BIRZEIT UNIVERSITY

Faculty of Engineering and Technology

Department of Electrical and Computer Engineering

Computer Network ENCS3320
Project Report

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Date: 31/8/2023

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1. Part 1

1.1. Definitions

1.1.1 What is ping

Ping is a network utility that tests the connection and measures the response time between two computers or devices in an IP network.

1.1.2 What is tracert

Tracert (short for "traceroute") is a network diagnostic tool used to trace the route that data packets take from your computer to a destination host on the Internet. It shows the sequence of routers and intermediate nodes through which the data passes, helping to identify potential network issues or delays along the way.

1.1.3 What is nslookup

Nslookup is a command-line tool used to query and retrieve information from Domain Name System (DNS) servers. It's commonly used to find the IP address associated with a domain name or to obtain other DNS-related information.

1.1.4 What is telnet

Telnet is a network protocol and command-line tool that allows you to establish a remote terminal session with another computer over a network, typically the internet. It enables you to access the command-line interface of a remote server or device as if you were physically present at that machine. However, telnet is not secure and transmits data, including passwords, in plaintext, which makes it unsuitable for sensitive information. As a result, its usage has largely been replaced by more secure alternatives like SSH (Secure Shell).

1.2 Commands

1.2.1 Ping www.amazon.de

As seen in figure 1, four packets were transmitted with the same TTL but various time delays of Minimum = 23ms, Maximum = 24ms, and Average = 23ms.We can see that the smartphone response time is shorter than the www.yale.edu response time, Since the two servers are not in the same network, the time for each packet to travel to and from its destination is more than when they were in the same network in the previous part.

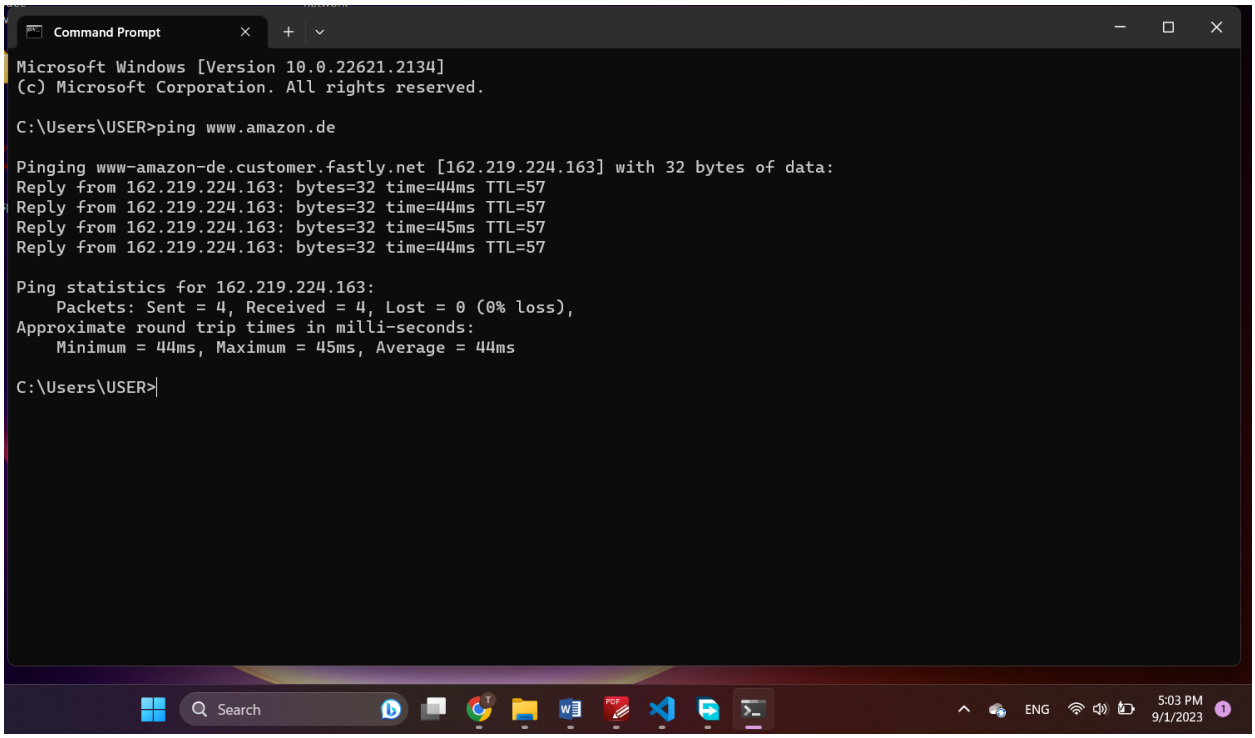


Figure 1: Ping www.amazon.de

1.2.2 Tracert www.amazon.de

Tracert is used to trace the path that an Internet Protocol packet takes to the destination. Using this comment (tracert), three messages are sent to each router, followed by a wait for the router's response, and the procedure is repeated until you reach the correct IP address. The measurements grow as we move down the line because the router rotates. farther. If the request fails, the packet is marked * The packet is unable to reach the targeted destination due to a problem along the path or location.

The above figure shows how much time the packets take to reach the next server and the path was used.

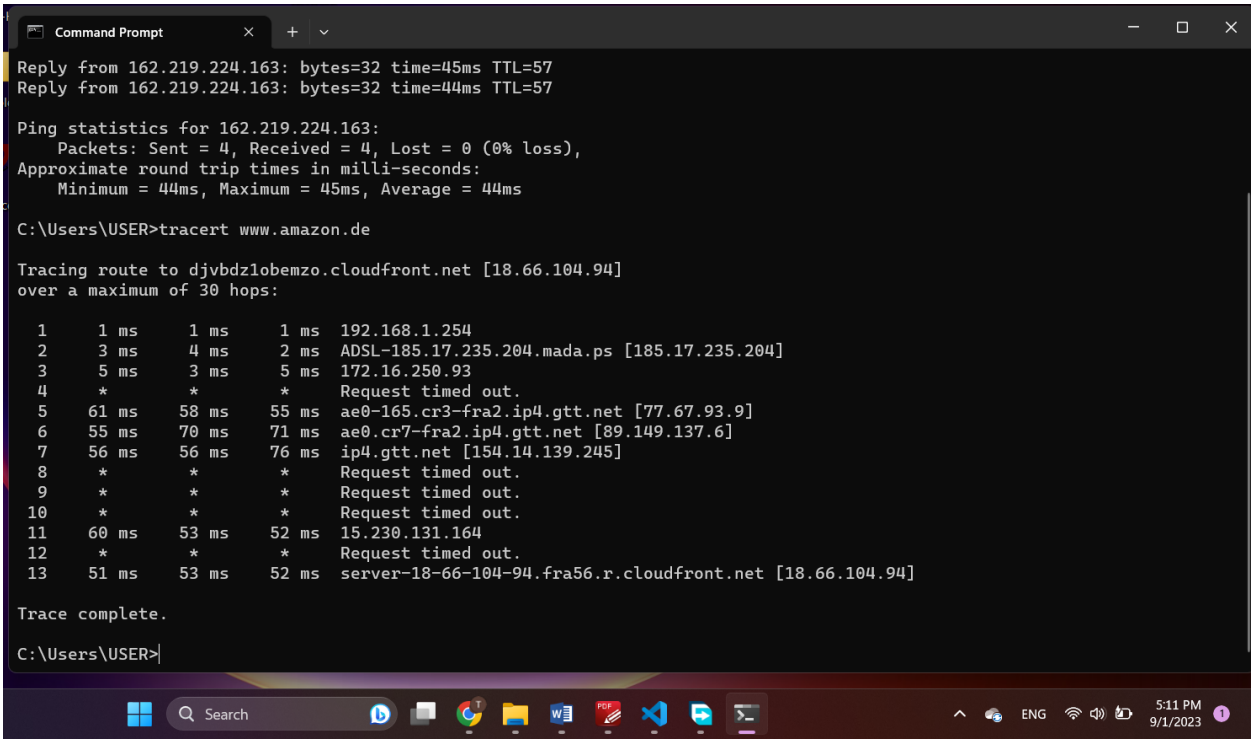


Figure 2: Tracert www.amazon.de

1.2.3 nslookup www.amazon.de

nslookup is used to display the IP address and other information, such as the name of the server As shown in figure 3

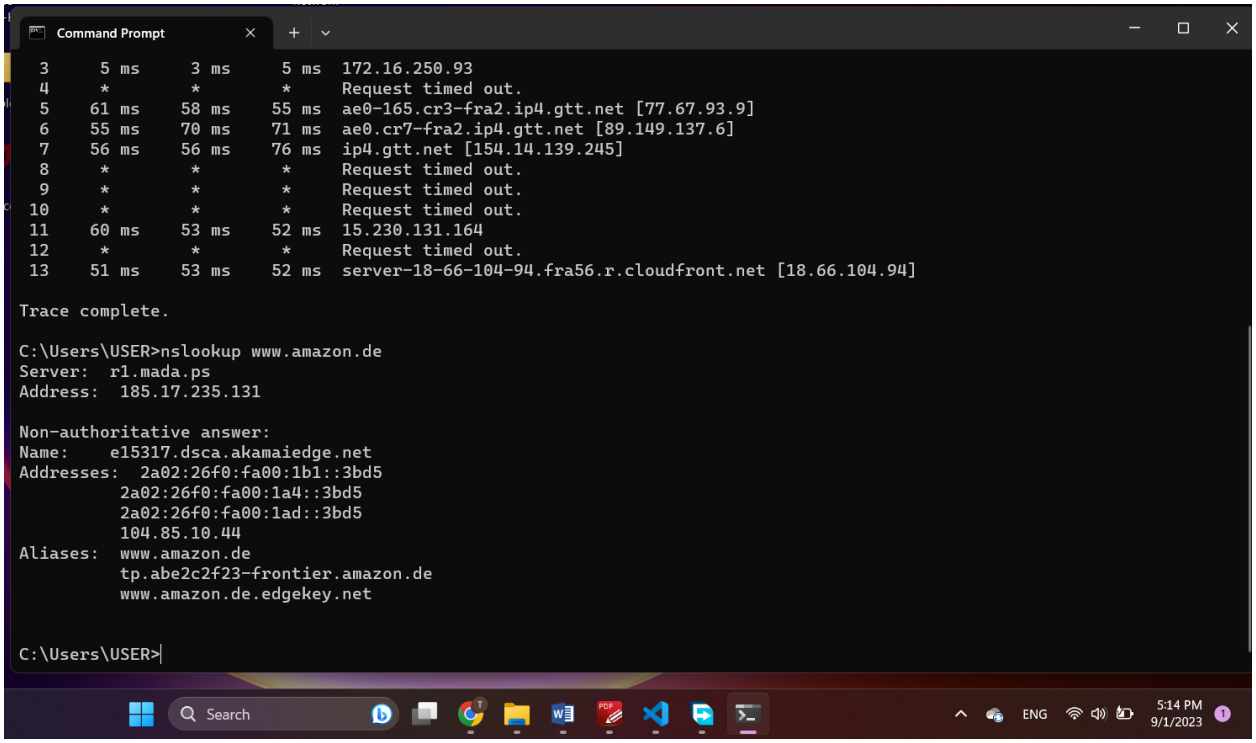


Figure 3: nslookup www.amazon.de

2. Part 2

In order to achieve the project requirements, a simple web server was implemented using socket programming. The primary objective of this server is to listen on port 12345 and respond to specific URL requests with appropriate content.

The server was configured to listen on port 12345. This involves setting up a socket connection and binding it to the specified port. The server is designed to listen for incoming connections and process client requests.

2.1 / , /index.html , /main_en.html and /en requests

Beyond the initial requirements of "/", "/index.html", "/main_en.html", and "/en", the server accommodated an array of possible scenarios.

- if the request is '/':

