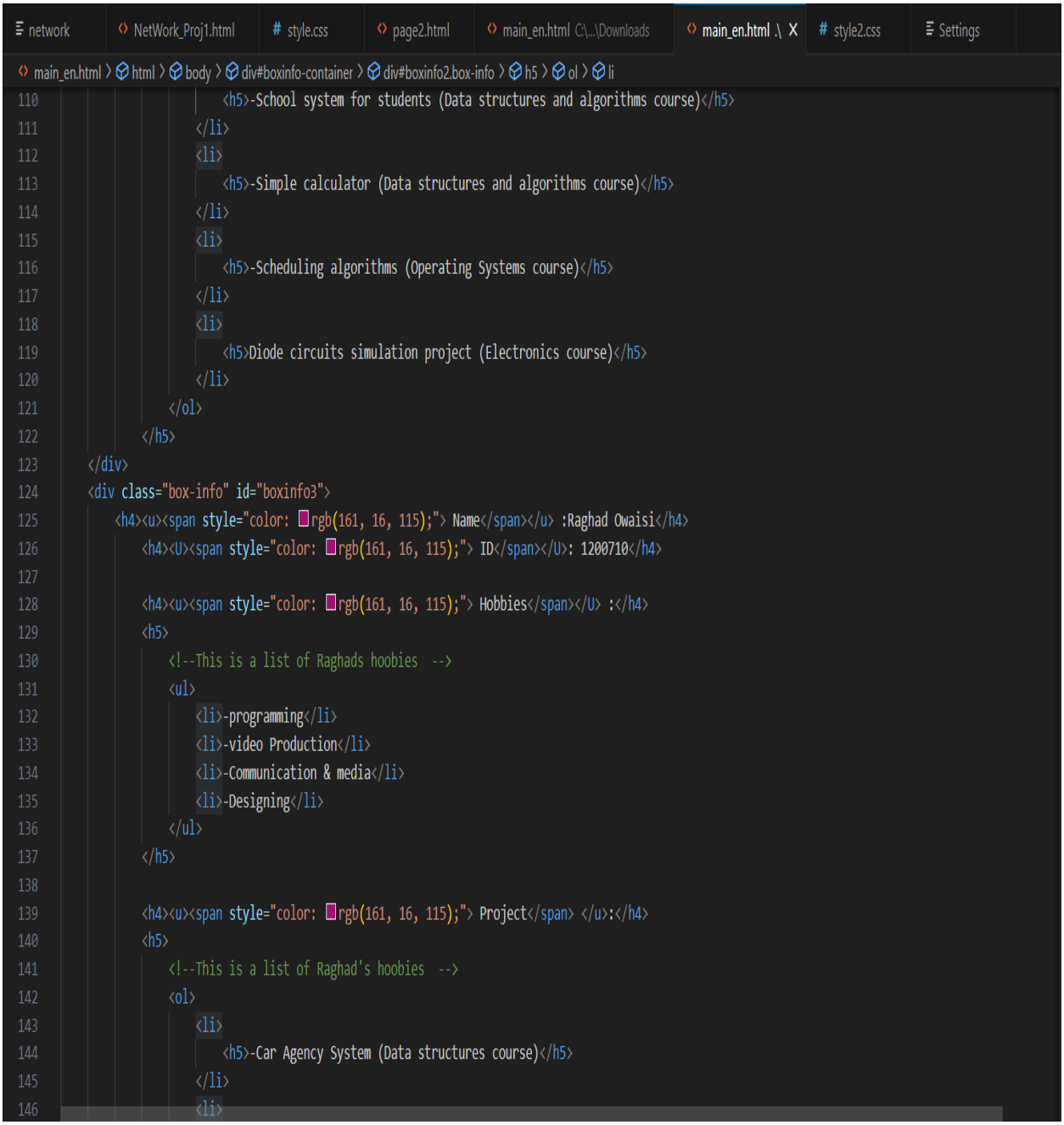
<h4><u> Name</u> :Doaa Hatu</h4>
<h4><U> ID</U>: 1211088</h4>
<h4><u> Hobbies</U> :</h4>
<h5>
<!--This is a list of Doaa's hoobies -->

-Reading
-Writing
-Astronomy
-Design

</h5>
<h4><u> Project </u>:</h4>
<h5>
<!--This is a list of Doaa's hoobies -->

<h5>-A delivery system for pizza restaurant (Java course)</h5>

<h5>-School system for students (Data structures and algorithms course)</h5>


network
NetWork_Proj1.html
style.css
page2.html
main_en.html C:\...\Downloads
main_en.html .\
style2.css
Settings
main_en.html › html › body › div#boxinfo-container › div#boxinfo2.box-info › h5 › ol › li
<h5>-School system for students (Data structures and algorithms course)</h5>

<h5>-Simple calculator (Data structures and algorithms course)</h5>

<h5>-Scheduling algorithms (Operating Systems course)</h5>

<h5>Diode circuits simulation project (Electronics course)</h5>

</h5>

<h4><u> Name</u> :Raghad Owaisi</h4>
<h4><U> ID</U>: 1200710</h4>
<h4><u> Hobbies</U> :</h4>
<h5>
<!--This is a list of Raghads hoobies -->

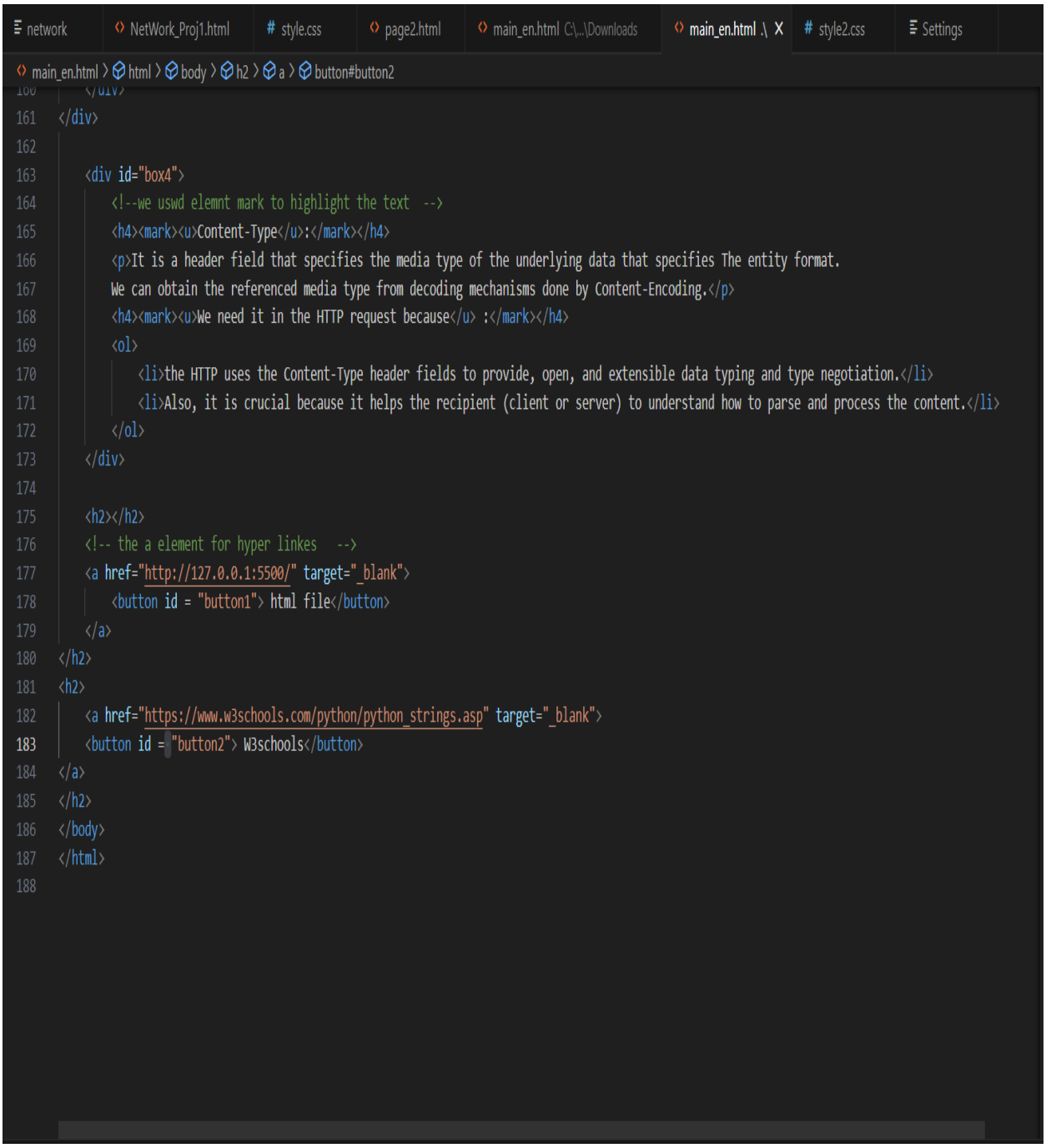
-programming
-video Production
-Communication & media
-Designing

</h5>
<h4><u> Project </u>:</h4>
<h5>
<!--This is a list of Raghad's hoobies -->

<h5>-Car Agency System (Data structures course)</h5>

main_en.html > html > body > div#boxinfo-container > div#boxinfo3.box-info > h5 > ol > li

```
                        <h5>--Martyrs Data(Data structures and algorithms course)</h5>
                    </li>
                    <li>
                        <h5>-Dental Clinic(Data Base Course)</h5>
                    </li>
                    <li>
                        <h5>-Stack converting(Data structure course)</h5>
                    </li>
                    <li>
                        <h5>-SM (Secure Media)(Usable security course)</h5>
                    </li>
                </ol>
            </h5>
    </div>
</div>

    <div id="box4">
        <!--we uswd elemnt mark to highlight the text  -->
        <h4><mark><u>Content-Type</u>:</mark></h4>
        <p>It is a header field that specifies the media type of the underlying data that specifies The entity format.
        We can obtain the referenced media type from decoding mechanisms done by Content-Encoding.</p>
        <h4><mark><u>We need it in the HTTP request because</u> :</mark></h4>
        <ol>
            <li>the HTTP uses the Content-Type header fields to provide, open, and extensible data typing and type negotiation.</li>
            <li>Also, it is crucial because it helps the recipient (client or server) to understand how to parse and process the content.</li>
        </ol>
    </div>

    <h2></h2>
    <!-- the a element for hyper linkes   -->
    <a href="http://127.0.0.1:5500/" target="_blank">
        <button id = "button1"> html file</button>
    </a>
</h2>
<h2>
    <a href="https://www.w3schools.com/python/python_strings.asp" target="_blank">
    <button id = "button2"> W3schools</button>
```


network
NetWork_Proj1.html
style.css
page2.html
main_en.html C:\...\Downloads
main_en.html .\ X
style2.css
Settings
main_en.html > html > body > h2 > a > button#button2

<!--we uswd elemnt mark to highlight the text -->
<h4><mark><u>Content-Type</u>:</mark></h4>
It is a header field that specifies the media type of the underlying data that specifies The entity format.
We can obtain the referenced media type from decoding mechanisms done by Content-Encoding.
<h4><mark><u>We need it in the HTTP request because</u> :</mark></h4>

the HTTP uses the Content-Type header fields to provide, open, and extensible data typing and type negotiation.
Also, it is crucial because it helps the recipient (client or server) to understand how to parse and process the content.

<h2></h2>
<!-- the a element for hyper linkes -->

<button id = "button1"> html file</button>

</h2>
<h2>

<button id = "button2"> W3schools</button>

</h2>
</body>
</html>

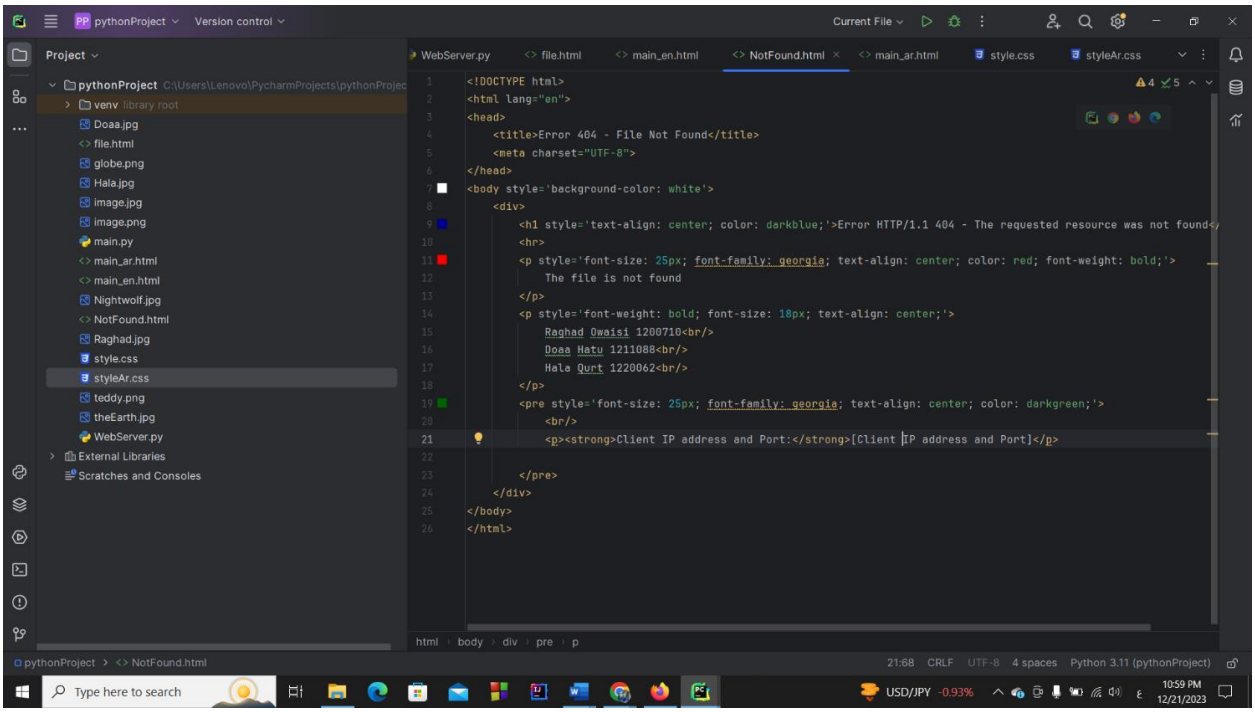


Figure 34:error page HTML code

This HTML code is used to design a personalized 404 error page. It features a centrally positioned heading, a horizontal line to separate sections, a primary error message, the students' data, and the client's IP address and port. The page is carefully styled with particular fonts, colors, and alignments to enhance its visual appeal.