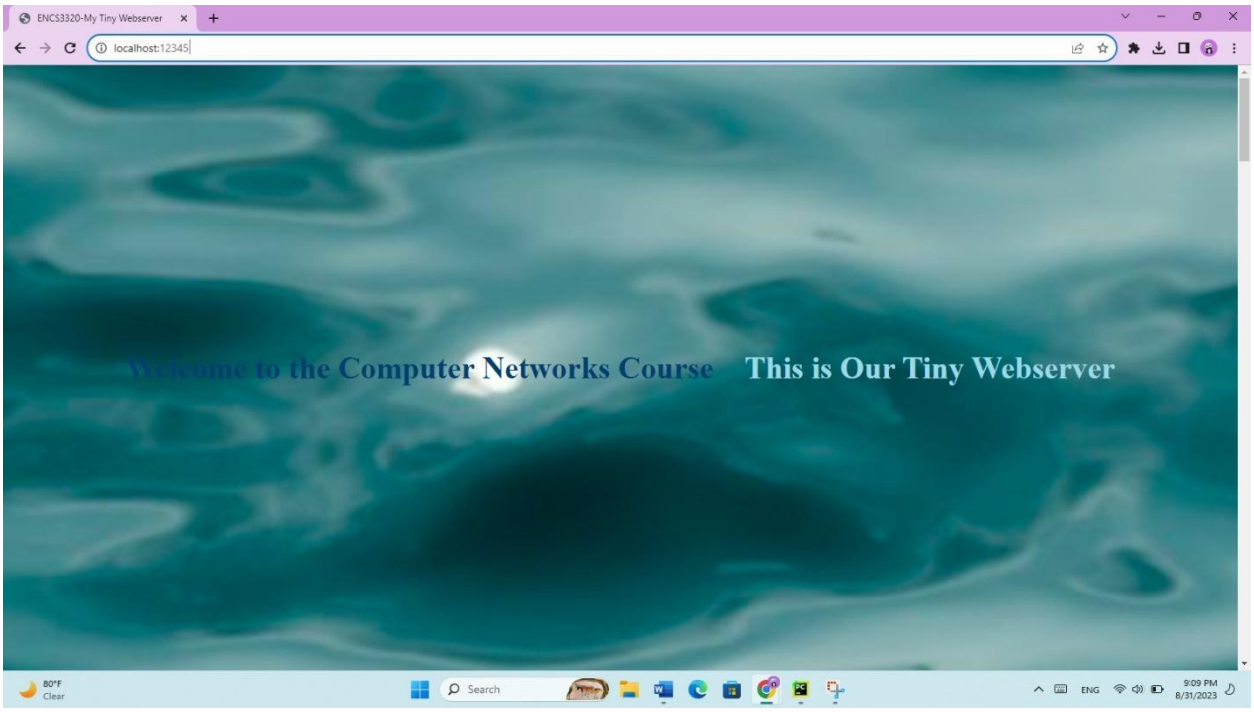
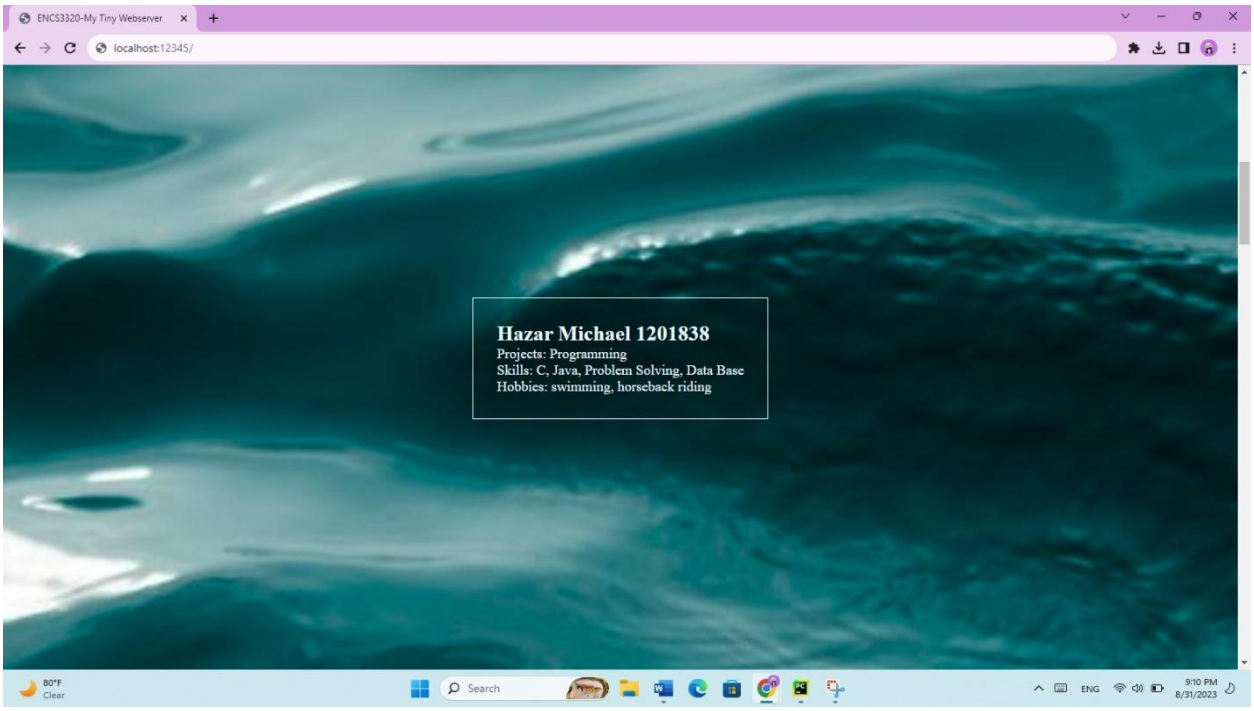
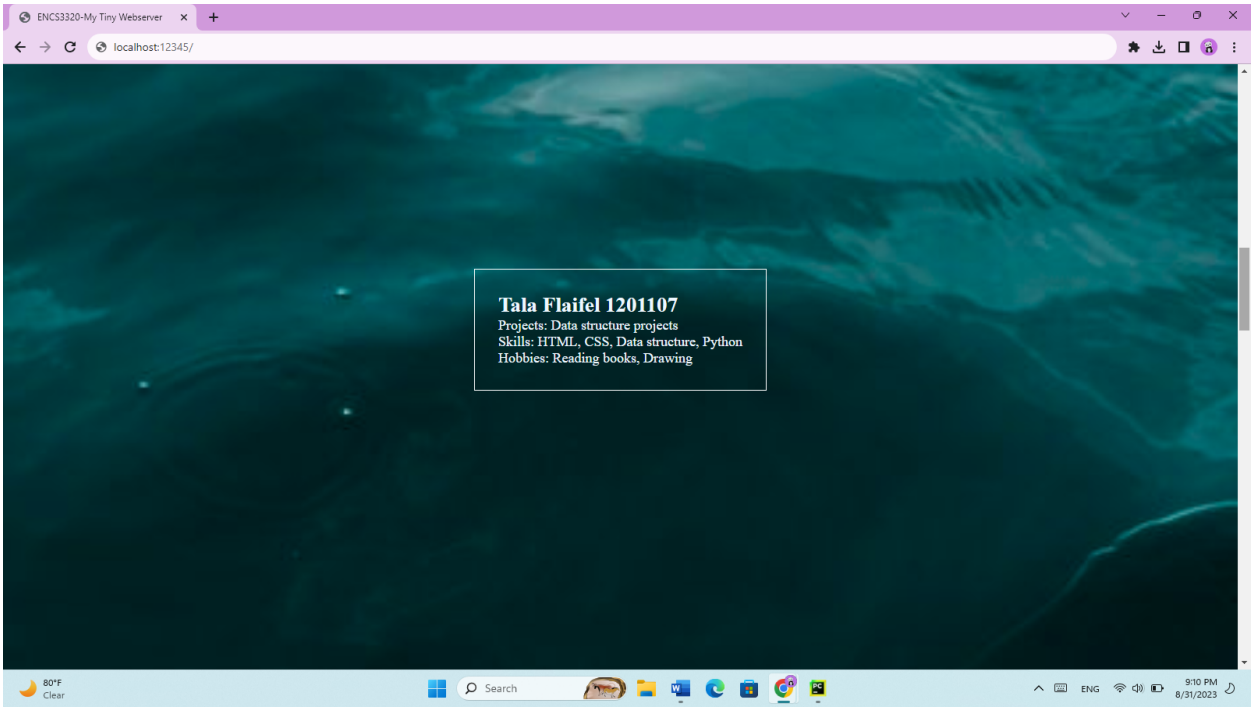
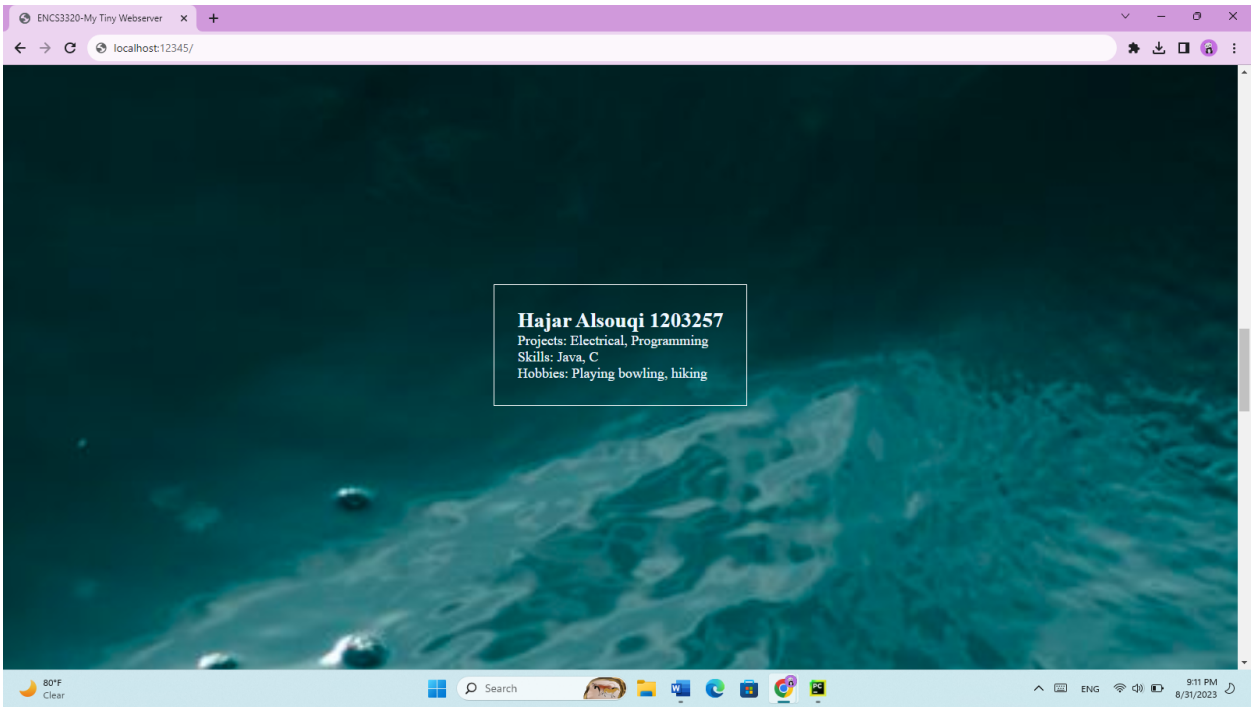
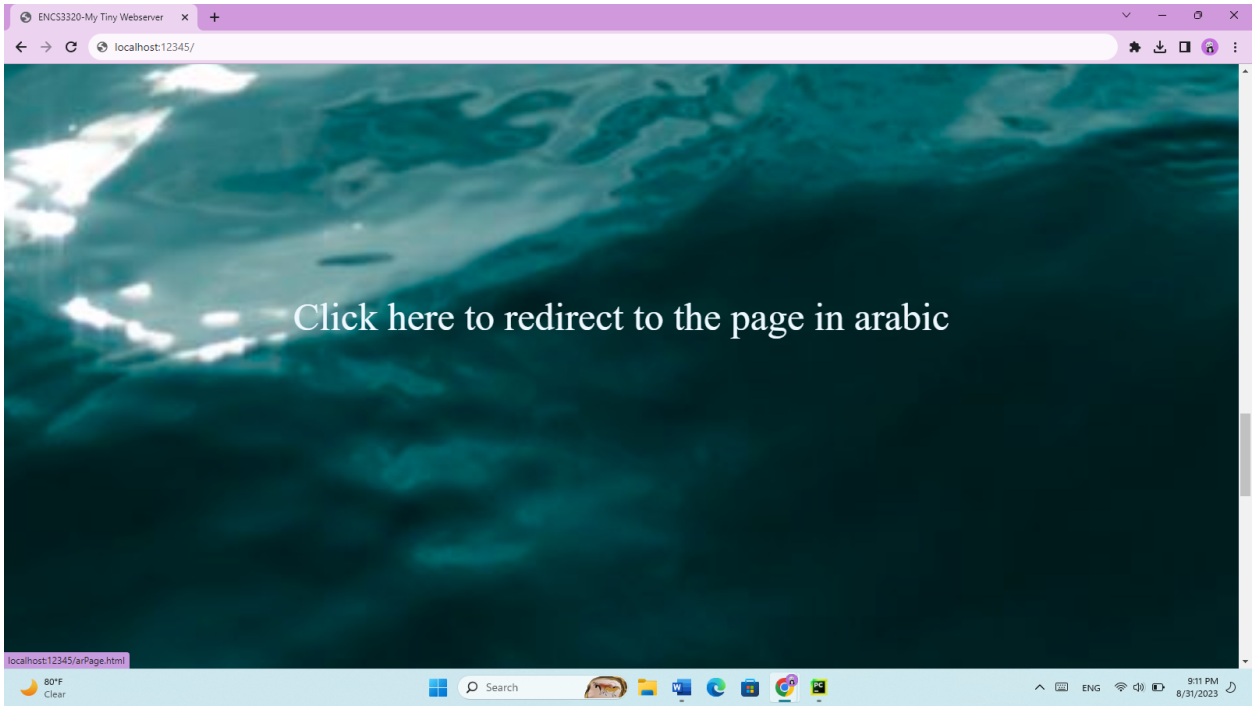


Figure 4: '/' request


ENCS3320-My Tiny Webserver
localhost:12345/
Hazar Michael 1201838
Projects: Programming
Skills: C, Java, Problem Solving, Data Base
Hobbies: swimming, horseback riding
80°F
Clear
Search
ENG
9:10 PM
8/31/2023

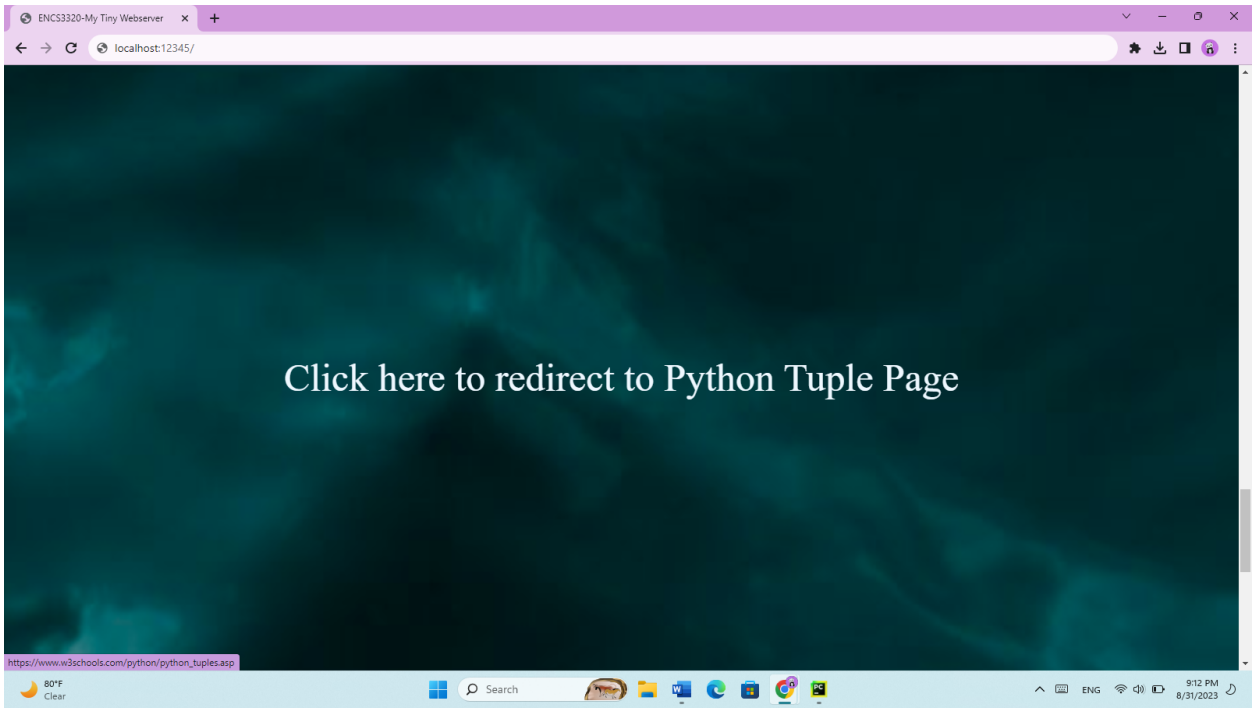

ENCS3320-My Tiny Webserver
localhost:12345/
Tala Flaifel 1201107
Projects: Data structure projects
Skills: HTML, CSS, Data structure, Python
Hobbies: Reading books, Drawing
80°F
Clear
Search
ENG
9:10 PM
8/31/2023





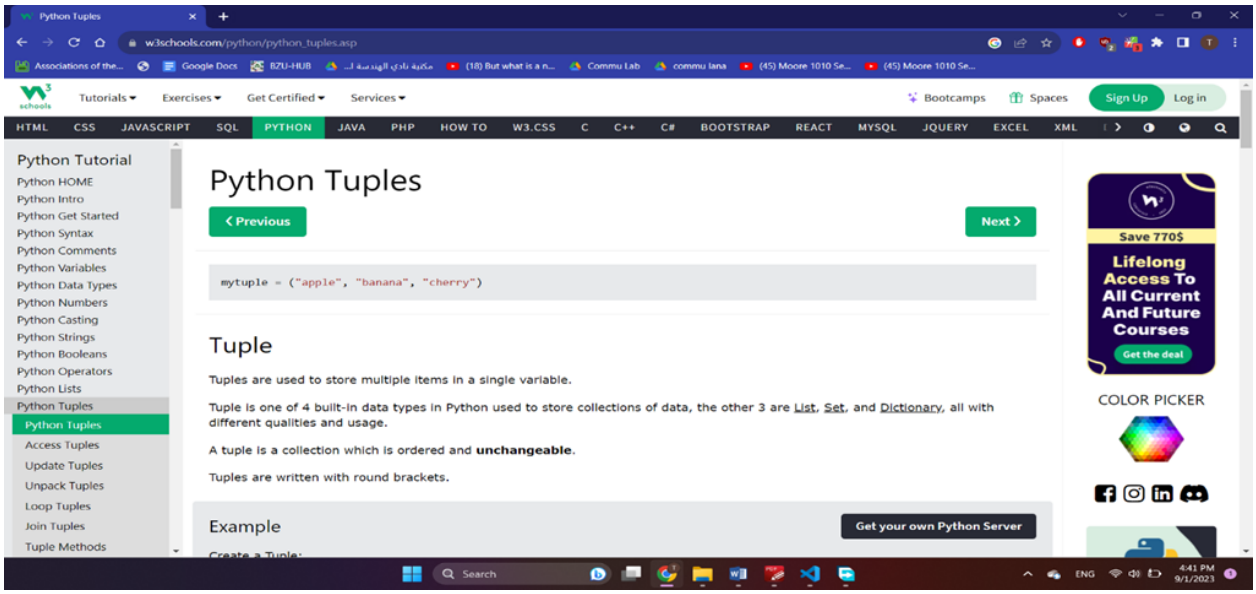
The above image shows a hyperlink labeled "Click here to redirect to the page in Arabic," offering a user-friendly option for visitors to seamlessly transition to the Arabic version of the web page upon clicking.

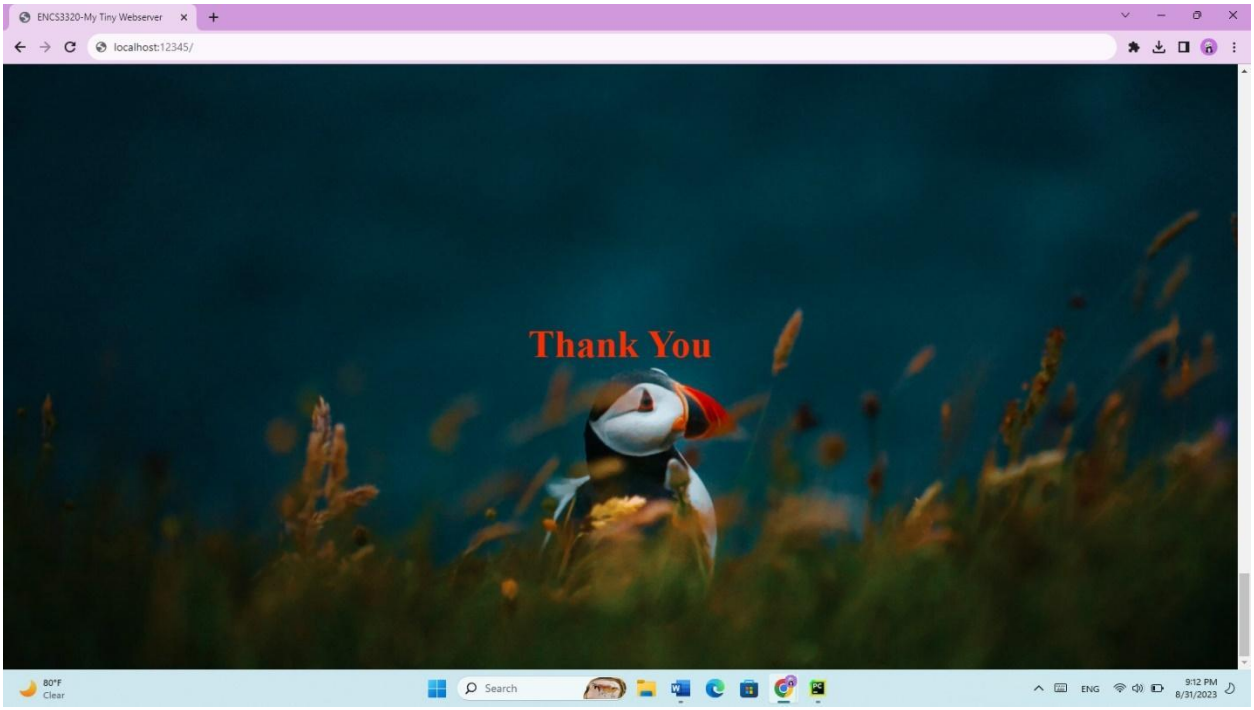
Redirected page



The above image shows a hyperlink reading "Click here to redirect to Python Tuple Page," serving as a direct link to the URL https://www.w3schools.com/python/python_tuples.asp as specified. This feature offers users swift access to the relevant educational content on Python tuples.

Redirected page





The forthcoming images illustrate that the following requests: "/", "/index.html", "/main_en.html", or "/en" (e.g., "localhost:12345/" or "localhost:12345/en"), all direct us to the central main web server. This unified response mechanism ensures consistent access to the main server content regardless of the specified path or language parameter.

- if request **'/index.html':**

Figure 5: '/index.html' request

- if request '/main_en.html':

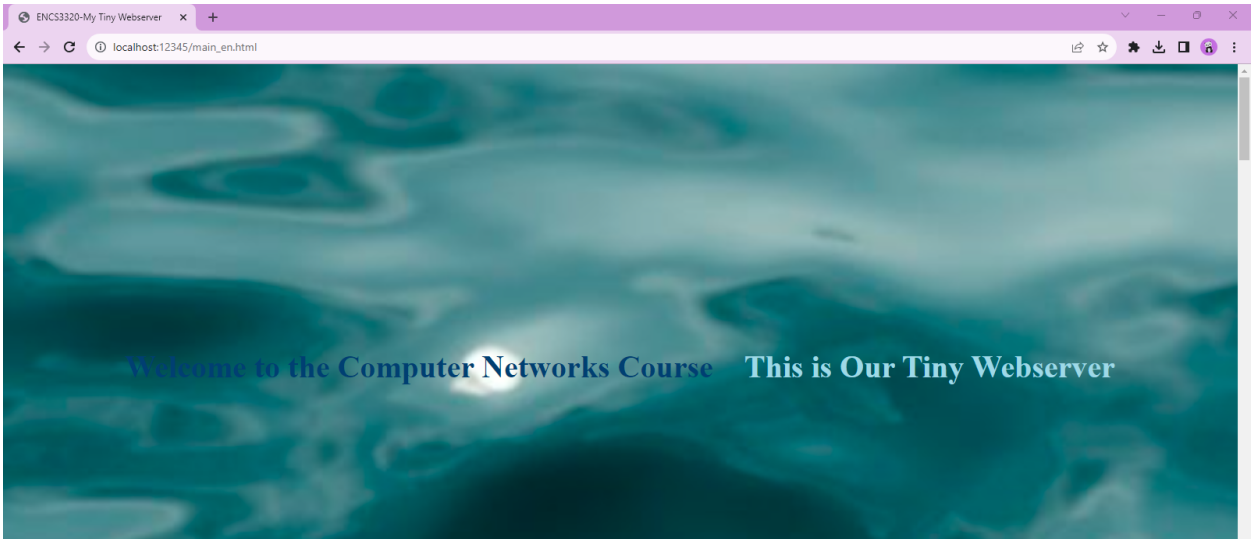


Figure 6: '/main_en.html' request

- if the request ‘/en’:

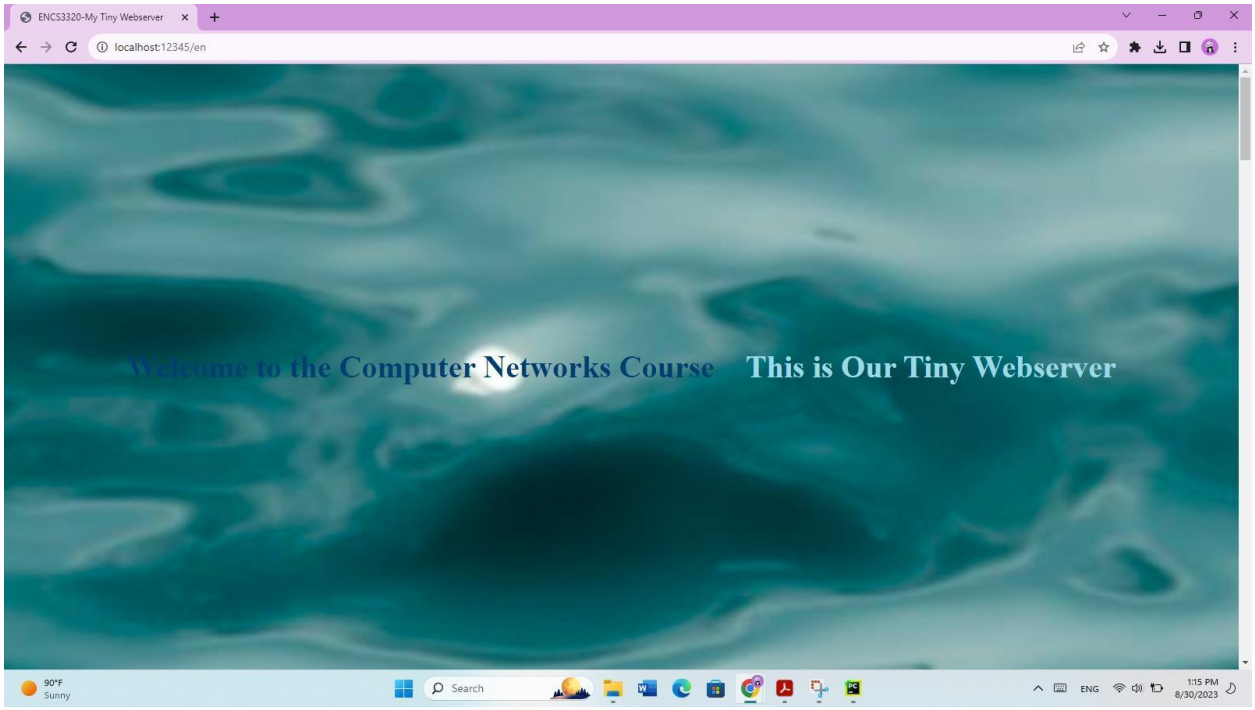


Figure 7: ‘/en.html’ request

```python
while True:
    print("The [Server] is ready to receive ...")
    connectionSocket, client_address = serverSocket.accept()
    data = connectionSocket.recv(1048).decode()
    print(data)
    browser_lines = data.split('\n')
    browser = browser_lines[0]

    if len(data) > 0:

        request_line = data.split('\n')[0]
        request_path = request_line.split()[1]
        client_req_url = browser.split()[1]

        if request_path in ('/', '/index.html', '/main_en.html', '/en', '/enPage.html'):
            connectionSocket.send('HTTP/1.1 200 OK\r\n'.encode())
            connectionSocket.send('Content-Type: text/html; charset=UTF-8\r\n'.encode())
            connectionSocket.send('\r\n'.encode())
            with open("enPage.html", "rb") as file:
                connectionSocket.send(file.read())
```

Figure 8: Language-Specific Page Delivery

This code snippet handles the first request by checking if the requested path matches "/", "/index.html", "/main_en.html", "/en", or "/enPage.html". If the match occurs, the server sends a "200 OK" response header along with the "Content-Type: text/html; charset=UTF-8" header.

2.2 /ar request

In response to the "/ar" request, the server provides "main_ar.html," an Arabic counterpart of "main_en.html." This facilitates language-specific content delivery based on user preferences, enhancing accessibility and user experience.