style.css Code

network | NetWork_Proj1.html | style.css | page2.html | main_en.html C:\...\Downloads | main_en.html .\ | style2.css X | Settings

style2.css > ...

```css
/* some generized features in the body */
body {
    background-image: url(Nightwolf.jpg);
    background-repeat: no-repeat;
    background-attachment: fixed;
    background-position: center;
    background-size: cover;
    margin: 0;
    padding: 0;
    font-family: 'Arial', sans-serif;
    color: #333;
}


/* using flex we can alligen more than one box next to each other */
#box-container {
    display: flex;
    border-radius: 15px;
    overflow: hidden;
}
/* created a class to put the common features of all used rounded images*/
.rounded-image {
    border-radius: 15px;
    overflow: hidden;
    width: 250px;
    height: 250px;
    margin-top: 100px;
    background-size: cover;
}
/* using flex we can alligen more than one box next to each other */

#boxinfo-container {
    display: flex;
    justify-content: space-between;
}

.box-info {
```

Figure 35:Style css code

network | NetWork_Proj1.html | style.css | page2.html | main_en.html C:\...\Downloads | main_en.html .\ | style2.css X | Settings

style2.css > .box-info

```css
.box-info {
    padding: 10px;
    border: 5px solid;
    width: 30%;
    font-size: 18px;
    margin-top: 30px;
    box-sizing: border-box;
    border-radius: 15px;
    overflow: hidden;
}
/* we used some featues to male are web page look nicer and more orgnaized */
#box4 {
    font-family: "Times New Roman", Times, serif;
    font-style: italic;
    margin: 20px auto;
    border: 0px ;
    width: 80%;
    font-size: 22px;
    color: rgb(63, 8, 77);
    padding: 10px;
    background-image: url(htmldesign.png);
    background-size: cover;
    border-radius: 15px;
    overflow: hidden;
    margin-bottom: 150px;
}
/* insted of repeating same features we used the three classes togather */
#box1, #box2, #box3 {
    border: 5px solid;
    width: 250px;
    height: 250px;
    font-size: 22px;
    margin-top: 100px;
    margin-bottom: 30px;
    border-radius: 15px;
    overflow: hidden;
}
```

Ln 37, Col 8 (4 selected) Spaces: 4 UTF-8 CRLF CSS

network | NetWork_Proj1.html | style.css | page2.html | main_en.html C:\...\Downloads | main_en.html .\ | style2.css X | Settings

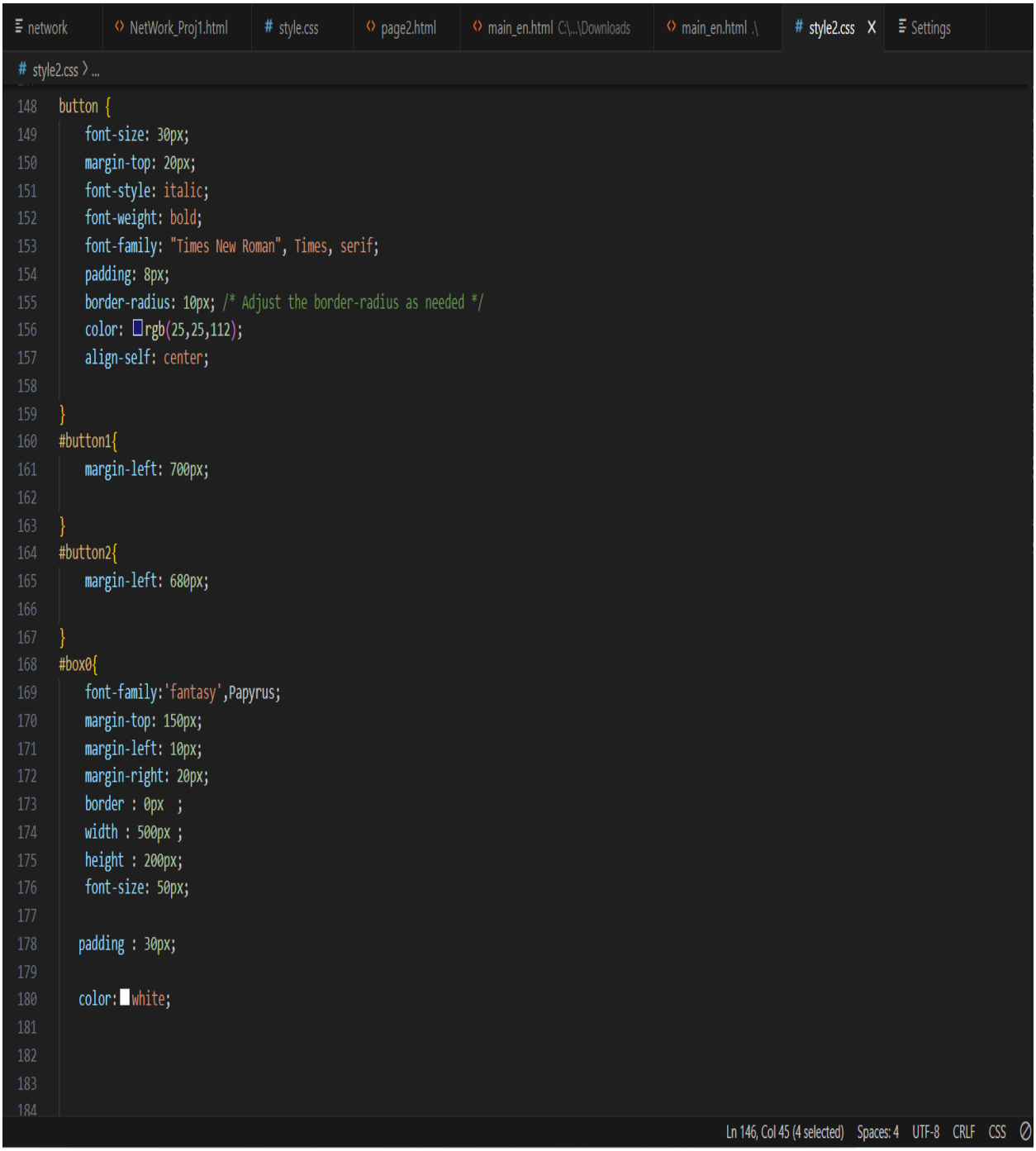
style2.css > #box1

```
.highlight-text {
    color: rgb(201, 182, 182);
}
/* specify the backgroung image and margines for each box */

#box1 {
    margin-left: 120px;
    background-image: url(Hala.jpg);
    background-size: cover;
}

#box2 {
    margin-left: 250px;
    background-image: url(Doaa.jpg);
    background-size: cover;
}

#box3 {
    margin-left: 280px;
    background-image: url(Raghad.jpg);
    background-size: cover;
}
/* insted of repeating same features we used the three classes togather */

#boxinfo1, #boxinfo2, #boxinfo3 {
     font-family: "Times New Roman", Times, serif;
    padding: 10px;
    border: 5px solid;
    width: 30%;
    font-size: 18px;
    margin-top: 30px;
    margin-bottom: 150px;
    box-sizing: border-box;
    border-radius: 15px;
    overflow: hidden;
}
/* to organize the lists we made*/
```

network | NetWork_Proj1.html | style.css | page2.html | main_en.html C:\...\Downloads | main_en.html .\ | style2.css X | Settings

style2.css > #boxinfo1

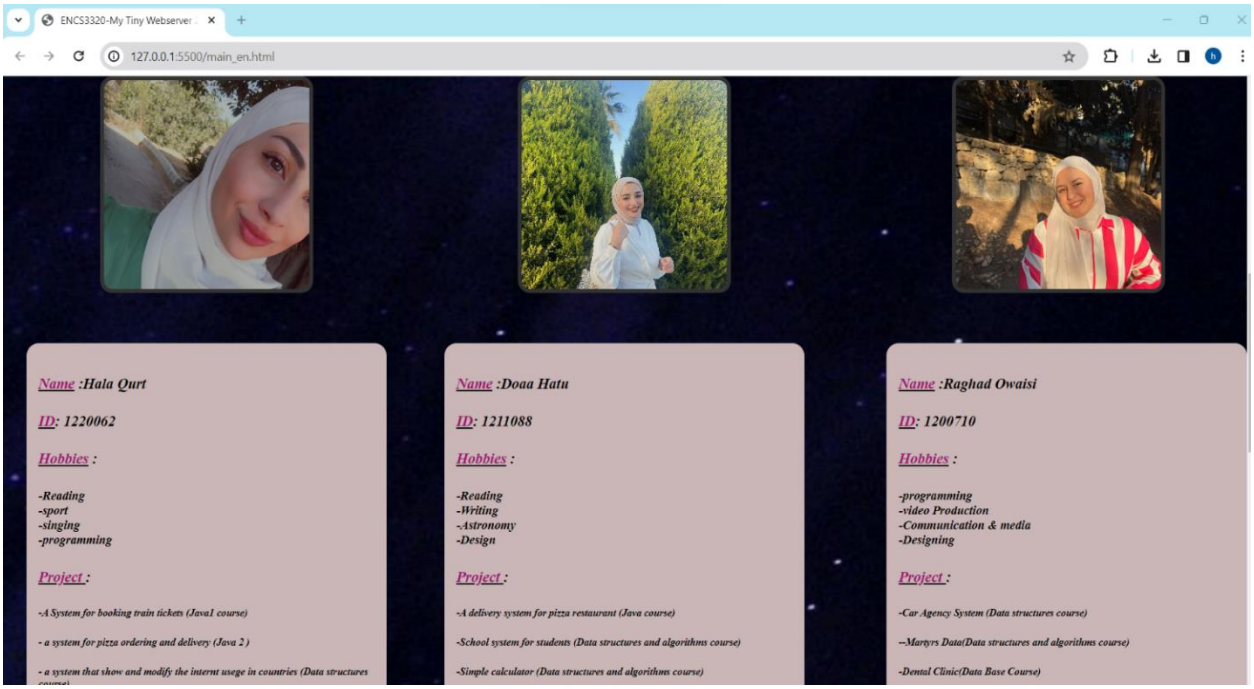
```
/* to oronize the lists we made*/
ul, ol {
    list-style-type: none;
    margin: 0;
    padding: 0;
}

li {
    margin-bottom: 0px;
}
/* insted of repeating same features we used the three classes togather */

#boxinfo1 {
    font-style: italic;
    border-color: rgb(201, 182, 182);
    background-color: rgb(201, 182, 182);
    margin-left: 30px;
    color: black;
}

#boxinfo2 {
    font-style: italic;
    border-color: rgb(201, 182, 182);
    background-color: rgb(201, 182, 182);
    margin-left: 70px;
    color: black;
}

#boxinfo3 {
    font-style: italic;
    border-color: rgb(201, 182, 182);
    background-color: rgb(201, 182, 182);
    margin-left: 100px;
    color: black;
}
/* insted of repeating same features we used the main class button */

```

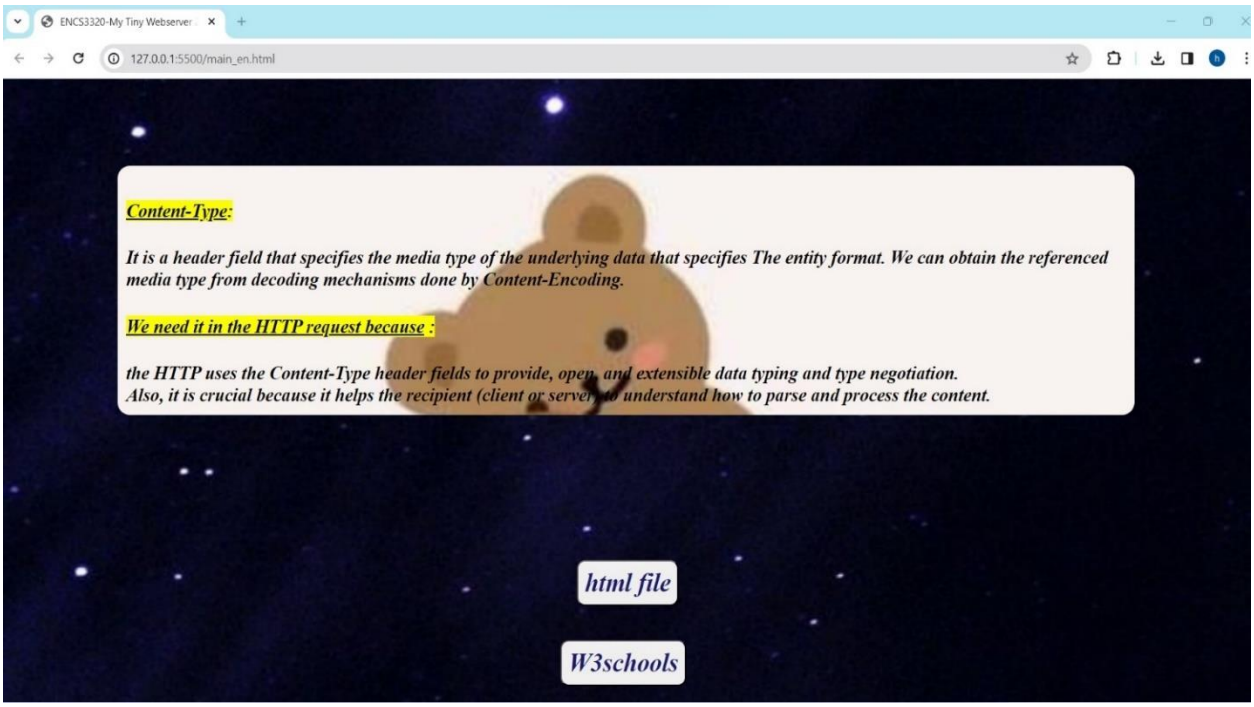


This CSS code aims to create a visually appealing and organized layout by using flexbox, rounded images, specific fonts, and carefully chosen colors.