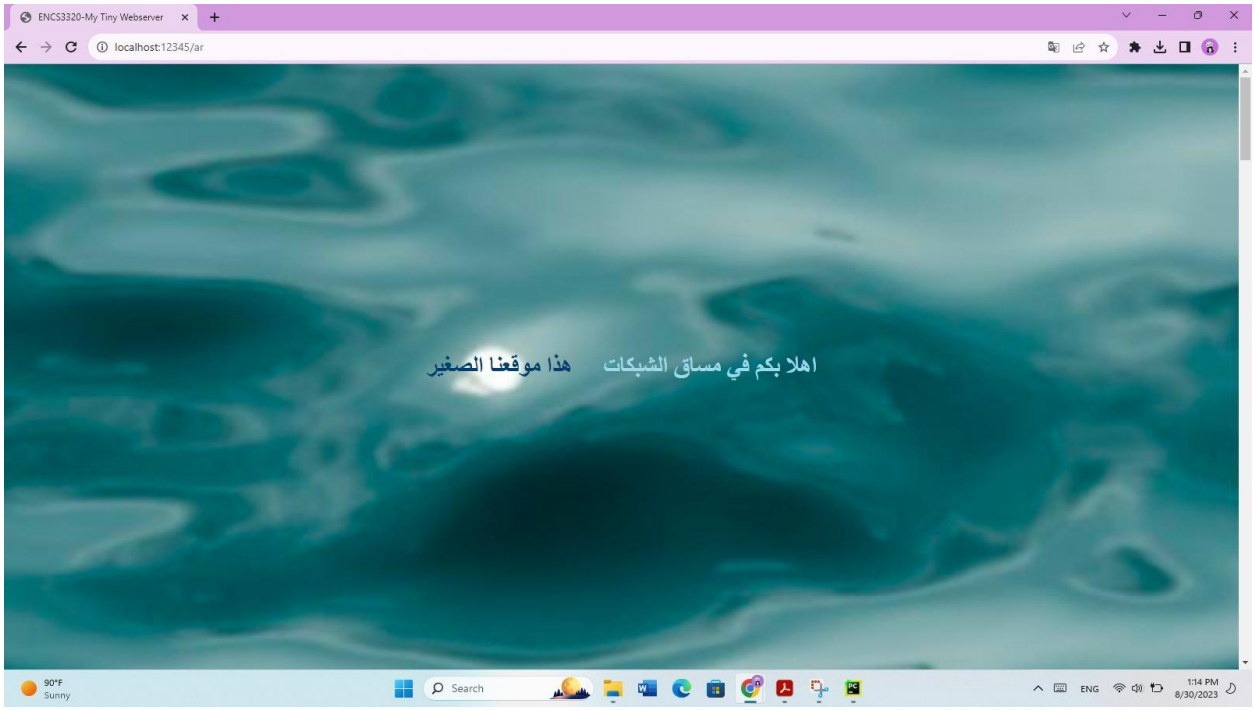
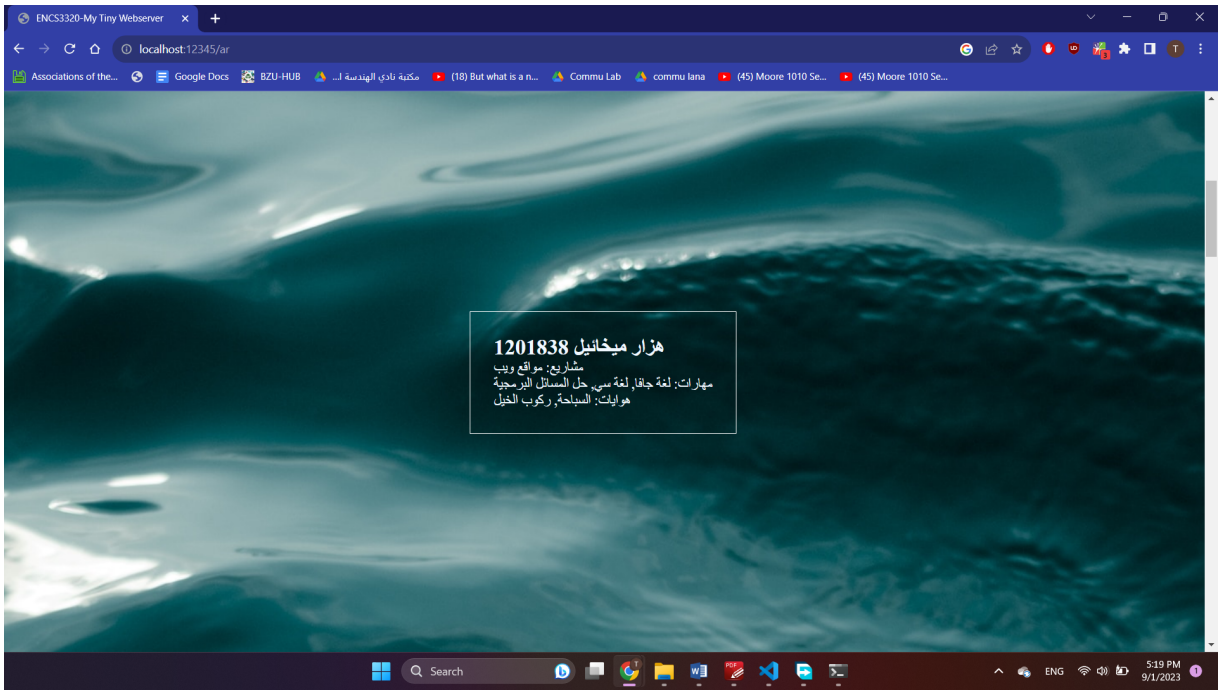
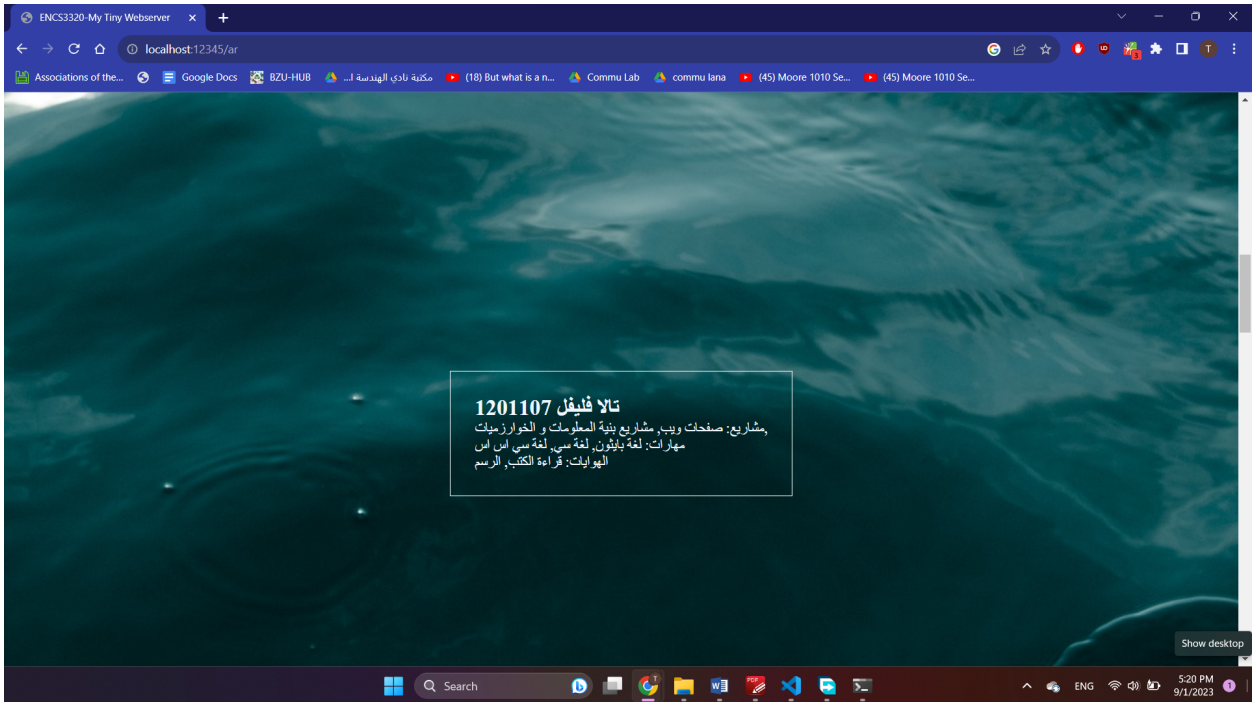
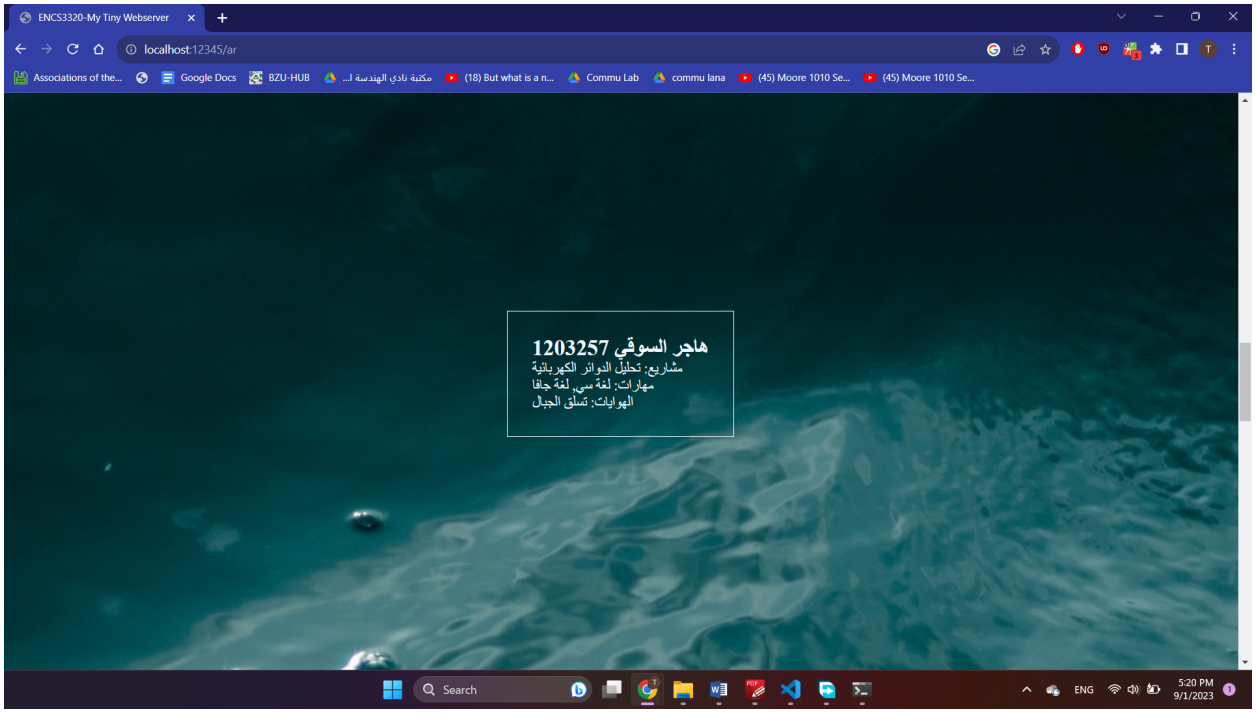
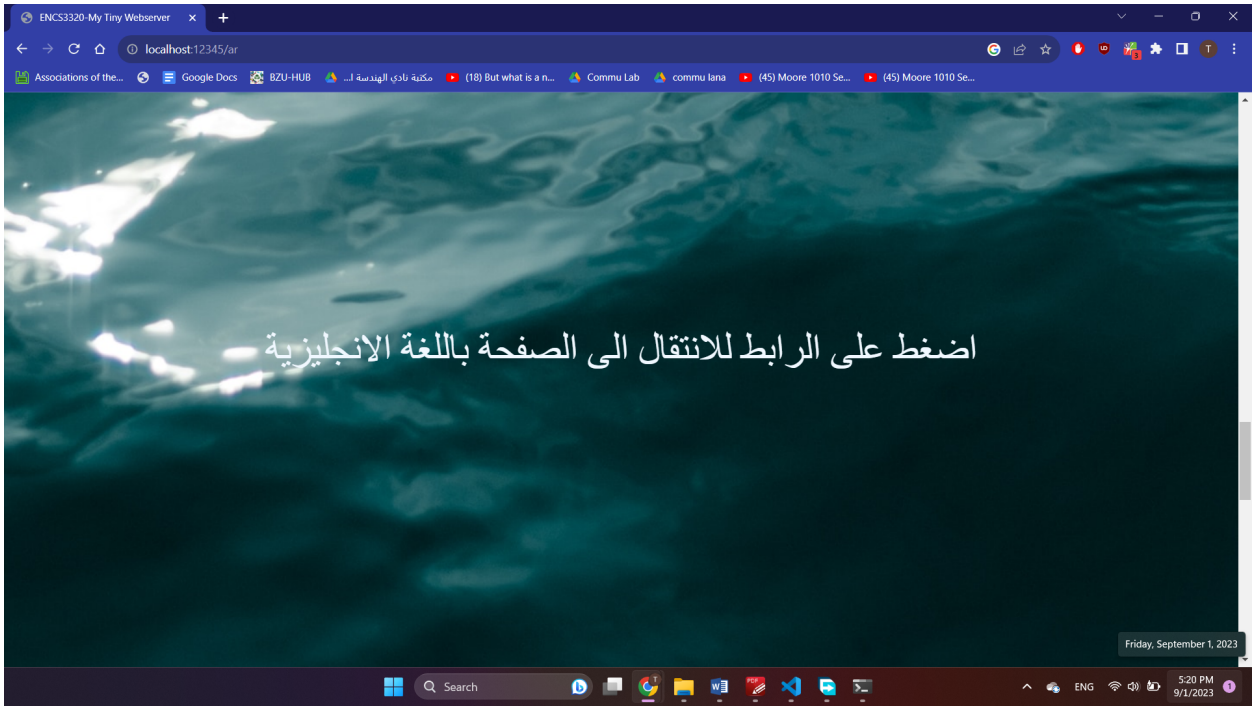


Figure 9: '/ar' request

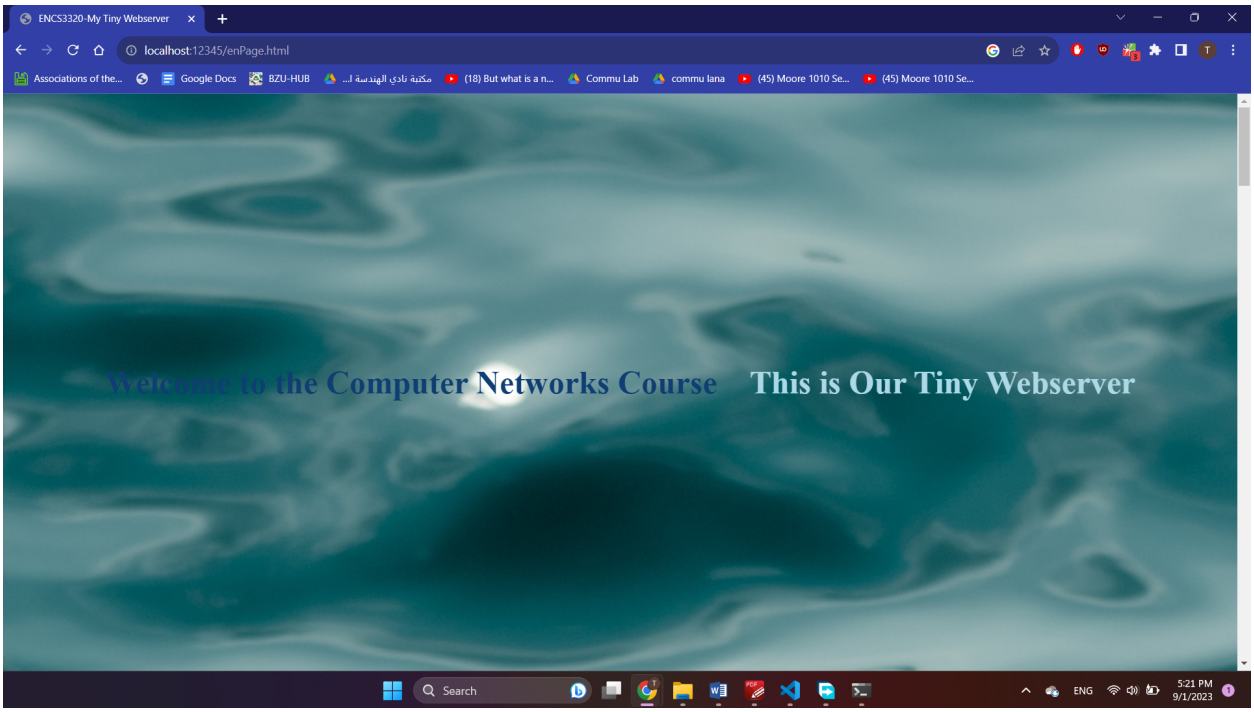


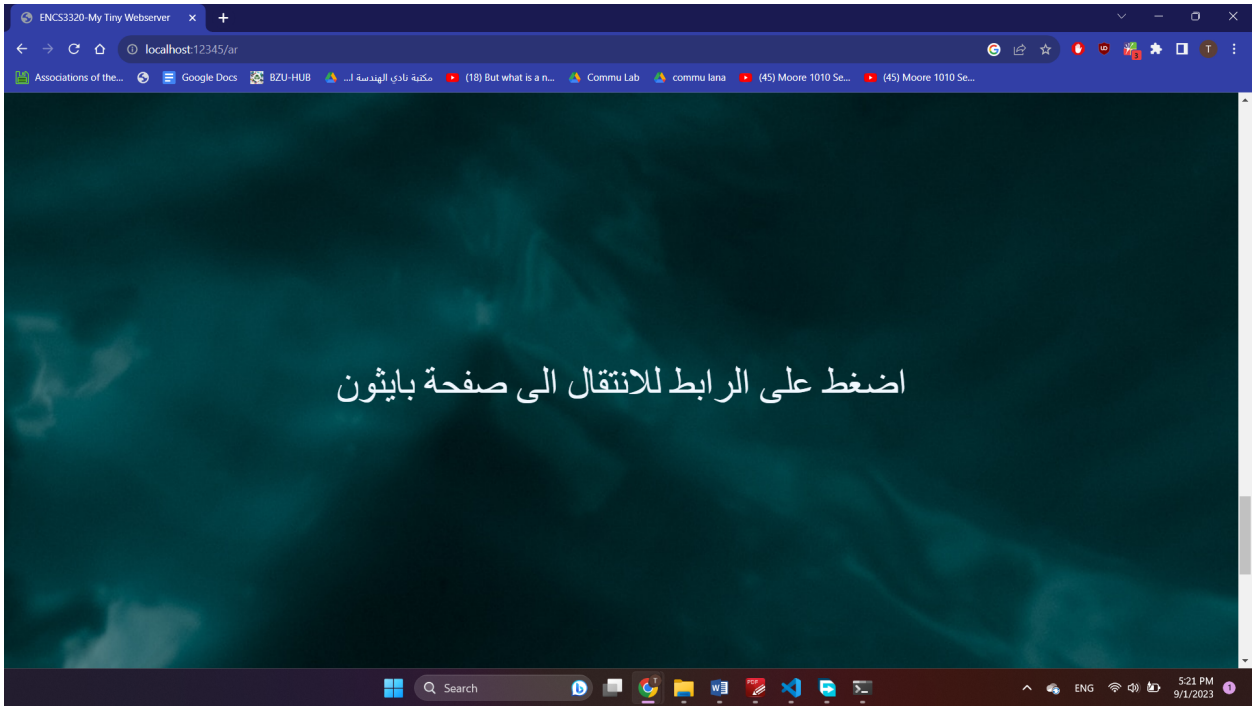

ENCS3320-My Tiny Webserver
localhost:12345/ar
تالا فليفل 1201107
مشاريع: صفحات ويب, مشاريع بنية المعلومات و الخوارزميات,
مهارات: لغة بايثون, لغة سي, لغة سي اس اس
الهوايات: قراءة الكتب, الرسم
Show desktop
Search
ENG
5:20 PM
9/1/2023


ENCS3320-My Tiny Webserver
localhost:12345/ar
هاجر السوقي 1203257
مشاريع: تحليل الدوائر الكهربائية
مهارات: لغة سي, لغة جافا
الهوايات: تسلق الجبال
Search
ENG
5:20 PM
9/1/2023

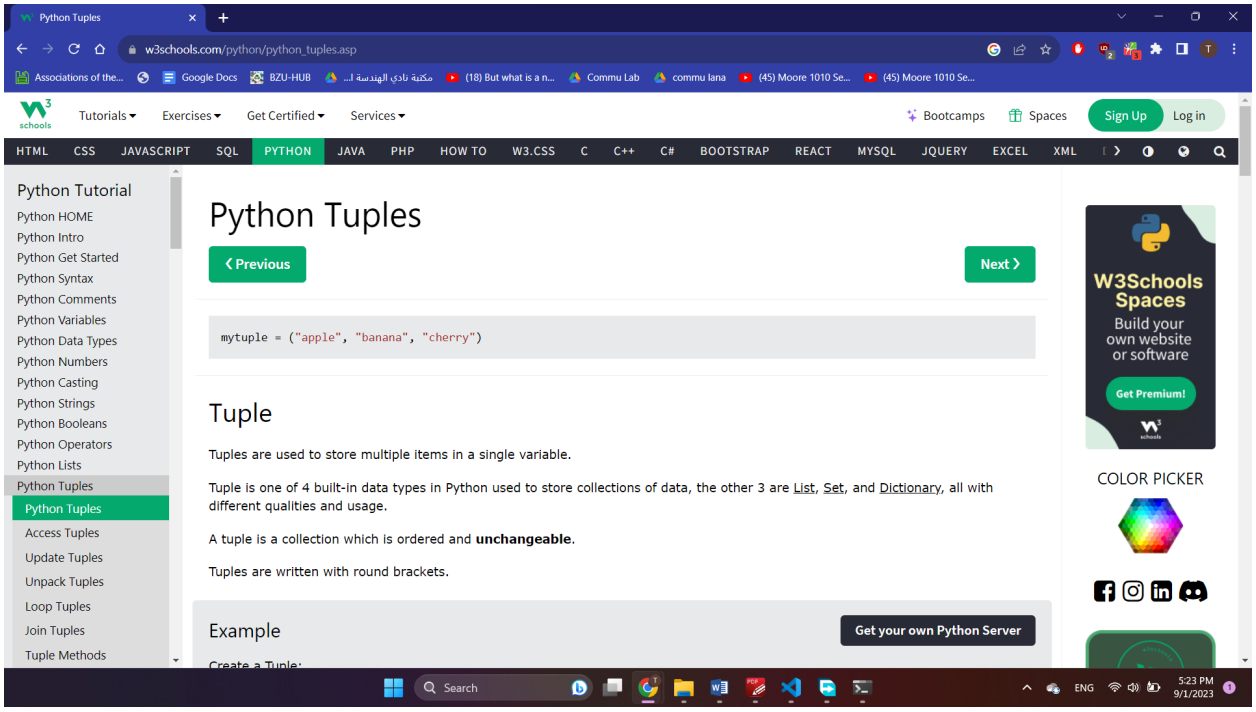


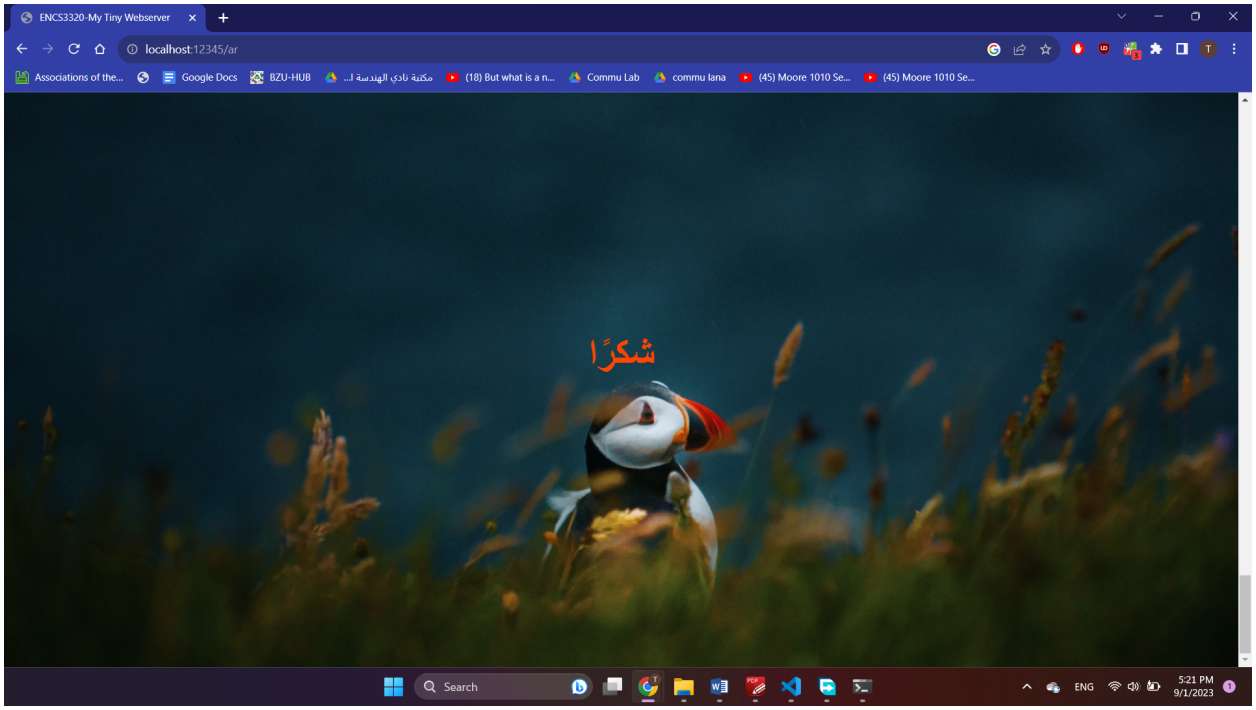
Redirected page





Redirected page






```
elif request_path in ('/ar', '/arPage.html'):
    connectionSocket.send('HTTP/1.1 200 OK\r\n'.encode())
    connectionSocket.send('Content-Type: text/html; charset=UTF-8\r\n'.encode())
    connectionSocket.send('\r\n'.encode())
    with open("arPage.html", "rb") as file:
        connectionSocket.send(file.read())
```

Figure 10: Arabic Version Page Delivery

This code section corresponds to the demand of Arabic Version Page Delivery. When the requested path matches "/ar" or "/arPage.html", the server responds with the "arPage.html" file. The response headers are set to "200 OK" and "Content-Type: text/html; charset=UTF-8", and the server sends the content of the Arabic page file to the client, ensuring language-specific content delivery.

2.2 Text File for Laptop Data

A laptop data file, containing names and prices of a minimum of 10 laptops, has been included. This file serves as the data source for subsequent server operations.

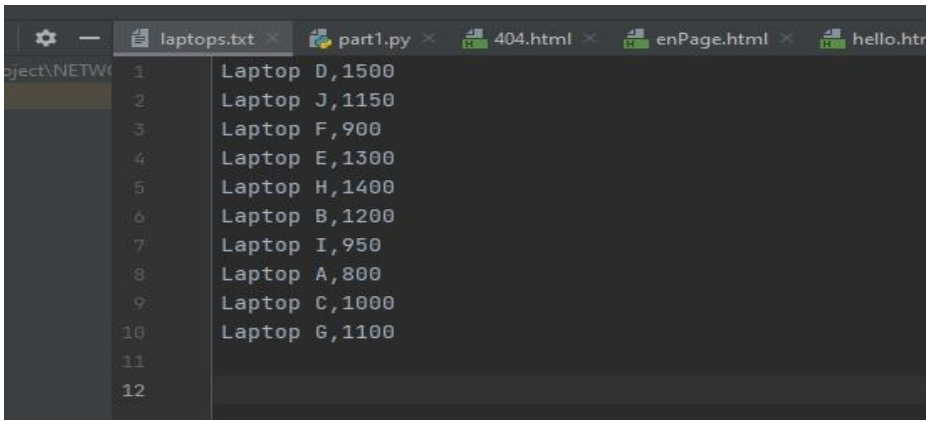


Figure 11 :text file contents

```
def read_laptops_from_file(filename):
    laptops = []
    with open(filename, 'r') as file:
        for line in file:
            name, price = line.strip().split(',')
            laptops.append({'Name': name, 'Price': price})
    return laptops
```

Figure 12: Loading Laptop Data from File Code

This code segment corresponds to Loading Laptop Data from a File. The function read_laptops_from_file reads data from a specified file containing laptop names and prices. It processes each line of the file, splitting it into name and price components based on a comma delimiter.

2.4 Sorting by Name (/SortByName) request

Upon receiving a "/SortByName" request, the server presents laptop names and prices in uppercase, sorted alphabetically. The output is displayed as a text page, enhancing readability and accessibility.