Web server:

Figure 36:English web server

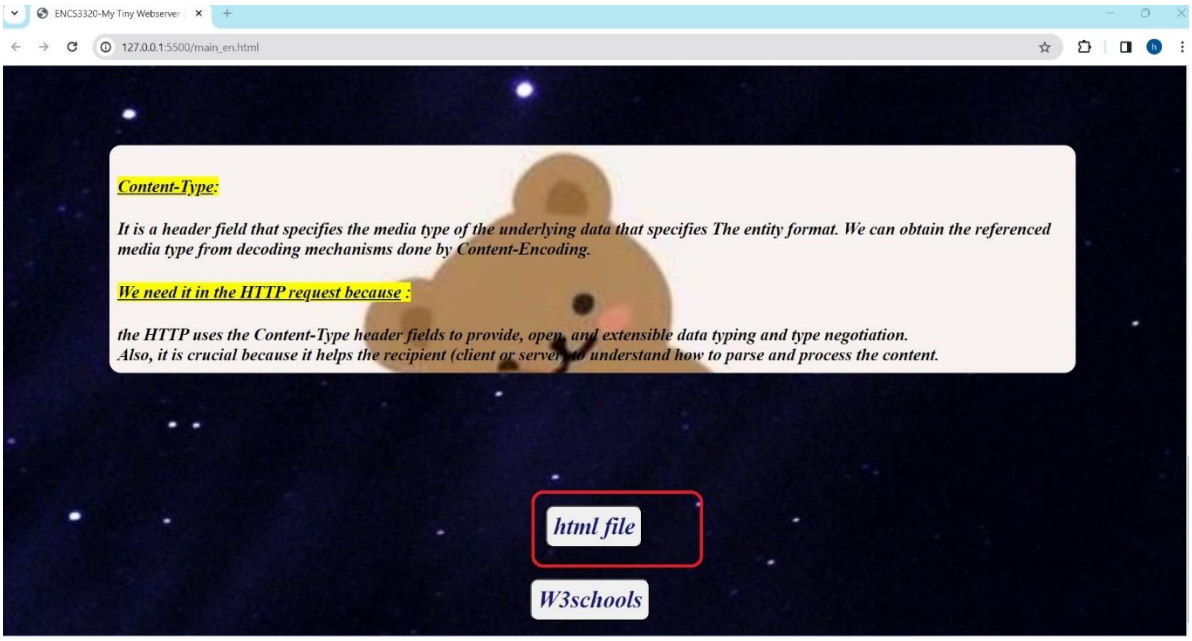




In the figures above we made sure to follow the instructions as given in the project description by setting the title of the page, the welcome phrase with the right colors, the group member names, IDs, Hobbies and preformed projects.

We also used CSS to enhance the frontend part of the project in every HTML file.

In the following figures, we will show the pages which our main page redirect you (by using hyper links).



The html file button redirect you to the following html page (a local html page).

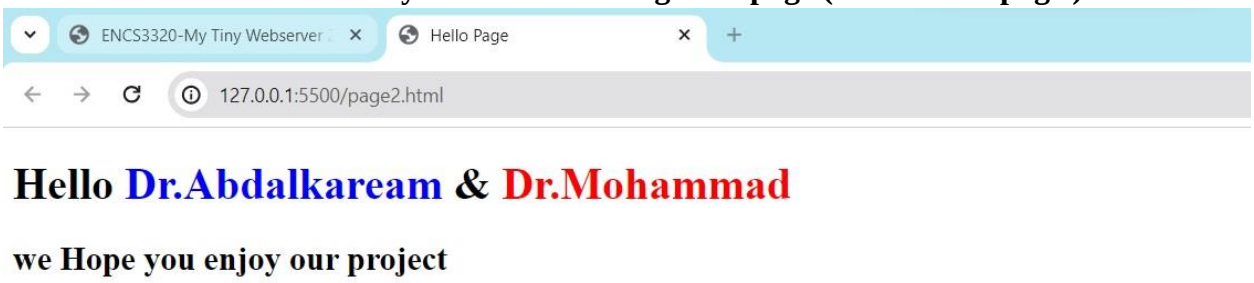
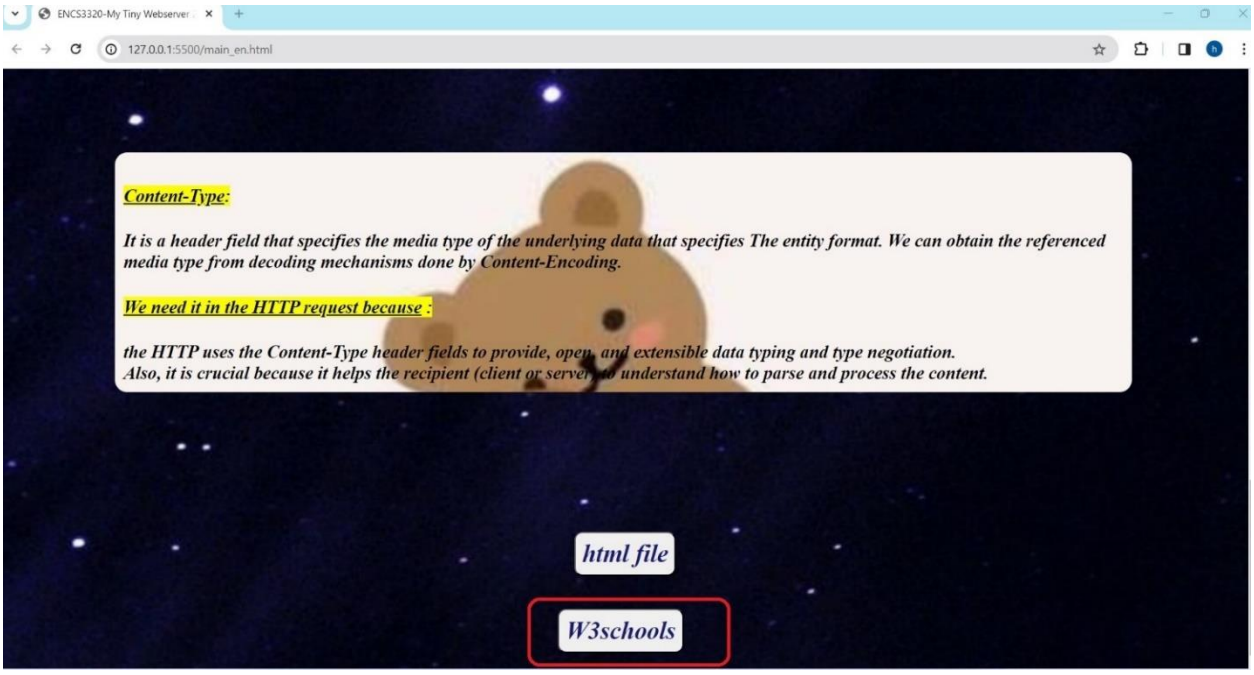


Figure 37:html file



The W3schools button redirect you to the following page (a link that was provided by the project).

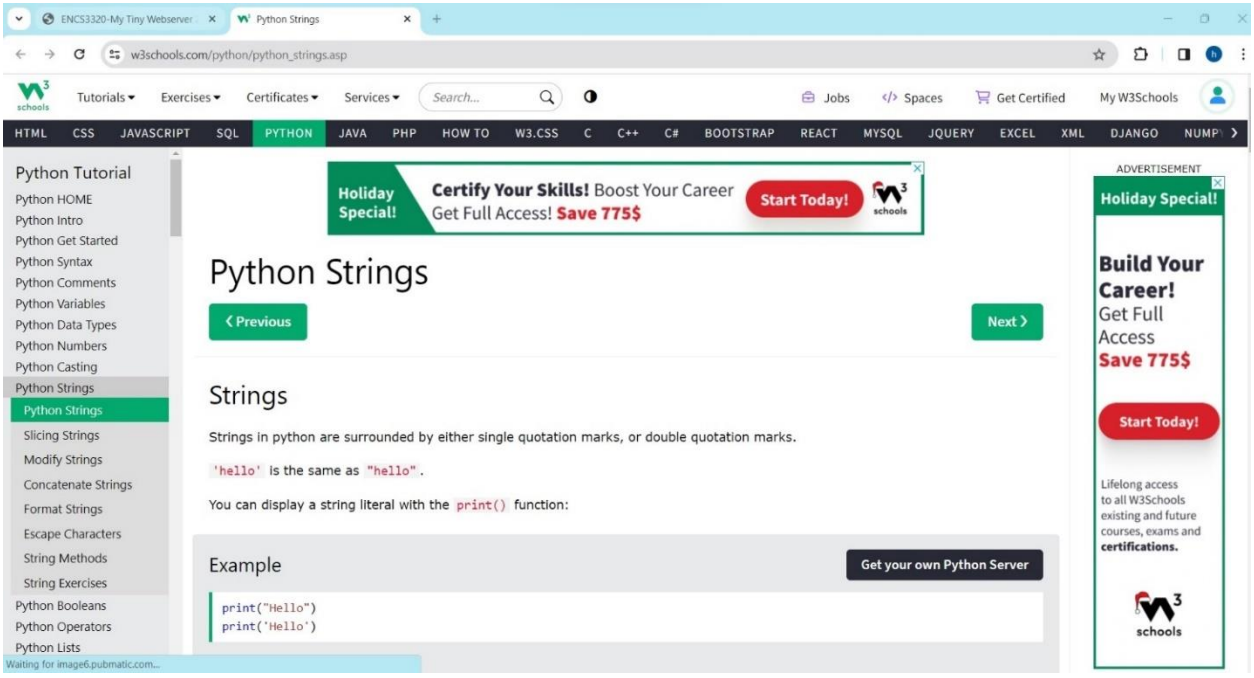


Figure 38:W3schools file

Arabic Version
HTML code (main_ar.html):

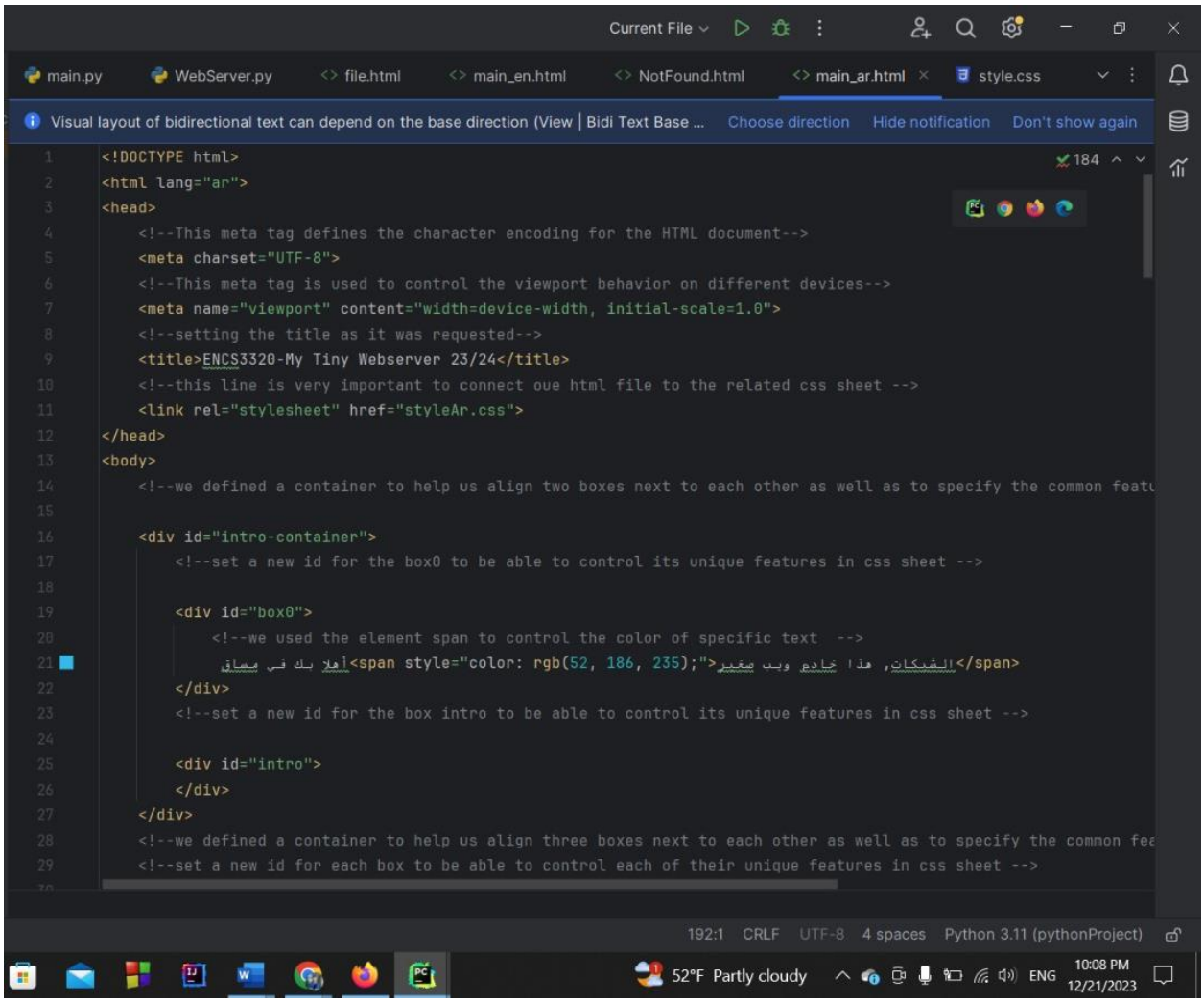
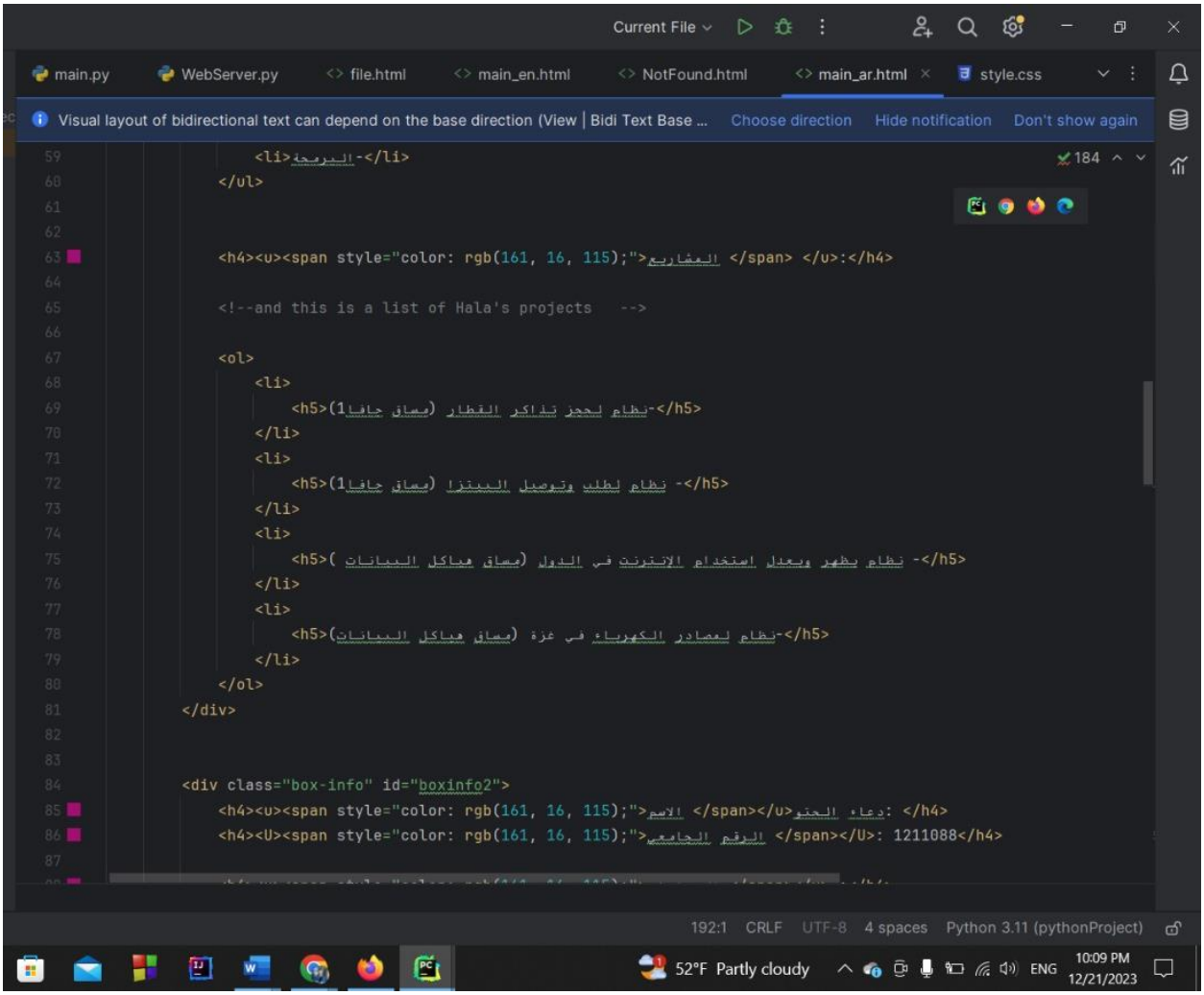


Figure 39:html Arabic code


Current File
main.py
WebServer.py
file.html
main_en.html
NotFound.html
main_ar.html
style.css
Visual layout of bidirectional text can depend on the base direction (View | Bidi Text Base ...
Choose direction
Hide notification
Don't show again
البرمجة-

<h4><u>المشاريع </u>:</h4>
<!--and this is a list of Hala's projects -->

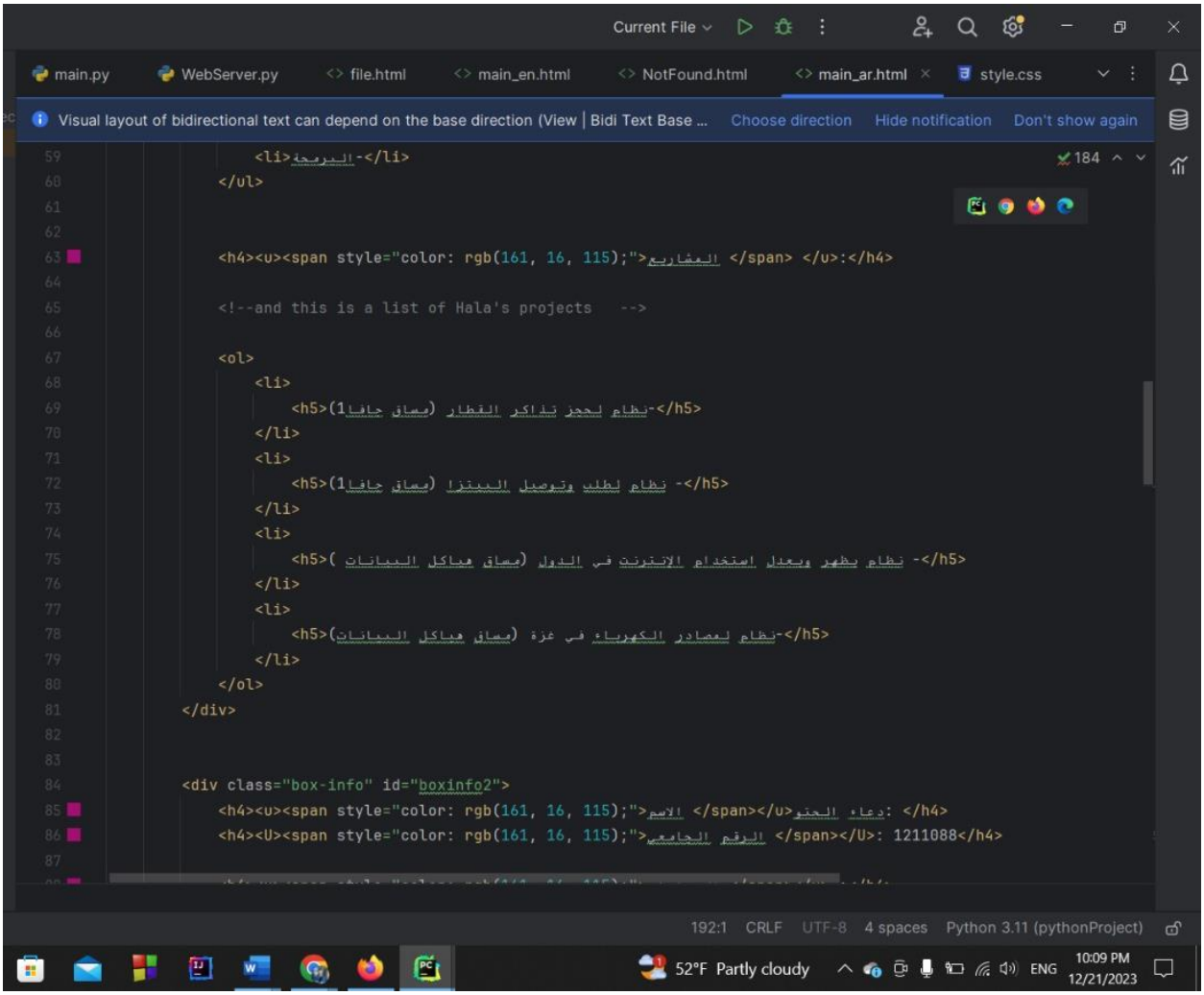
<h5>(1مساق جافا) نظام لحجز تذاكر القطار-</h5>

<h5>(1مساق جافا) نظام لطلب وتوصيل البيتزا -</h5>

<h5>(مساق هياكل البيانات) نظام يظهر ويعدل استخدام الانترنت في الدول -</h5>

<h5>(مساق هياكل البيانات) نظام لمصادر الكهرباء في غزة-</h5>

<h4><u>الاسم </u>دعاء الحتو: </h4>
<h4><U>الرقم الجامعي </U>: 1211088</h4>
192:1
CRLF
UTF-8
4 spaces
Python 3.11 (pythonProject)
52°F Partly cloudy
ENG
10:09 PM
12/21/2023


Current File
main.py
WebServer.py
file.html
main_en.html
NotFound.html
main_ar.html
style.css
Visual layout of bidirectional text can depend on the base direction (View | Bidi Text Base ...
Choose direction
Hide notification
Don't show again
البرمجة-

<h4><u>المشاريع </u>:</h4>
<!--and this is a list of Hala's projects -->

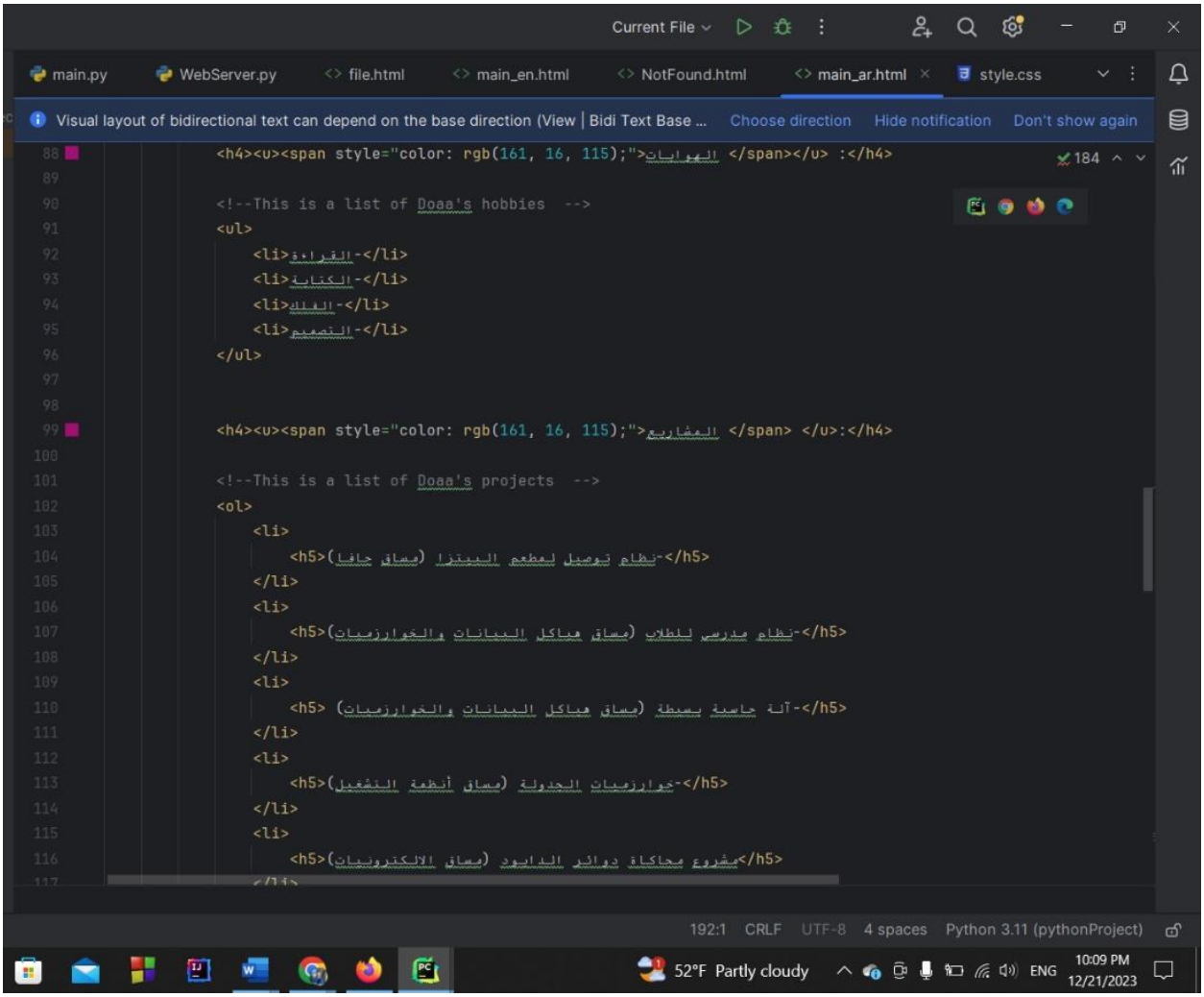
<h5>(1مساق جافا) نظام لحجز تذاكر القطار-</h5>

<h5>(1مساق جافا) نظام لطلب وتوصيل البيتزا -</h5>

<h5>(مساق هياكل البيانات) نظام يظهر ويعدل استخدام الانترنت في الدول -</h5>

<h5>(مساق هياكل البيانات) نظام لمصادر الكهرباء في غزة-</h5>

<h4><u>الاسم </u>دعاء الحتو: </h4>
<h4><U>الرقم الجامعي </U>: 1211088</h4>
192:1
CRLF
UTF-8
4 spaces
Python 3.11 (pythonProject)
52°F Partly cloudy
ENG
10:09 PM
12/21/2023