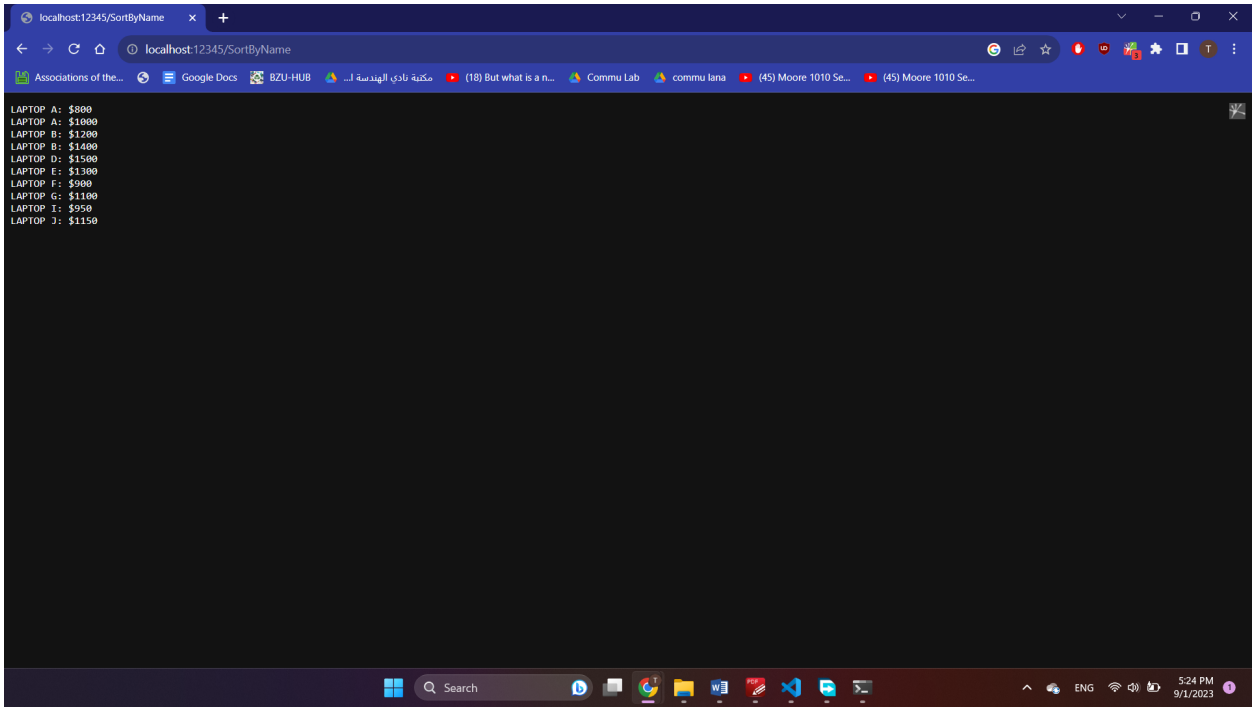


Figure 13:/SortByName request

2.5 Sorting by Price (/SortByPrice) request

For a "/SortByPrice" request, the server showcases laptop names and prices, sorted by price. Additionally, the total sum of all laptop prices is provided. The results are presented in a text page, facilitating easy comprehension.

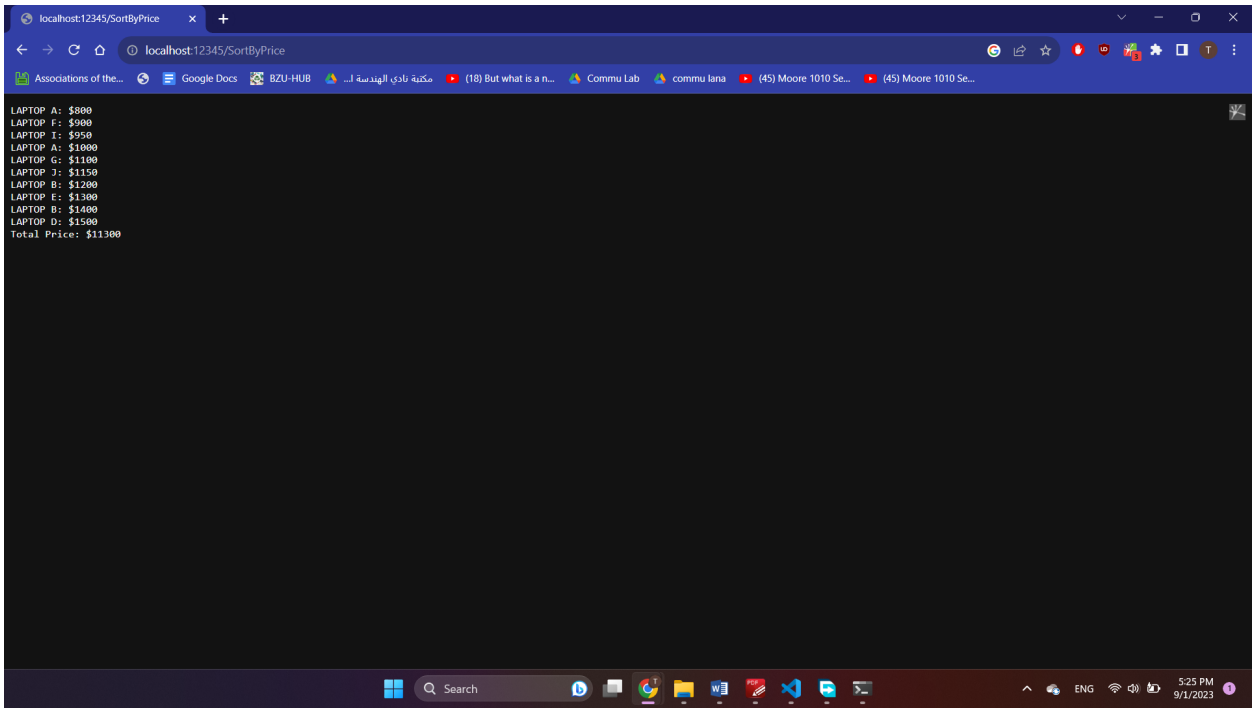


Figure 14:/ SortByPrice request

2.6 HTML File Request Handling

if the request is an .html file then the server should send the requested html file with Content-Type: text/html.

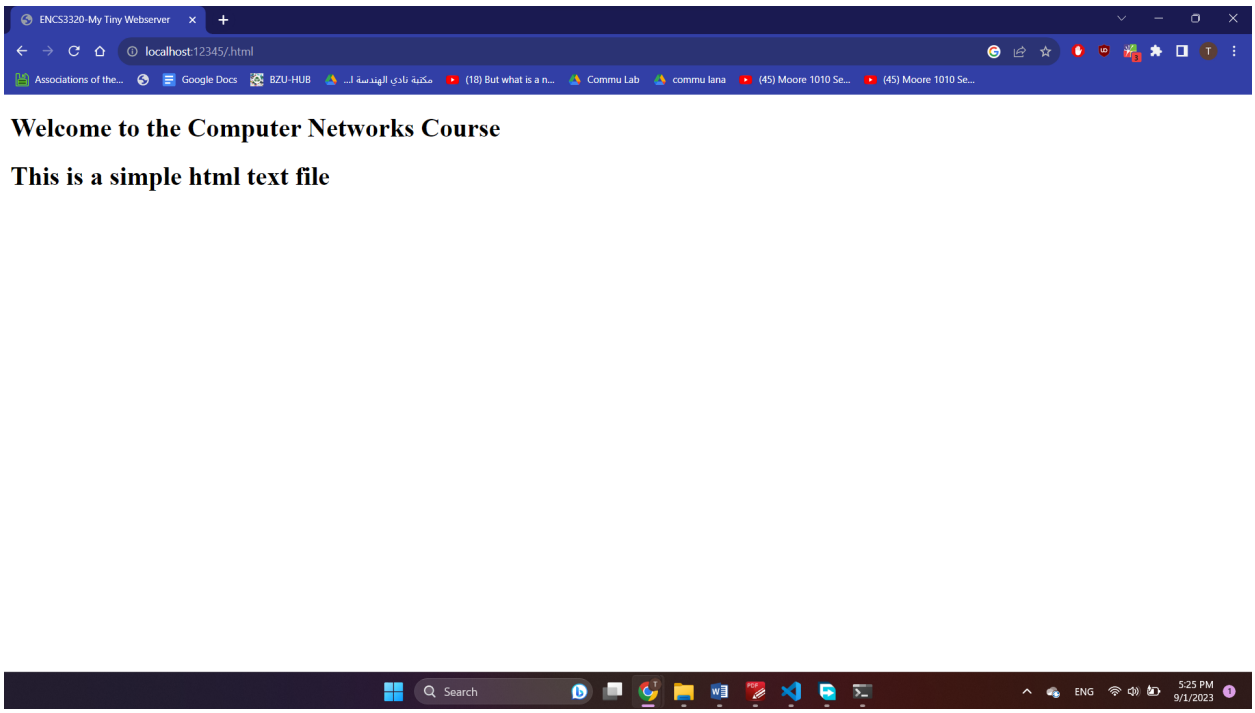


Figure 15: /.html file request

```
elif client_req_url.endswith('/.html'):
    connectionSocket.send('HTTP/1.1 200 OK\r\n'.encode())
    connectionSocket.send('Content-Type: text/html; charset=UTF-8\r\n'.encode())
    connectionSocket.send('\r\n'.encode())
    with open("hello.html", "rb") as file:
        connectionSocket.send(file.read())
elif client_req_url.endswith('.css'):
```

Figure 16: HTML File Request Handling Code

This code snippet corresponds to HTML File Request. When the client's requested URL ends with ".html", the server responds with a "200 OK" status, setting the "Content-Type" header to "text/html; charset=UTF-8".

2.7 CSS File Request Handling

Requests for .css files prompt the server to provide the designated CSS content, tailored for "text/css; charset=UTF-8" content type.

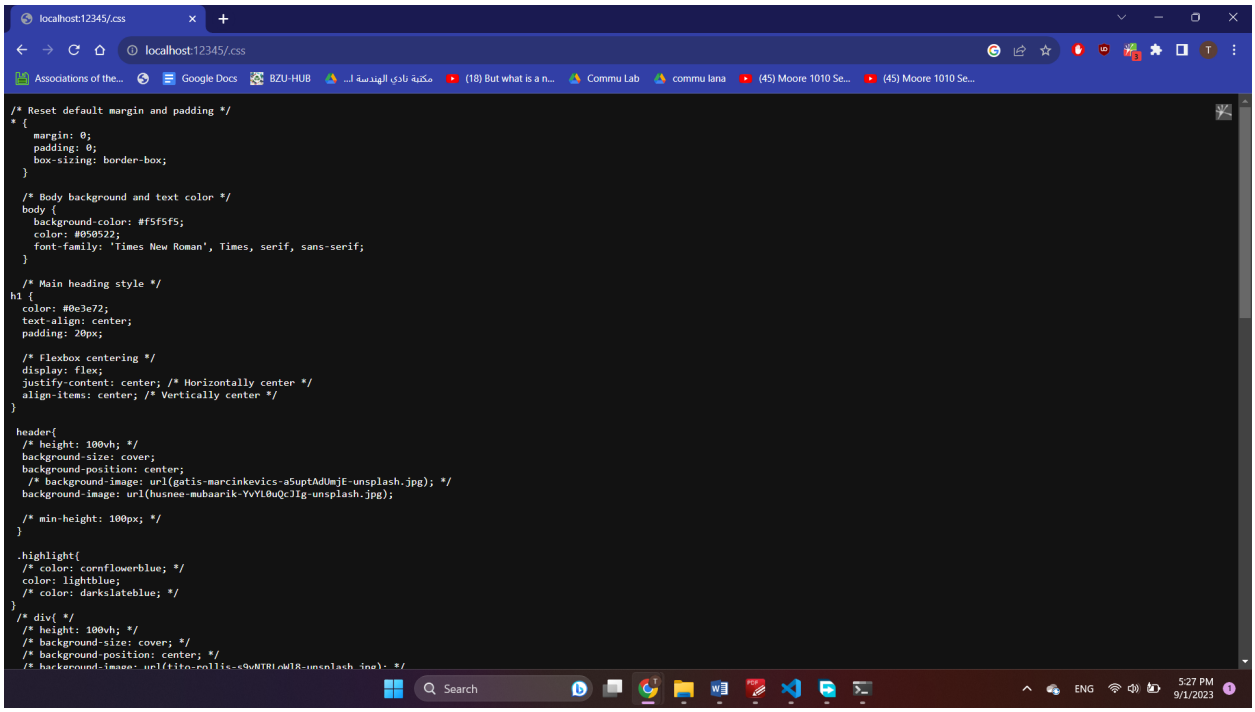


Figure 17: /.css request

2.8 .PNG Image Request Handling

For .png file requests, the server transmits the requested PNG image while ensuring the correct "Content-Type: image/png" setting. This technique guarantees accurate image rendering.

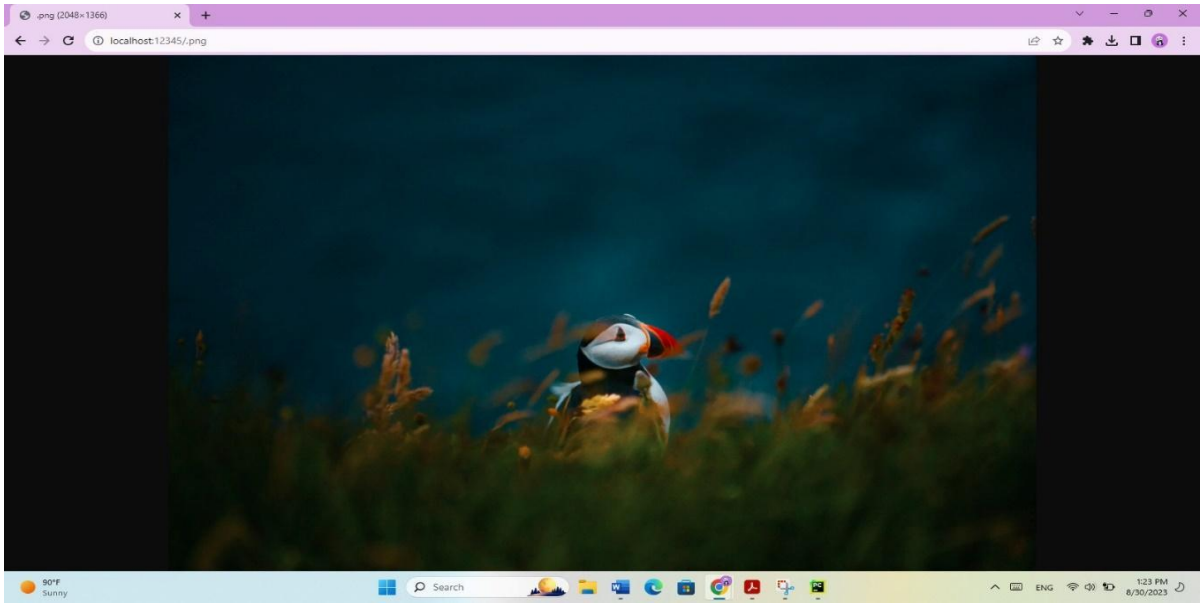


Figure 18: /.png request

2.9 JPG Image Request Handling

Requests for .jpg files lead the server to transmit the specified JPG image, accompanied by "Content-Type: image/jpeg." This protocol ensures optimal display of requested images in the browser.