Current File
main.py
WebServer.py
file.html
main_en.html
NotFound.html
main_ar.html
style.css
Visual layout of bidirectional text can depend on the base direction (View | Bidi Text Base ...
Choose direction
Hide notification
Don't show again
<h4><u>الهوايات </u> :</h4>
<!--This is a list of Doaa's hobbies -->

القراءة-
الكتابة-
الغناء-
التصميم-

<h4><u>المشاريع </u>:</h4>
<!--This is a list of Doaa's projects -->

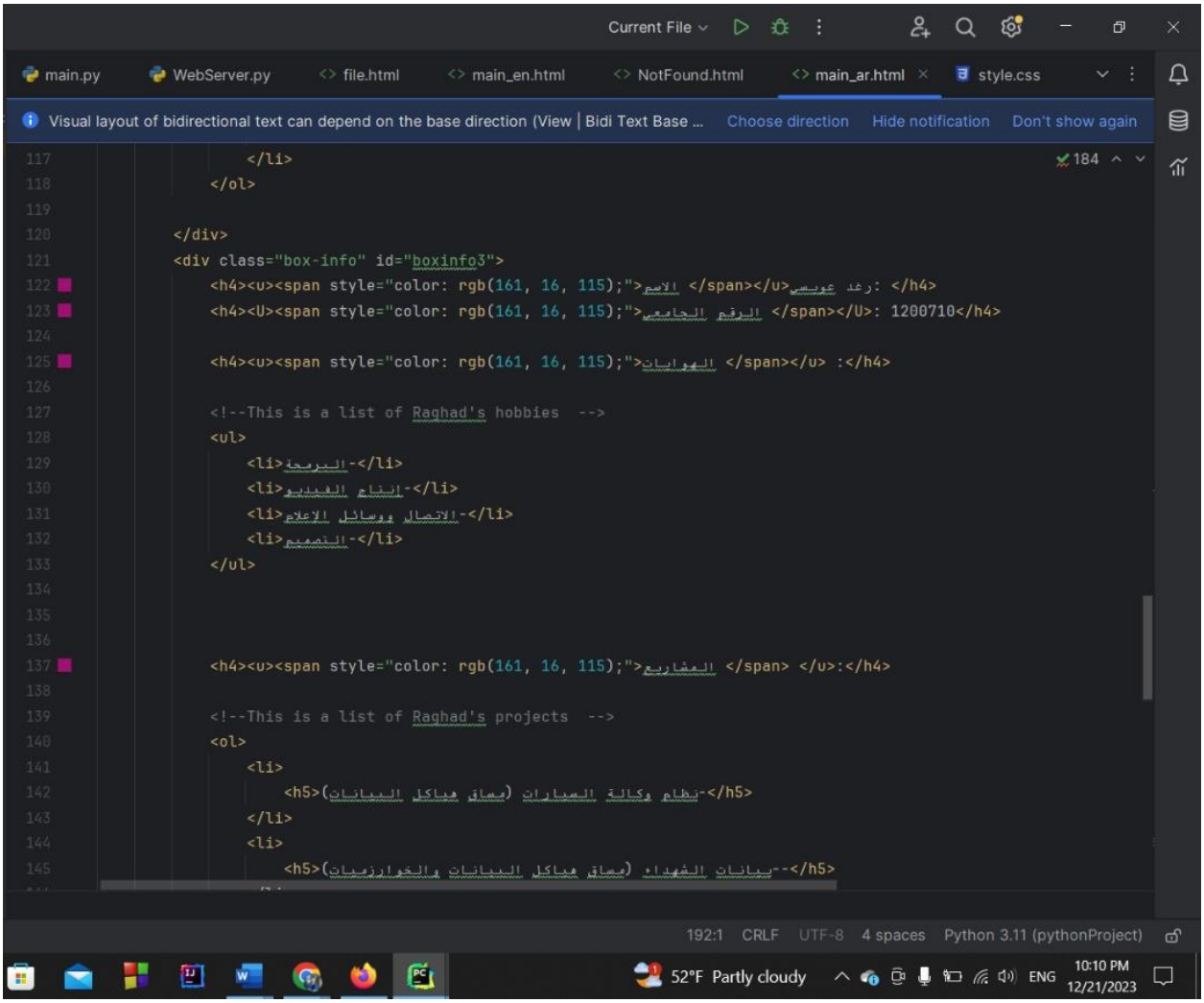
<h5>(مساق جافا) نظام توصيل لمطعم البيتزا-</h5>

<h5>(مساق هياكل البيانات والخوارزميات) نظام مدرس للطلاب-</h5>

<h5> (مساق هياكل البيانات والخوارزميات) آلة حاسبة بسيطة-</h5>

<h5>(مساق أنظمة التشغيل) خوارزميات الجدولة-</h5>

<h5>(مساق الالكترونيات) مشروع محاكاة دوائر الدايود</h5>
192:1 CRLF UTF-8 4 spaces Python 3.11 (pythonProject)
52°F Partly cloudy
ENG
10:09 PM
12/21/2023


Current File
main.py
WebServer.py
file.html
main_en.html
NotFound.html
main_ar.html
style.css
Visual layout of bidirectional text can depend on the base direction (View | Bidi Text Base ...
Choose direction
Hide notification
Don't show again
184

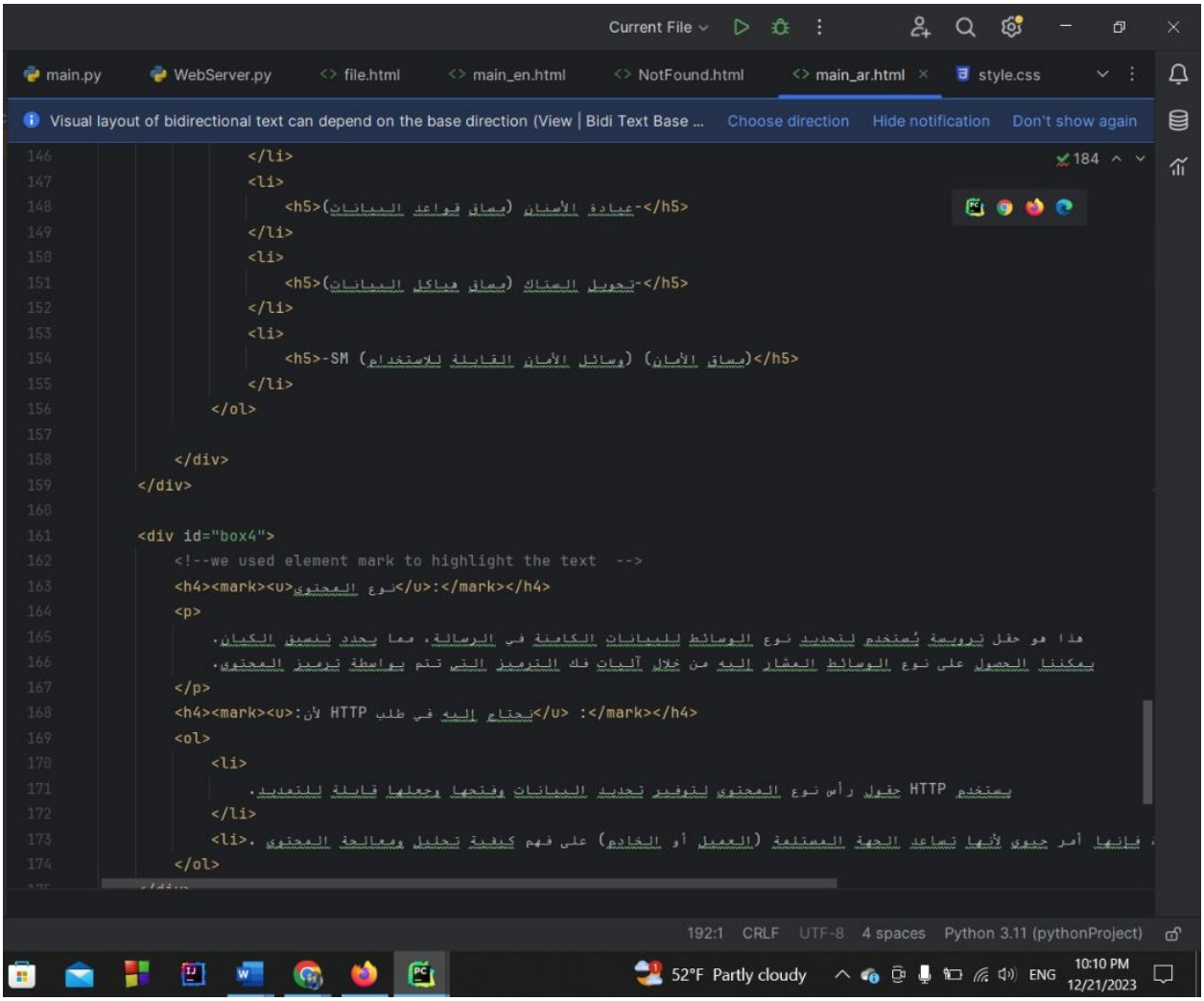
<h4><u>الاسم </u>رغد عويسي: </h4>
<h4><U>الرقم الجامعي </U>: 1200710</h4>
<h4><u>الهوايات </u> :</h4>
<!--This is a list of Raghad's hobbies -->

البرمجة-
انشاء الفيديو-
الاتصال ووسائل الاعلام-
التصميم-

<h4><u>المشاريع </u>:</h4>
<!--This is a list of Raghad's projects -->

<h5>(مساق هياكل البيانات) نظام وكالة السيارات-</h5>

<h5>(مساق هياكل البيانات والخوارزميات) بيانات الشهداء--</h5>
192:1 CRLF UTF-8 4 spaces Python 3.11 (pythonProject)
52°F Partly cloudy
ENG
10:10 PM
12/21/2023


Current File
main.py
WebServer.py
file.html
main_en.html
NotFound.html
main_ar.html
style.css
Visual layout of bidirectional text can depend on the base direction (View | Bidi Text Base ...
Choose direction
Hide notification
Don't show again
184

<h5>(عيادة الأسنان (مساق قواعد البيانات-</h5>

<h5>(تحويل العناك (مساق هياكل البيانات-</h5>

<h5>-SM (وسائل الأمان القابلة للاستخدام) (مساق الأمان)</h5>

<!--we used element mark to highlight the text -->
<h4><mark><u>نوع المحتوى</u>:</mark></h4>

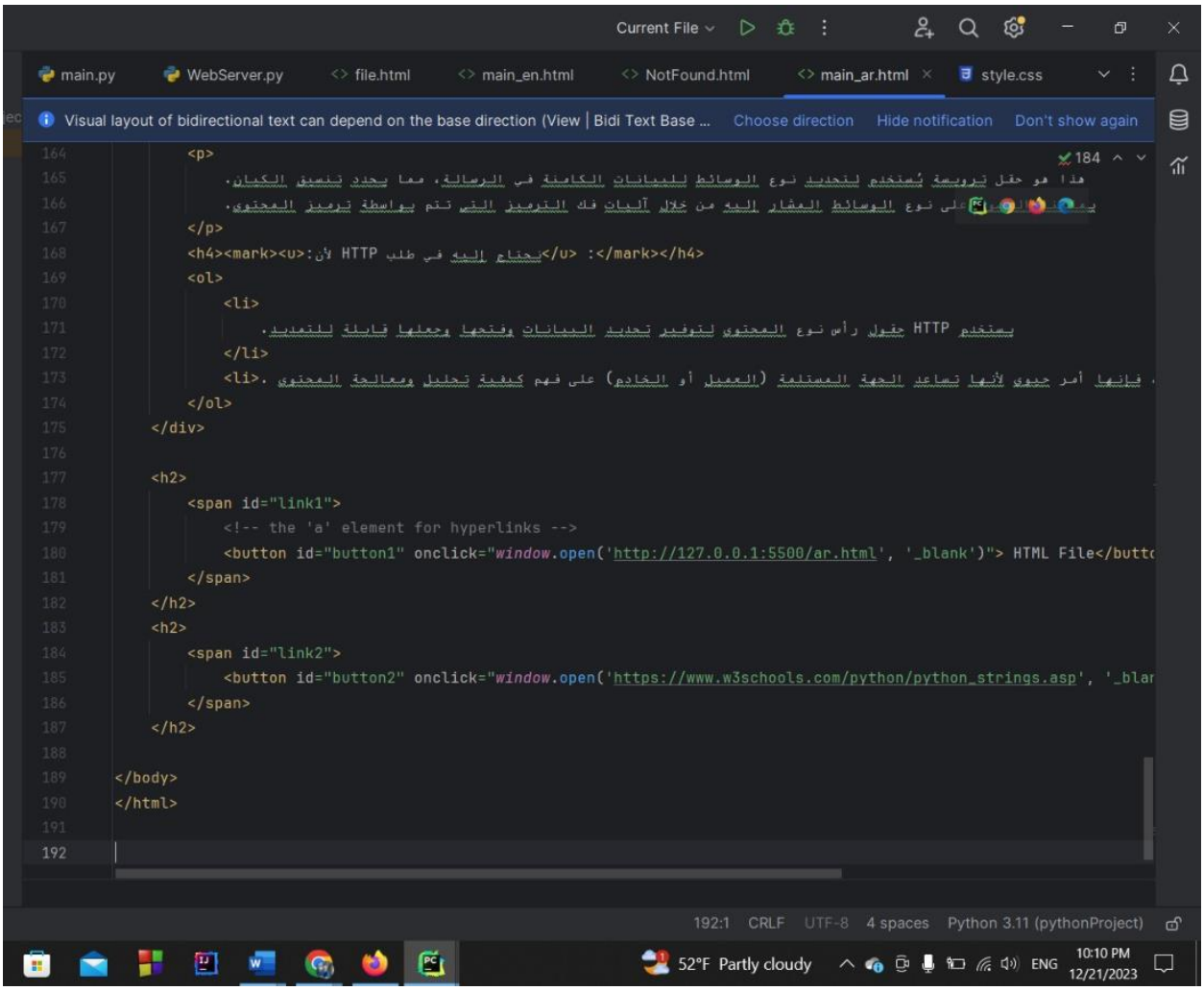
هذا هو حقل تعريفية يُستخدم لتحديد نوع الوسائط للبيانات الكامنة في الرسالة، مما يحدد تنسيق الكيان.
يمكننا الحصول على نوع الوسائط المشار اليه من خلال آليات فك الترميز التي تتم بواسطة ترميز المحتوى.