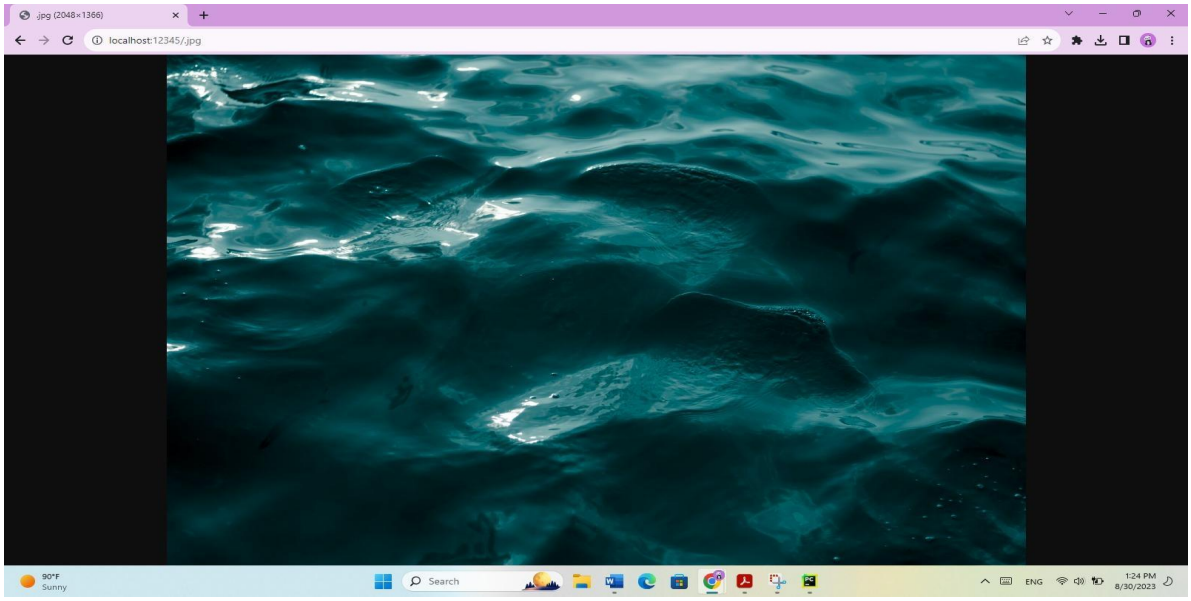


Figure 19: /.jpg request

2.10 Temporary Redirects

Utilizing the 307 Temporary Redirect status code, the server redirects these three requests.

2.10.1 /azn request redirect to amazon website

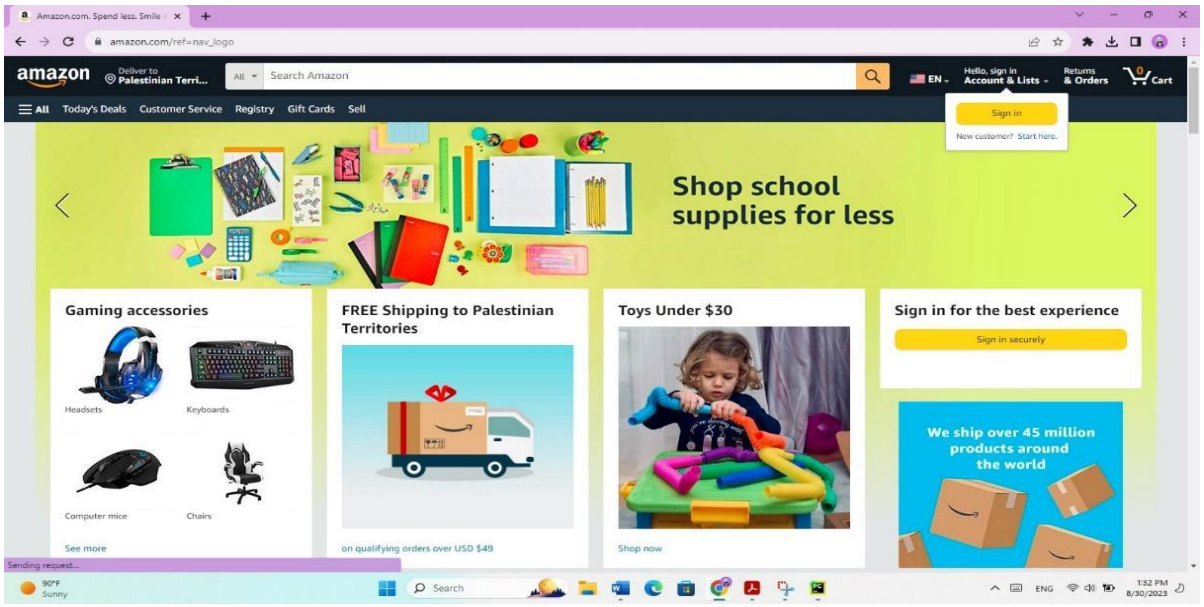


Figure 20: /azn request

2.10.2 /so request redirects to stackoverflow.com website

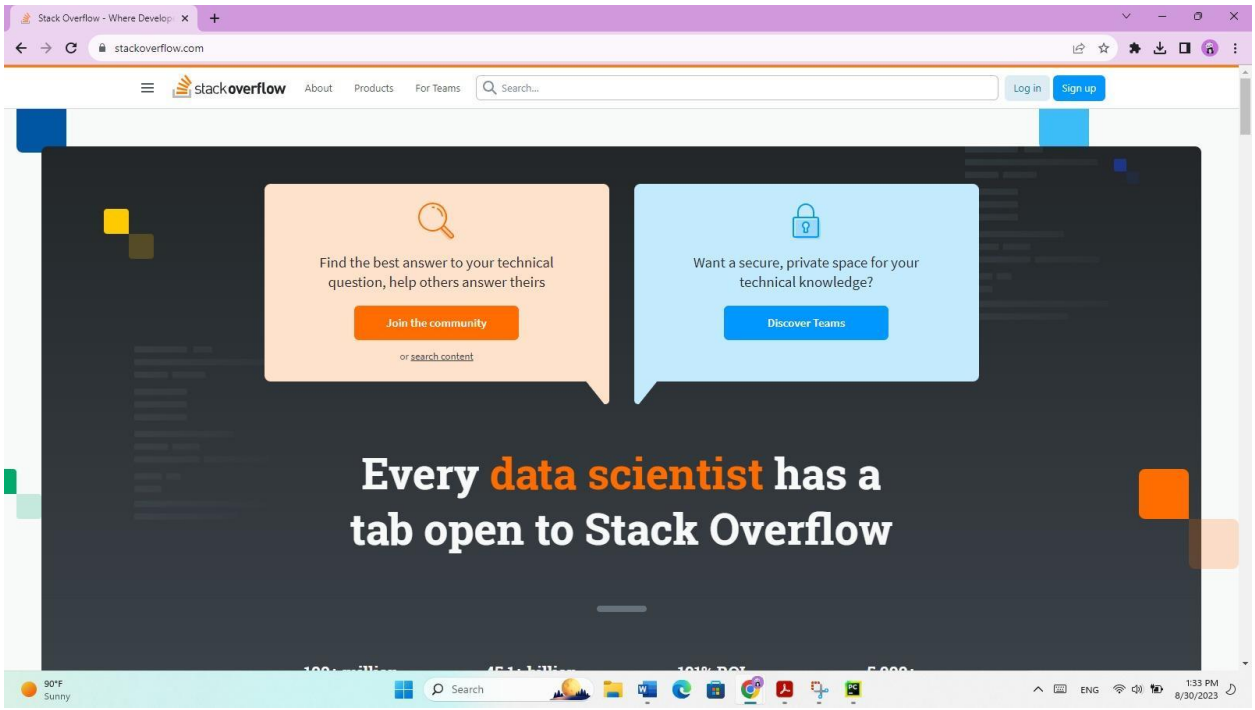


Figure 21: /so request

2.10.3 /bzu request redirect to birzeit website

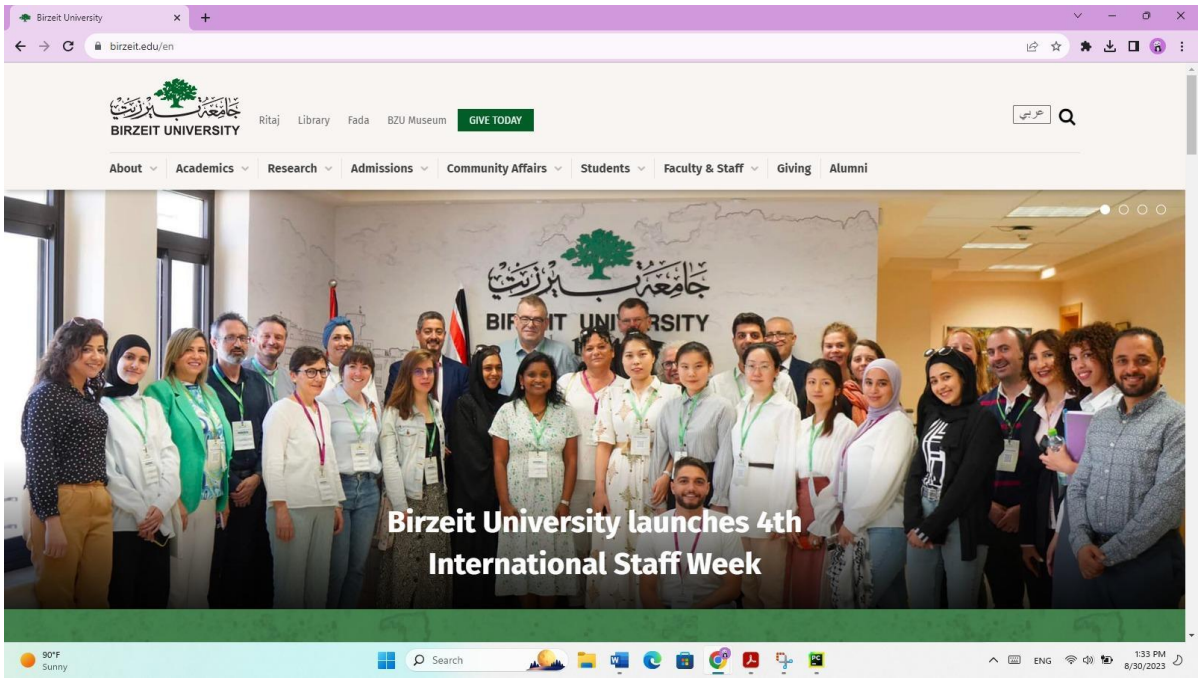


Figure 22: /bzu request

2.11 404 Not Found Handling

In case of incorrect or missing requests, the server generates a simple HTML page with the "HTTP/1.1 404 Not Found" status, "Error 404" in the title, and a noticeable "The file is not found" message in red. The page also includes bold names and IDs, as well as the client's IP and port for reference.

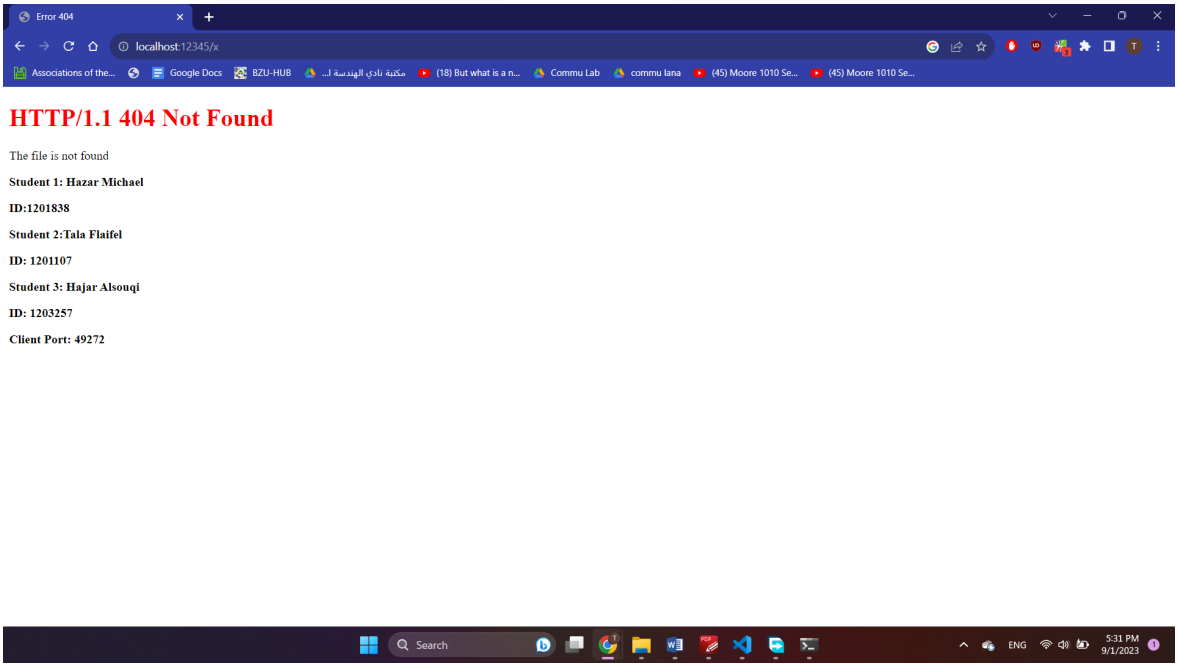


Figure 23: any invalid request output

2.12 HTTP Request Logging

The program logs incoming HTTP requests on the terminal window, enhancing monitoring and debugging capabilities. This feature aids in tracking server-client interactions and diagnosing potential issues.