<h4><mark><u>:لأن HTTP في طلب تحتاج اليه</u> :</mark></h4>

يستخدم HTTP حقول رأس نوع المحتوى لتوفير تحديد البيانات وفتحها وجعلها قابلة للتعديل.

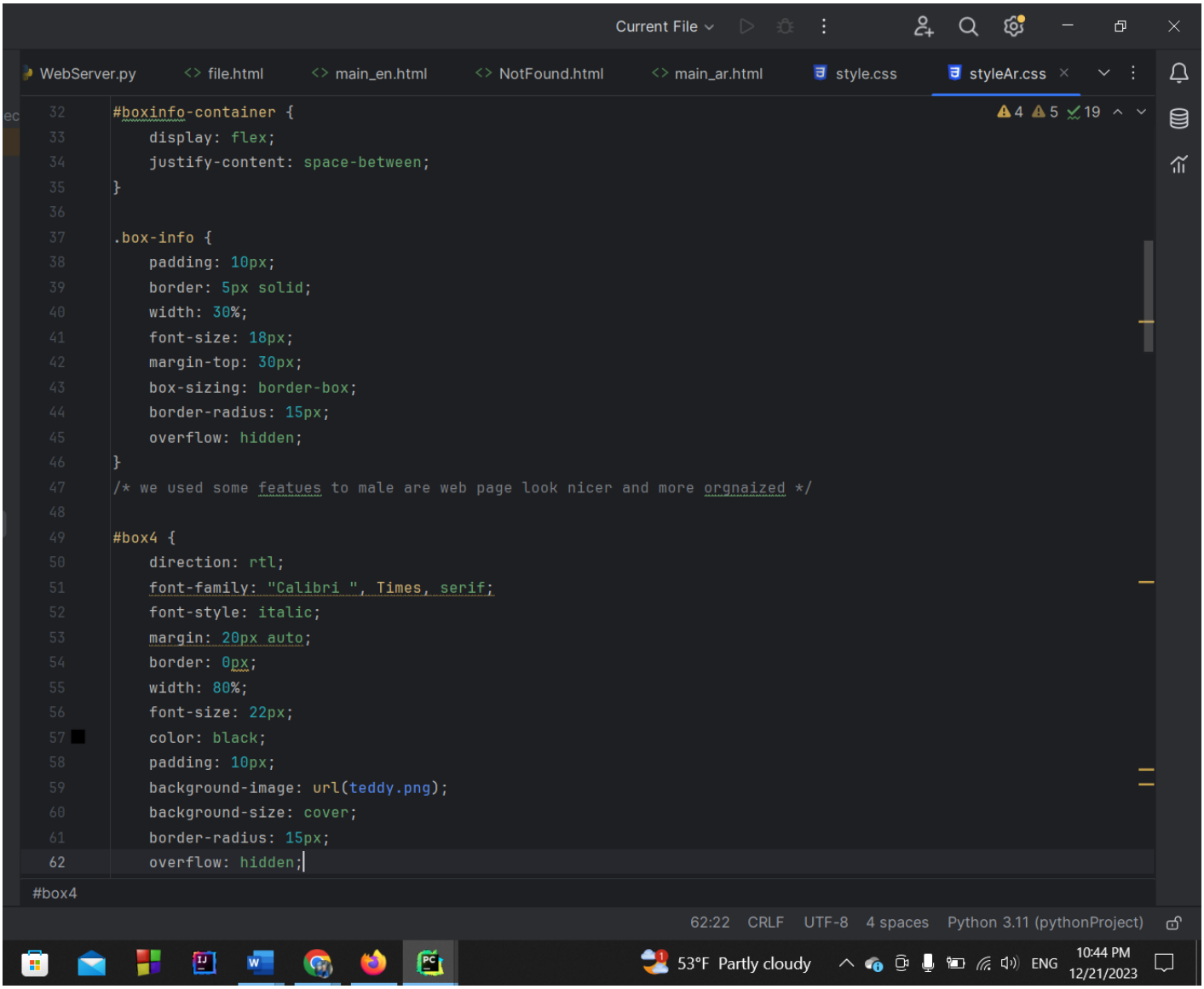
. فإنها أمر حيوي لأنها تساعد الجهة المستلمة (العميل أو الخادم) على فهم كيفية تحليل ومعالجة المحتوى

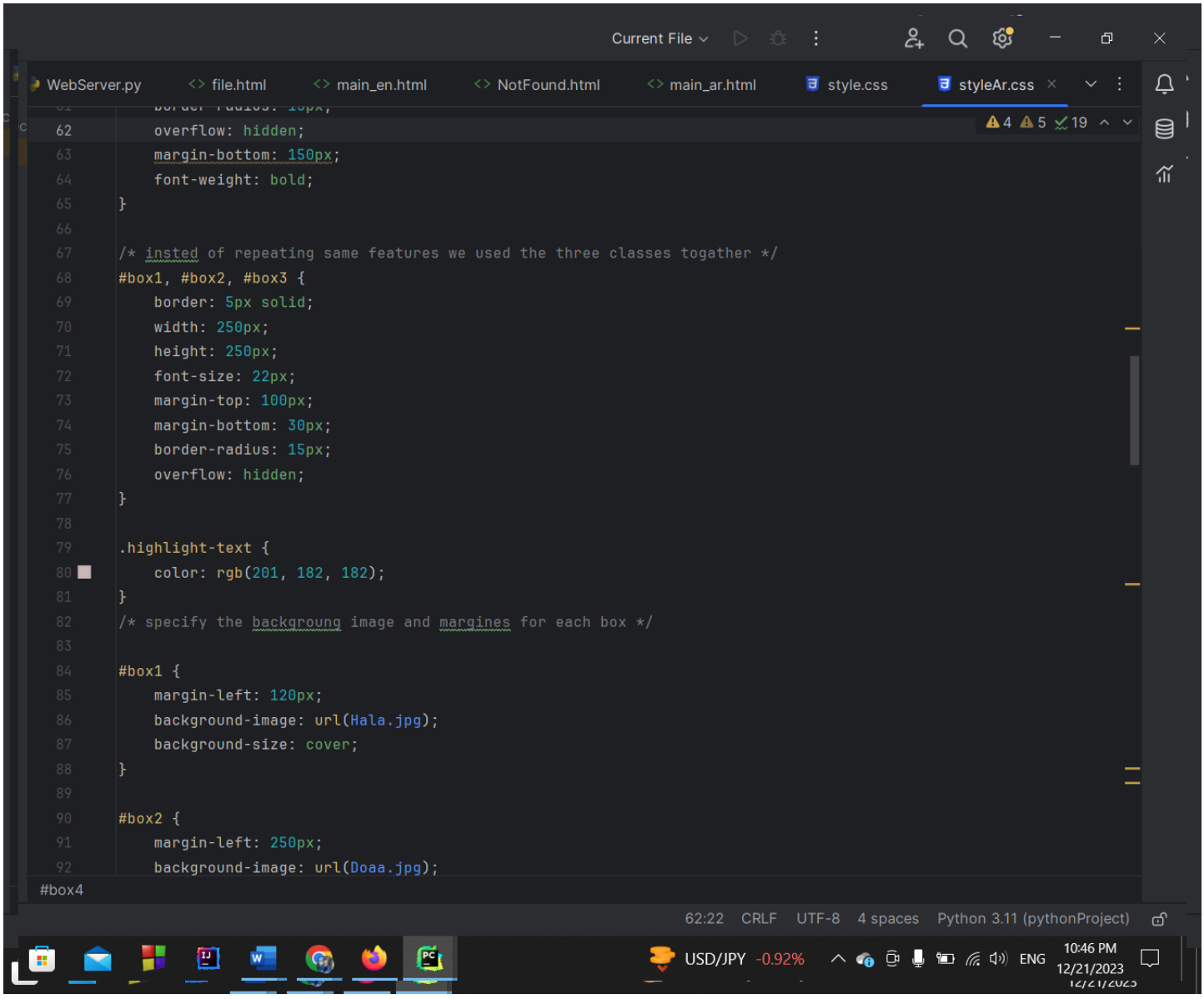
192:1 CRLF UTF-8 4 spaces Python 3.11 (pythonProject)
52°F Partly cloudy
ENG
10:10 PM
12/21/2023

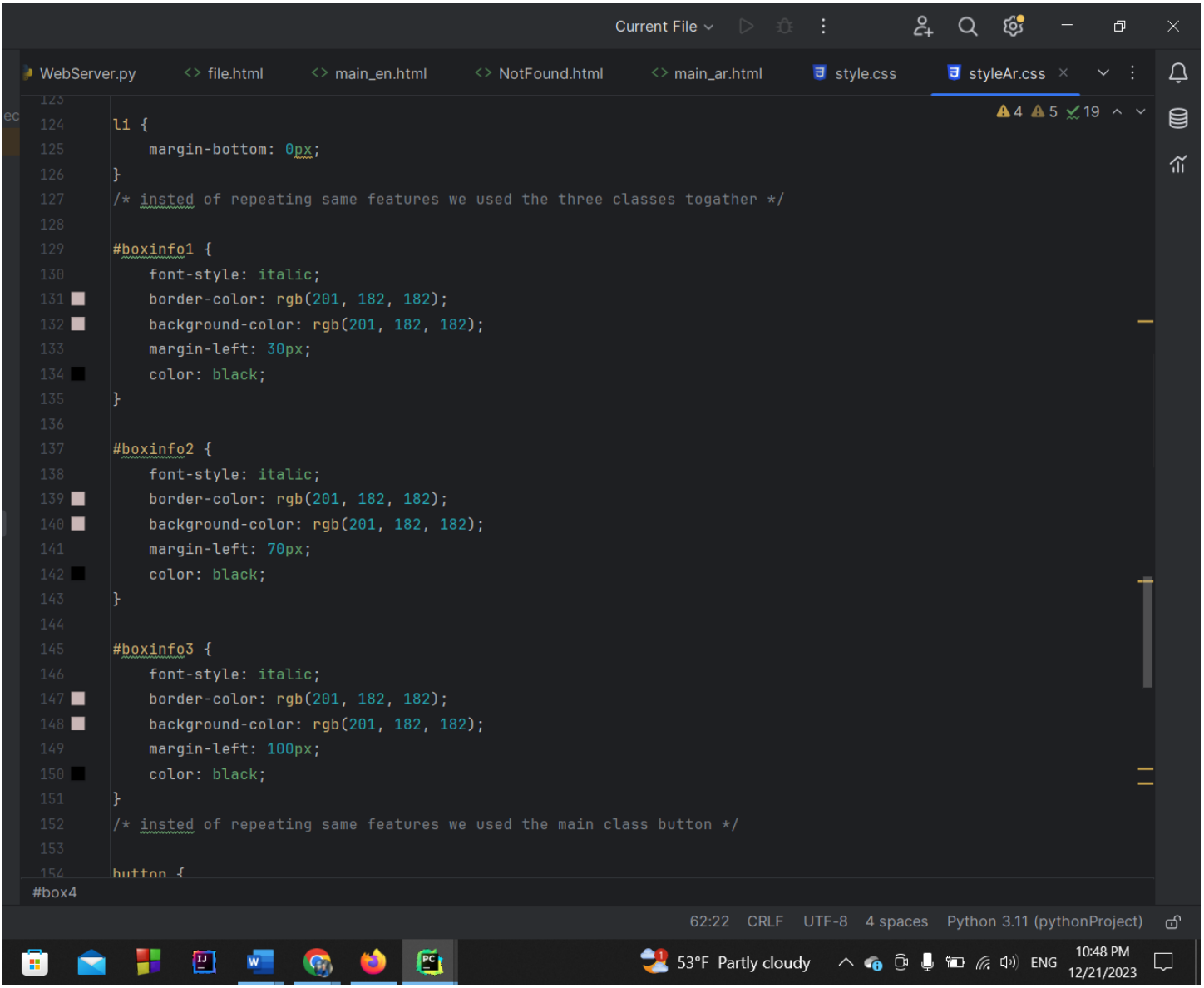


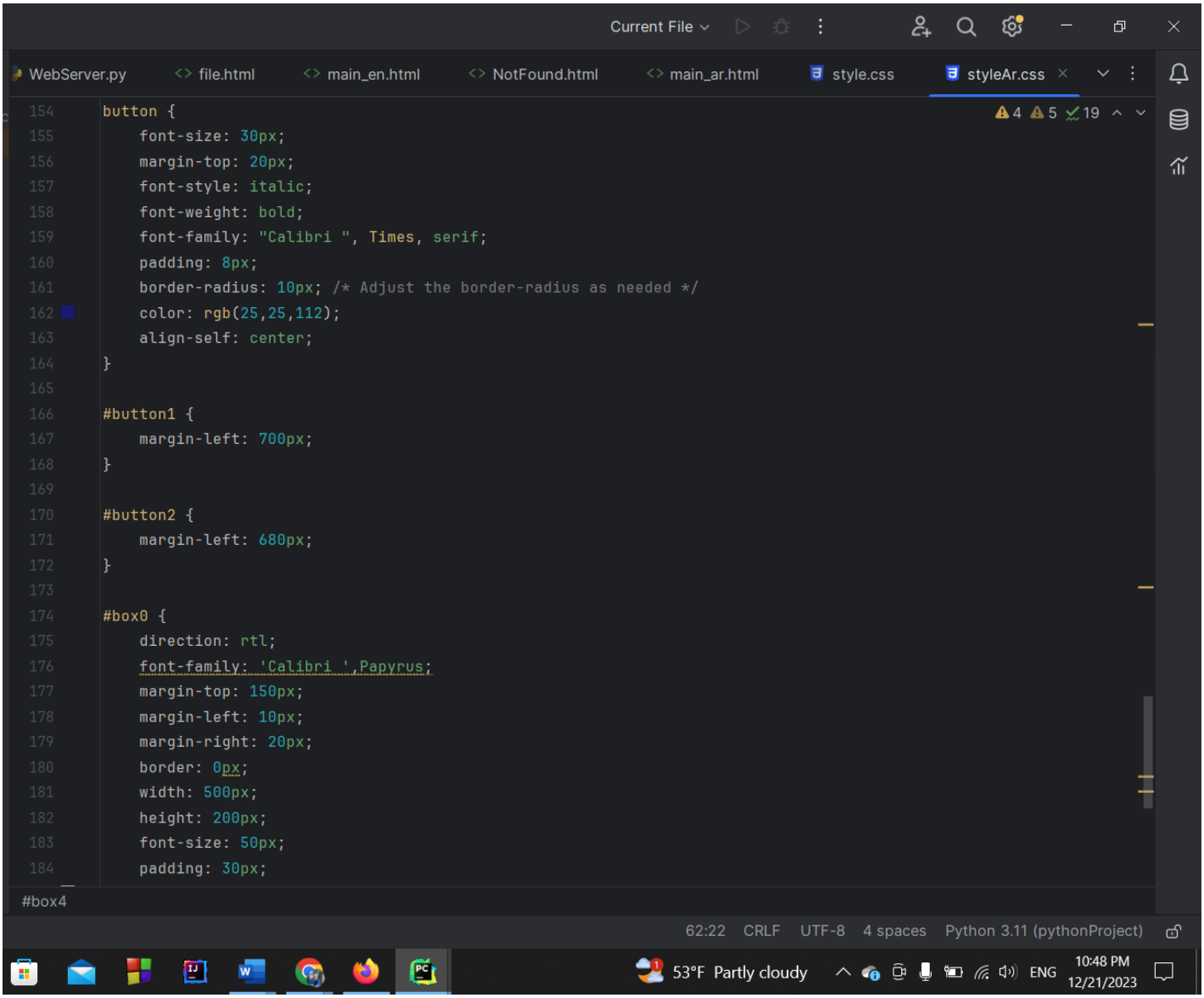
This HTML document creates an Arabic webpage that introduces a course project related to (بخادم ويب صغير). It provides information about the team, including names, IDs, hobbies, and projects. Additionally, it includes links to external resources, specifically a W3Schools page and an HTML file. The styling is externally handled by a CSS file.

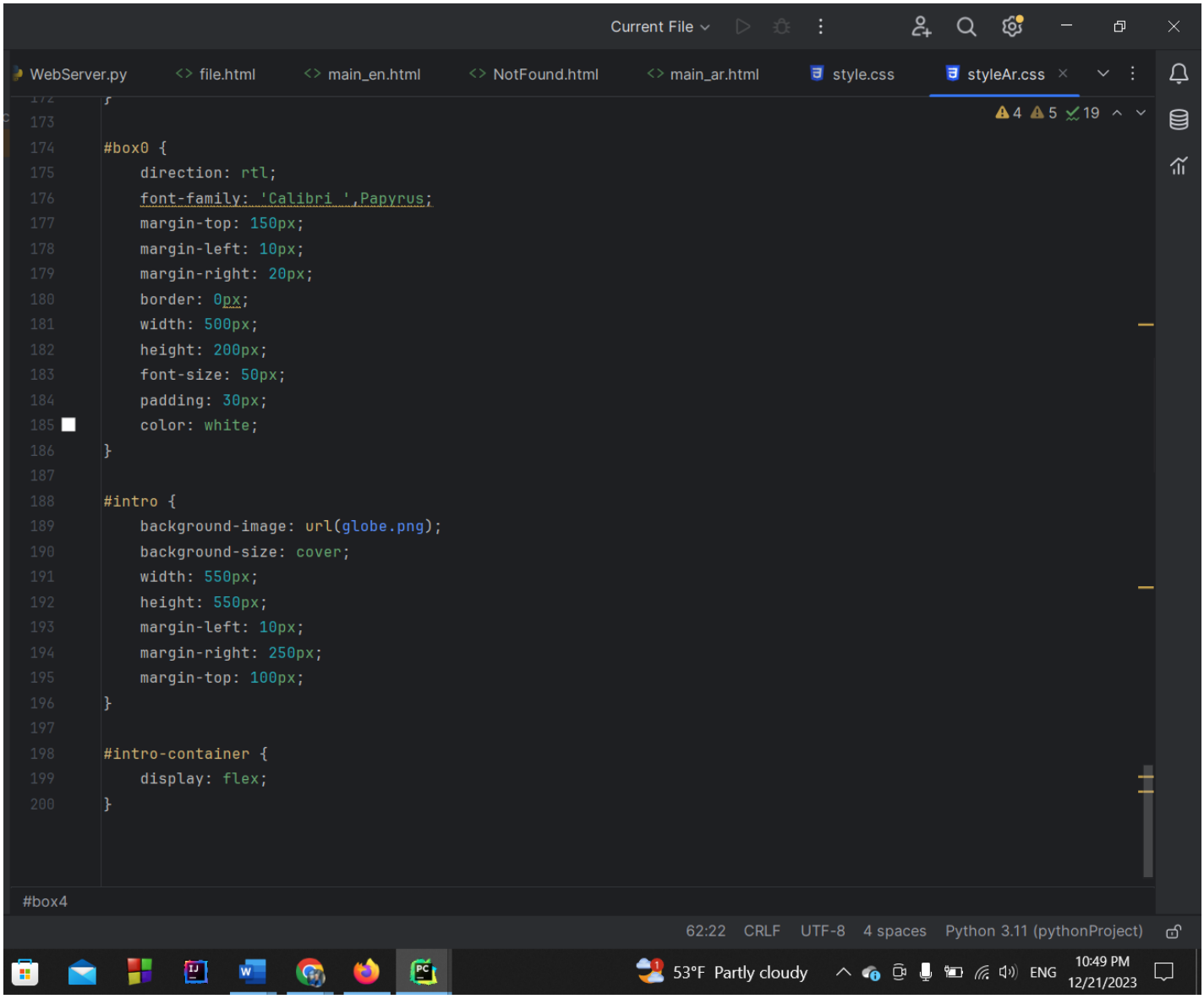
styleAr.css code:




Current File
WebServer.py
file.html
main_en.html
NotFound.html
main_ar.html
style.css
styleAr.css
4 5 19
62 overflow: hidden;
63 margin-bottom: 150px;
64 font-weight: bold;
65 }
66
67 /* insted of repeating same features we used the three classes togather */
68 #box1, #box2, #box3 {
69 border: 5px solid;
70 width: 250px;
71 height: 250px;
72 font-size: 22px;
73 margin-top: 100px;
74 margin-bottom: 30px;
75 border-radius: 15px;
76 overflow: hidden;
77 }
78
79 .highlight-text {
80 color: rgb(201, 182, 182);
81 }
82 /* specify the backgroung image and margines for each box */
83
84 #box1 {
85 margin-left: 120px;
86 background-image: url(Hala.jpg);
87 background-size: cover;
88 }
89
90 #box2 {
91 margin-left: 250px;
92 background-image: url(Doaa.jpg);
#box4
62:22 CRLF UTF-8 4 spaces Python 3.11 (pythonProject)
USD/JPY -0.92%
ENG
10:46 PM
12/21/2023


Current File
WebServer.py
file.html
main_en.html
NotFound.html
main_ar.html
style.css
styleAr.css
4 5 19
li {
margin-bottom: 0px;
}
/* insted of repeating same features we used the three classes togather */
#boxinfo1 {
font-style: italic;
border-color: rgb(201, 182, 182);
background-color: rgb(201, 182, 182);
margin-left: 30px;
color: black;
}
#boxinfo2 {
font-style: italic;
border-color: rgb(201, 182, 182);
background-color: rgb(201, 182, 182);
margin-left: 70px;
color: black;
}
#boxinfo3 {
font-style: italic;
border-color: rgb(201, 182, 182);
background-color: rgb(201, 182, 182);
margin-left: 100px;
color: black;
}
/* insted of repeating same features we used the main class button */
button {
#box4
62:22 CRLF UTF-8 4 spaces Python 3.11 (pythonProject)
53°F Partly cloudy
ENG
10:48 PM
12/21/2023


Current File
WebServer.py
file.html
main_en.html
NotFound.html
main_ar.html
style.css
styleAr.css
4 5 19
button {
font-size: 30px;
margin-top: 20px;
font-style: italic;
font-weight: bold;
font-family: "Calibri ", Times, serif;
padding: 8px;
border-radius: 10px; /* Adjust the border-radius as needed */
color: rgb(25,25,112);
align-self: center;
}
#button1 {
margin-left: 700px;
}
#button2 {
margin-left: 680px;
}
#box0 {
direction: rtl;
font-family: 'Calibri ',Papyrus;
margin-top: 150px;
margin-left: 10px;
margin-right: 20px;
border: 0px;
width: 500px;
height: 200px;
font-size: 50px;
padding: 30px;
#box4
62:22 CRLF UTF-8 4 spaces Python 3.11 (pythonProject)
53°F Partly cloudy
ENG
10:48 PM
12/21/2023


Current File
WebServer.py
file.html
main_en.html
NotFound.html
main_ar.html
style.css
styleAr.css
4 5 19
#box0 {
direction: rtl;
font-family: 'Calibri ',Papyrus;
margin-top: 150px;
margin-left: 10px;
margin-right: 20px;
border: 0px;
width: 500px;
height: 200px;
font-size: 50px;
padding: 30px;
color: white;
}
#intro {
background-image: url(globe.png);
background-size: cover;
width: 550px;
height: 550px;
margin-left: 10px;
margin-right: 250px;
margin-top: 100px;
}
#intro-container {
display: flex;
}
#box4
62:22 CRLF UTF-8 4 spaces Python 3.11 (pythonProject)
53°F Partly cloudy
ENG
10:49 PM
12/21/2023

Web Server

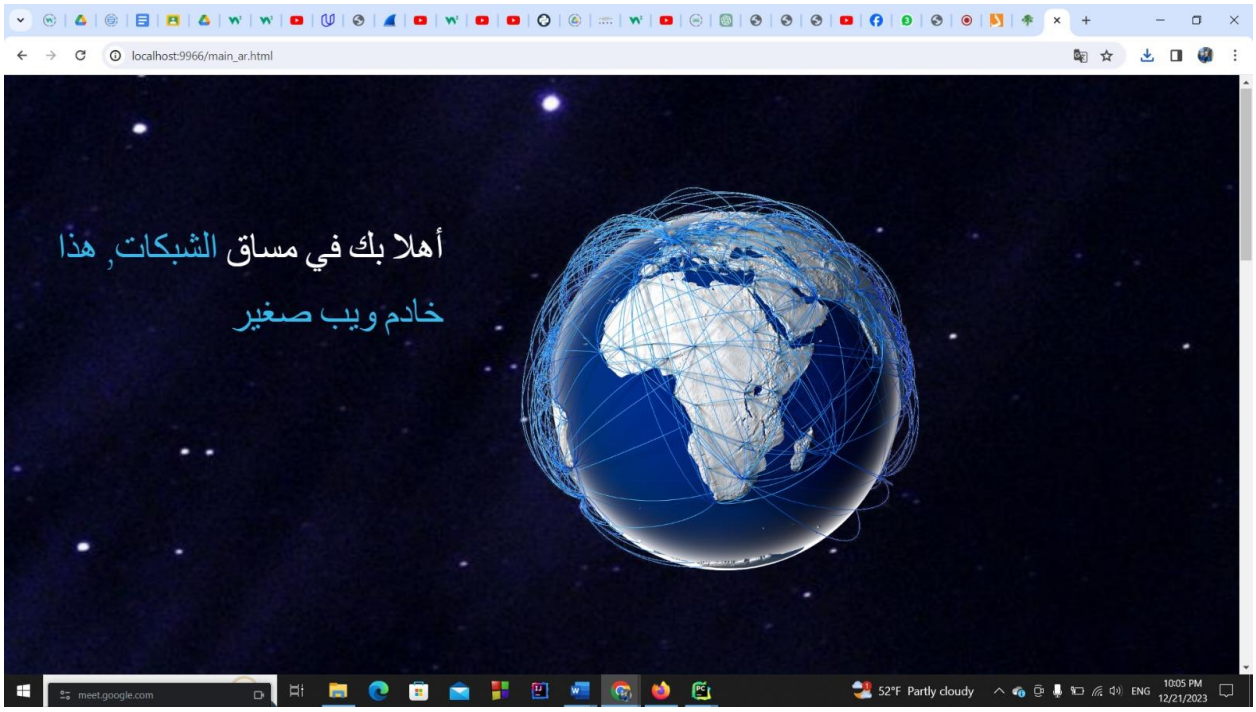
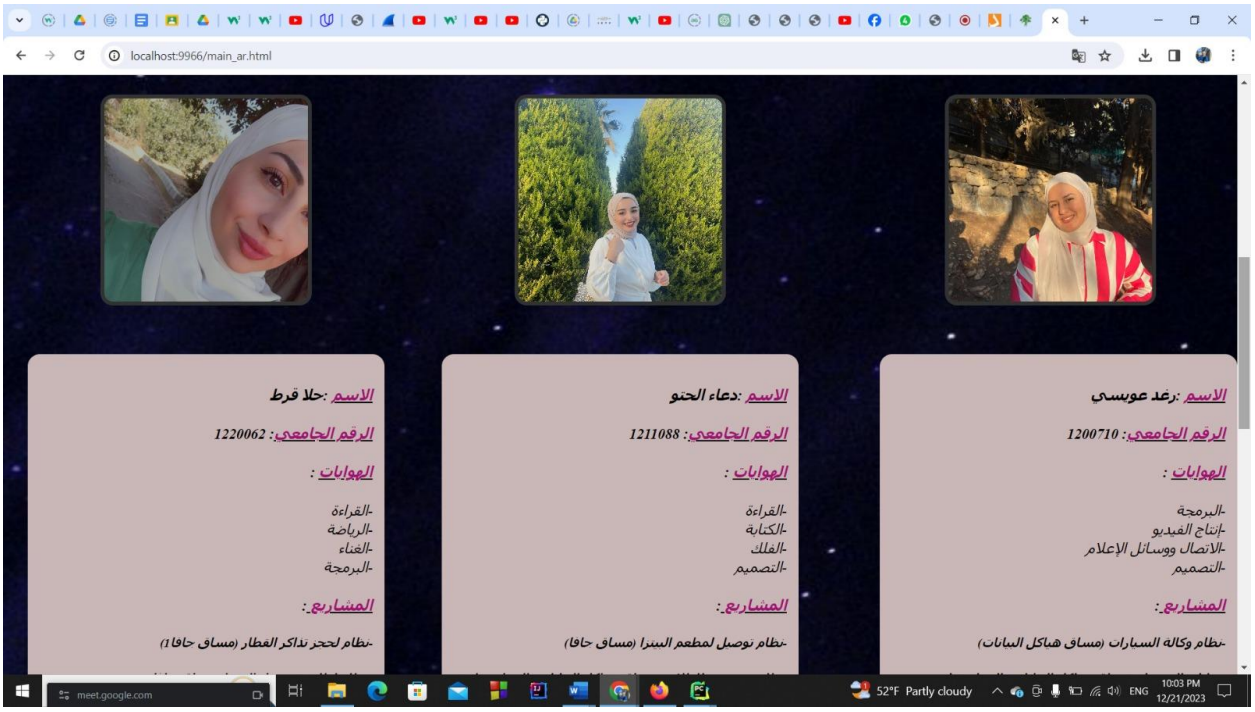
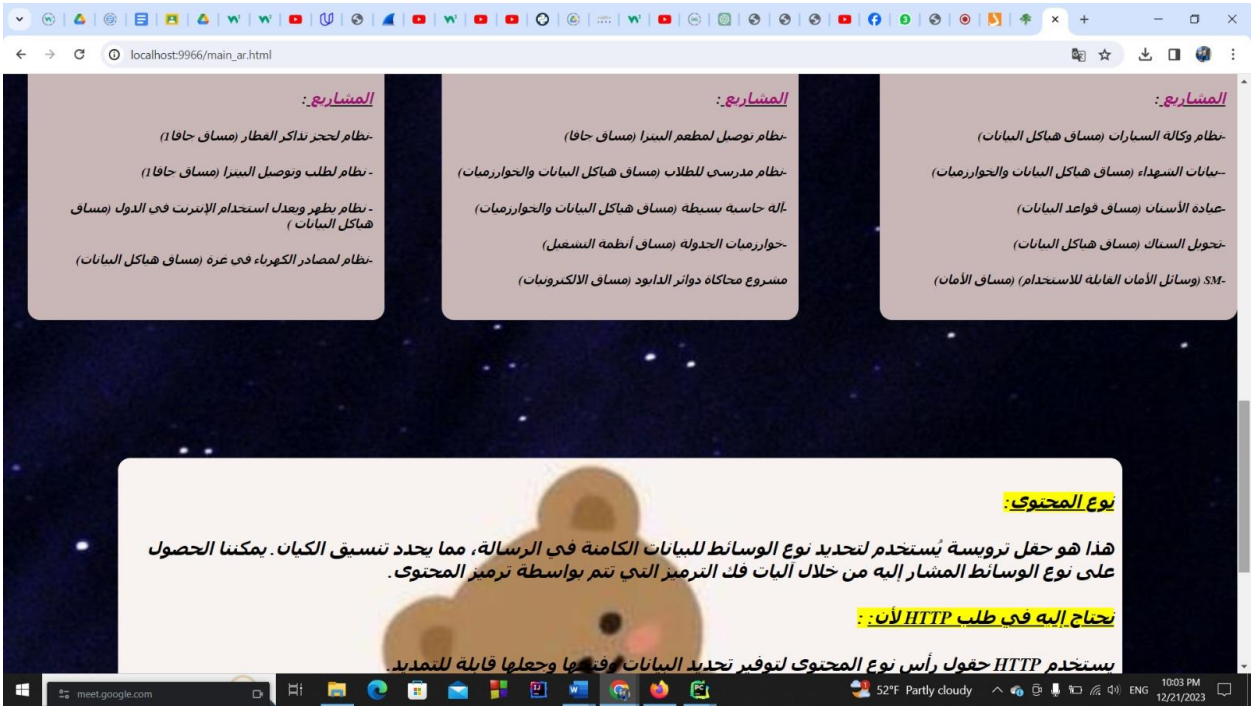


Figure 41:Arabic webserver




localhost:9966/main_ar.html
المشاريع :
-نظام وكالة السيارات (مساق هياكل البيانات)
-بيانات الشهداء (مساق هياكل البيانات والخوارزميات)
-عيادة الأسنان (مساق قواعد البيانات)
-تحويل السناك (مساق هياكل البيانات)
-SM (وسائل الأمان القابلة للاستخدام) (مساق الأمان)
المشاريع :
-نظام توصيل لمطعم البيرا (مساق خافا)
-نظام مدرسي للطلاب (مساق هياكل البيانات والخوارزميات)
-آله حاسبة بسيطة (مساق هياكل البيانات والخوارزميات)
-خوارزميات الجدولة (مساق أنظمة التسغيل)
مشروع محاكاة دوائر الدايود (مساق الالكترونيات)
المشاريع :
-نظام لحجز تذاكر القطار (مساق خافا1)
- نظام لطلب وتوصيل البيرا (مساق خافا1)
- نظام يظهر وبعدل استخدام الإنترنت في الدول (مساق هياكل البيانات)
-نظام لمصادر الكهرباء في غزة (مساق هياكل البيانات)
نوع المحتوى:
هذا هو حقل ترويسة يُستخدم لتحديد نوع الوسائط للبيانات الكامنة في الرسالة، مما يحدد تنسيق الكيان. يمكننا الحصول على نوع الوسائط المشار إليه من خلال آليات فك الترميز التي تتم بواسطة ترميز المحتوى.
نحتاج إليه في طلب HTTP لأن: :
يستخدم HTTP حقول رأس نوع المحتوى لتوفير تحديد البيانات وفتحها وجعلها قابلة للتمديد.
meet.google.com
52°F Partly cloudy
ENG
10:03 PM
12/21/2023


localhost:9966/main_ar.html
نوع المحتوى:
هذا هو حقل ترويسة يُستخدم لتحديد نوع الوسائط للبيانات الكامنة في الرسالة، مما يحدد تنسيق الكيان. يمكننا الحصول على نوع الوسائط المشار إليه من خلال آليات فك الترميز التي تتم بواسطة ترميز المحتوى.
نحتاج إليه في طلب HTTP لأن: :
يستخدم HTTP حقول رأس نوع المحتوى لتوفير تحديد البيانات وفتحها وجعلها قابلة للتمديد.
أيضاً، فإنها أمر حيوي لأنها تساعد الجهة المستلمة (العميل أو الخادم) على فهم كيفية تحليل ومعالجة المحتوى .
HTML File
W3schools
meet.google.com
52°F Partly cloudy
ENG
10:04 PM
12/21/2023

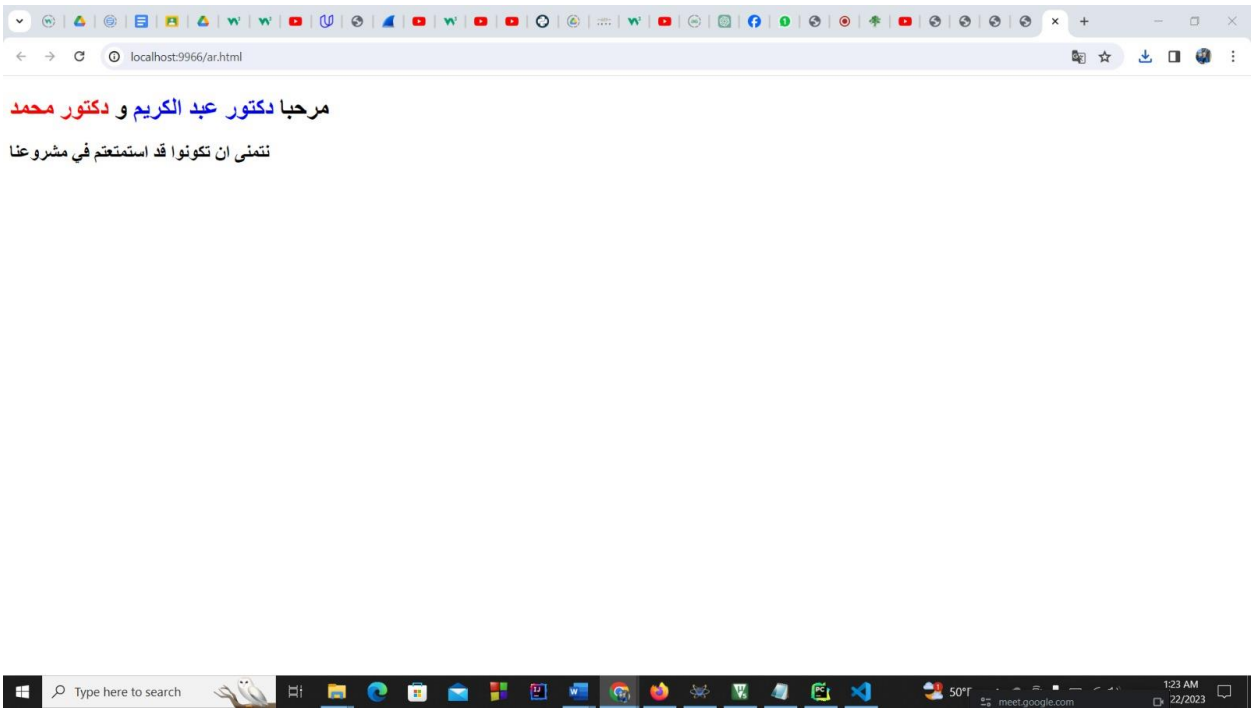


Figure 42:html Arabic file

Testing the website from another device

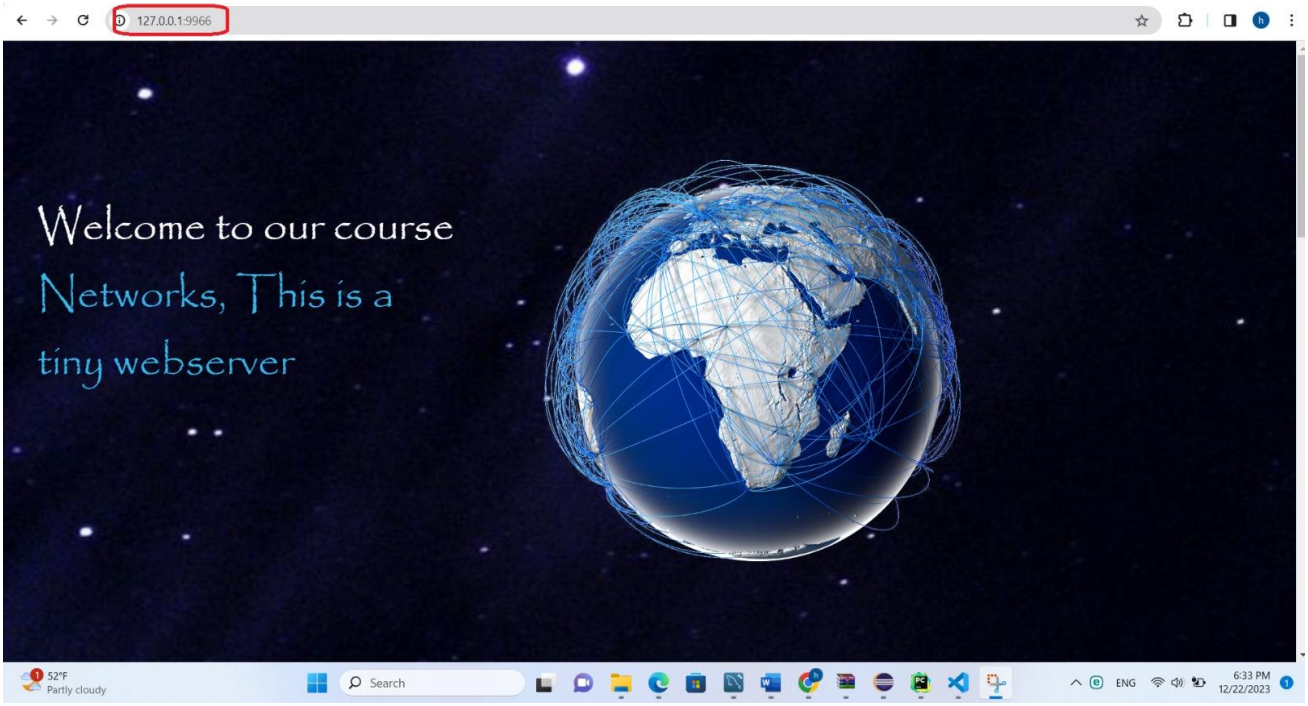


Figure 43:Test from another device