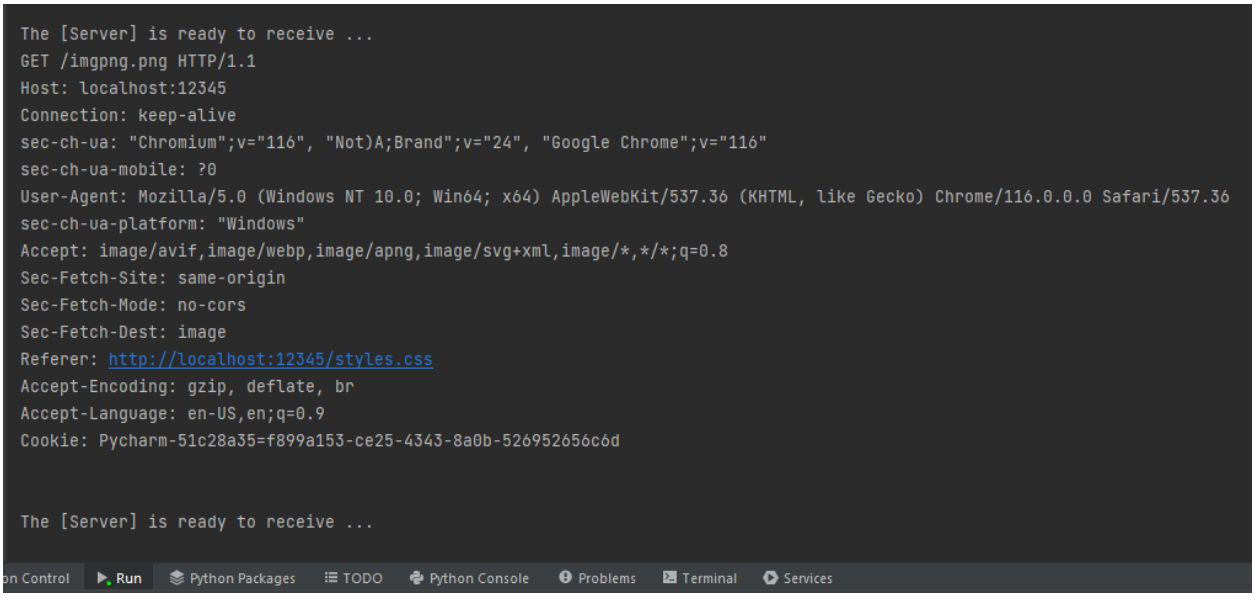


Figure 24: http request example

Appendices

Appendix A: main code

```
from socket import *

serverport = 12345
serverSocket = socket(AF_INET, SOCK_STREAM)
serverSocket.bind(('', serverport))
serverSocket.listen(1)


def generate_response_header(status, content_type):
    response = f'HTTP/1.1 {status}\r\n'
    response += f'Content-Type: {content_type}\r\n'
    response += '\r\n'
    return response.encode()


def sort_laptops_by_name(laptops):
    return sorted(laptops, key=lambda laptop: laptop['Name'].upper())


def sort_laptops_by_price(laptops):
    return sorted(laptops, key=lambda laptop: int(laptop['Price']))


def format_laptop_list(laptops):
    formatted_list = []
    for laptop in laptops:
        formatted_list.append(f"{laptop['Name'].upper()}: ${laptop['Price']}")
    return '\n'.join(formatted_list)


def read_laptops_from_file(filename):
    laptops = []
    with open(filename, 'r') as file:
        for line in file:
            name, price = line.strip().split(',')
            laptops.append({'Name': name, 'Price': price})
    return laptops


    laptops = read_laptops_from_file('laptops.txt')
while True:
    print("The [Server] is ready to receive ...")
    connectionSocket, client_address = serverSocket.accept()
    data = connectionSocket.recv(1048).decode()
    print(data)
    browser_lines = data.split('\n')
    browser = browser_lines[0]

    if len(data) > 0:

        request_line = data.split('\n')[0]
```

```
        request_path = request_line.split()[1]
        client_req_url = browser.split()[1]

                if  request_path  in  ('/',  '/index.html',  '/main_en.html',  '/en',
'/enPage.html'):
            connectionSocket.send('HTTP/1.1 200 OK\r\n'.encode())
                                    connectionSocket.send('Content-Type:   text/html;
charset=UTF-8\r\n'.encode())
            connectionSocket.send('\r\n'.encode())
            with open("enPage.html", "rb") as file:
                connectionSocket.send(file.read())
        elif request_path in ('/ar', '/arPage.html'):
            connectionSocket.send('HTTP/1.1 200 OK\r\n'.encode())
                                    connectionSocket.send('Content-Type:   text/html;
charset=UTF-8\r\n'.encode())
            connectionSocket.send('\r\n'.encode())
            with open("arPage.html", "rb") as file:
                connectionSocket.send(file.read())
        elif client_req_url == '/style.css' or client_req_url.endswith('.css'):
            connectionSocket.send("HTTP/1.1 200 OK \r\n".encode())
            connectionSocket.send("Content-Type:text/css\r\n".encode())
            connectionSocket.send("\r\n".encode())
            style_css = open("styles.css", "rb").read()  # open english html file
            connectionSocket.send(style_css)
        elif client_req_url.endswith(".png"):
            connectionSocket.send("HTTP/1.1 200 OK \r\n".encode())
            connectionSocket.send("Content-Type:image/png\r\n".encode())
            connectionSocket.send("\r\n".encode())
            png_image = open("imgpng.png", "rb").read()  # open english html file
            connectionSocket.send(png_image)
        elif client_req_url.endswith(".jpg"):
            connectionSocket.send("HTTP/1.1 200 OK \r\n".encode())
            connectionSocket.send("Content-Type:image/jpeg\r\n".encode())
            connectionSocket.send("\r\n".encode())
             jpg_image = open("husnee-mubaarik-YvYL0uQcJIg-unsplash.jpg", "rb").read()
# open english html file
            connectionSocket.send(jpg_image)
        elif client_req_url.endswith('/.html'):
            connectionSocket.send('HTTP/1.1 200 OK\r\n'.encode())
                                    connectionSocket.send('Content-Type:   text/html;
charset=UTF-8\r\n'.encode())
            connectionSocket.send('\r\n'.encode())
            with open("hello.html", "rb") as file:
                connectionSocket.send(file.read())
        elif client_req_url.endswith('.css'):
            connectionSocket.send('HTTP/1.1 200 OK\r\n'.encode())
                                     connectionSocket.send('Content-Type:   text/css;
charset=UTF-8\r\n'.encode())
            connectionSocket.send('\r\n'.encode())
            with open("styles.css", "rb") as file:
                connectionSocket.send(file.read())

            try:
                with open(request_path[1:], "rb") as file:
                    connectionSocket.send(file.read())
            except FileNotFoundError:
                # Handle 404 here...
```

```
                pass

        elif client_req_url == '/SortByName':
            response = generate_response_header('200 OK', 'text/plain; charset=UTF-8')
            sorted_laptops = sort_laptops_by_name(laptops)
            laptop_list = format_laptop_list(sorted_laptops)
            connectionSocket.send(response)
            connectionSocket.send(laptop_list.encode())
        elif client_req_url == '/SortByPrice':
            response = generate_response_header('200 OK', 'text/plain; charset=UTF-8')
            sorted_laptops = sort_laptops_by_price(laptops)
            laptop_list = format_laptop_list(sorted_laptops)
            total_price = sum(int(laptop['Price']) for laptop in sorted_laptops)
            laptop_list += f"\nTotal Price: ${total_price}"
            connectionSocket.send(response)
            connectionSocket.send(laptop_list.encode())
        elif client_req_url == '/azn':
                                    redirect_link   =   b'HTTP/1.1   307   Temporary
Redirect\nLOCATION:https://www.amazon.com/ref=nav_logo\n\n '
            connectionSocket.sendall(redirect_link)
        elif client_req_url == '/so':
                                    redirect_link   =   b'HTTP/1.1   307   Temporary
Redirect\nLOCATION:https://stackoverflow.com/\n\n '
            connectionSocket.sendall(redirect_link)
        elif client_req_url == '/bzu':
                                    redirect_link   =   b'HTTP/1.1   307   Temporary
Redirect\nLOCATION:https://www.birzeit.edu/en\n\n '
            connectionSocket.sendall(redirect_link)
        else:
            # Handle other cases (404 or redirects) here...
                    response  =  generate_response_header('404  Not  Found',  'text/html;
charset=UTF-8')
            with open("404.html", "rb") as file:
                                   html_content  =  file.read().replace(b'{client_ip}',
str(client_address[0]).encode()).replace(
                    b'{client_port}', str(client_address[1]).encode())
                connectionSocket.sendall(response + html_content)
            pass

    connectionSocket.close()
```

Appendix B: styles.css code

```css
/* Reset default margin and padding */
* {
    margin: 0;
    padding: 0;
    box-sizing: border-box;
  }

  /* Body background and text color */
  body {
    background-color: #f5f5f5;
    color: #050522;
    font-family: 'Times New Roman', Times, serif, sans-serif;
  }

  /* Main heading style */
h1 {
  color: #0e3e72;
  text-align: center;
  padding: 20px;

  /* Flexbox centering */
  display: flex;
  justify-content: center; /* Horizontally center */
  align-items: center; /* Vertically center */
}

 header{
  /* height: 100vh; */
  background-size: cover;
  background-position: center;
   /* background-image: url(gatis-marcinkevics-a5uptAdUmjE-unsplash.jpg); */
  background-image: url(husnee-mubaarik-YvYL0uQcJIg-unsplash.jpg);

  /* min-height: 100px; */
 }

 .highlight{
  /* color: cornflowerblue; */
  color: lightblue;
  /* color: darkslateblue; */
}
 /* div{ */
  /* height: 100vh; */
  /* background-size: cover; */
  /* background-position: center; */
  /* background-image: url(tito-rollis-s9vNTRLoWl8-unsplash.jpg); */
  /* background-image: url(adrien-olichon-MsEWtfunmEc-unsplash.jpg); */

  /* min-height: 100px; */
 /* } */
  /* Student information box */
  .student-box {
    /* background-color: rgb(106, 195, 227); */
    /* border: 1px solid #ccc; */
    padding: 20px;
    margin: 20px;
  }
```

```
  .student-box {
    /* background-color: rgb(106, 195, 227); */
    /* border: 1px solid #ccc; */
    border: 1px solid #ffffff;
    padding: 30px 30px;
    color: aliceblue;
    transition: 0.5 ease;
    font-size: 18px;
    margin: 20px;
  }

  /* Blue text style */
  .blue-color {
    color: blue;
  }
  h2{
    color: aliceblue;
  }
  h3{
    color: orangered;

  }
  /* Default styling for the image container */
.image-container {
  background-size: cover;
  background-position: center;
  background-image: url(imgpng.png);
}

  /* Introduction paragraph */
  .intro {
    text-align: center;
    padding: 20px;
  }
  .black-color {
    color: black;
  }
  .center-content {
    display: flex;
    justify-content: center;
    align-items: center;
    min-height: 100vh;
    /* background-color: #f5f5f5; Match the body background */
  }
  .mid-content {
    display: flex;
    justify-content: center;
    align-items: center top;
    min-height: 100vh;
    /* background-color: #f5f5f5; Match the body background */
  }
  .above-center {
    position: relative;
    top: -30px; /* Adjust this value to move the text above the center */
  }
  a {
```

```
    display: block;
    color: rgb(52, 52, 150);
    text-decoration: none;
    margin-bottom: 10px;
  }
```

Appendix C: Arabic page HTTP code

```
<!DOCTYPE html>
<html>
<head>
  <link rel="stylesheet" type="text/css" href="styles.css">

  <meta charset="UTF-8">

</head>

<body>
<header>
<title>ENCS3320-My Tiny Webserver</title>

<div class="center-content">
    <h1 class="title">هذا موقعنا الصغير</h1>
    <h1 class="title highlight">اهلا بكم في مساق الشبكات</h1>
</div>
<!-- <h1><span class="black-color">Welcome to our course</span><samp
class="blue-color"> Computer Networks, This is a tiny webserver</samp></h1>
<p class="intro">Here are the group members and some information about
them:</p> -->

<div class="center-content">
<div class="student-box">
  <h2>1201838 هزار ميخائيل </h2>
  <p>مشاريع: مواقع ويب</p>
  <p>مهارات: لغة جافا, لغة سي, حل المسائل البرمجية </p>
  <p>هوايات: السباحة, ركوب الخيل  </p>
</div>
</div>


<div class="center-content">
<div class="student-box">

  <h2>1201107 تالا فليفل</h2>
  <p>مشاريع: صفحات ويب, مشاريع بنية المعلومات و الخوارزميات, </p>
  <p>مهارات: لغة بايثون, لغة سي, لغة سي اس اس</p>
  <p>الهوايات: قراءة الكتب, الرسم</p>
</div>
</div>

<div class="center-content">
<div class="student-box">
  <h2>1203257 هاجر السوقي</h2>
  <p>مشاريع: تحليل الدوائر الكهربائية</p>
  <p>مهارات: لغة سي, لغة جافا</p>
```

```
  <p>الهوايات: تسلق الجبال</p>
</div>
</div>


<div class="center-content">
  <p><a style="font-size: 50px;color: aliceblue"  href="enPage.html" >اضغط على
الرابط للانتقال الى الصفحة باللغة الانجليزية</a>
  </p>
</div>

<div class="center-content">
  <p><a  style="font-size: 50px;color: aliceblue"
href="https://www.w3schools.com/python/python_tuples.asp " >اضغط على الرابط للانتقال
الى صفحة بايثون </a>
  </p>
</div>

</div>
</header>
  <div class="image-container">
    <div class="center-content">
      <h3 class="above-center" style="font-size: 50px;">شكراً</h3>

  </div>


<header></header>
</div></body>
</html>
```

Appendix D: English page HTTP code

```
<!DOCTYPE html>
<html>
<head>
  <link rel="stylesheet" type="text/css" href="styles.css">
</head>

<body>
<header>
<title>ENCS3320-My Tiny Webserver</title>

<div class="center-content">
    <h1 style="font-size: 40px;" class="title">Welcome to the Computer Networks
Course</h1>
    <h1 style="font-size: 40px;" class="title highlight">This is Our Tiny
Webserver</h1>
</div>
<!-- <h1><span class="black-color">Welcome to our course</span><samp
class="blue-color"> Computer Networks, This is a tiny webserver</samp></h1>
<p class="intro">Here are the group members and some information about
them:</p> -->

<div class="center-content">
```

```
<div class="student-box">
  <h2>Hazar Michael       1201838</h2>
  <p>Projects: Programming</p>
  <p>Skills: C, Java, Problem Solving, Data Base</p>
  <p>Hobbies: swimming, horseback riding </p>
</div>
</div>


<div class="center-content">
<div class="student-box">

  <h2>Tala Flaifel      1201107</h2>
  <p>Projects:  Data structure projects </p>
  <p>Skills: HTML, CSS, Data structure, Python</p>
  <p>Hobbies: Reading books, Drawing</p>
</div>
</div>

<div class="center-content">
<div class="student-box">
  <h2>Hajar Alsouqi 1203257</h2>
  <p>Projects: Electrical, Programming</p>
  <p>Skills: Java, C</p>
  <p>Hobbies: Playing bowling, hiking </p>
</div>
</div>

<div class="center-content">
  <p><a style="font-size: 50px;color: aliceblue"  href="arPage.html" >Click
here to redirect to the page in arabic</a>
  </p>
</div>

<div class="center-content">
  <p><a  style="font-size: 50px;color: aliceblue"
href="https://www.w3schools.com/python/python_tuples.asp " >Click here to
redirect to Python Tuple Page</a>
  </p>
</div>

</div>
</header>
  <div class="image-container">
    <div class="center-content">
      <h3 class="above-center" style="font-size: 50px;">Thank You</h3>

  </div>

  </div>
<header></header>
</body>
</html>
```

Appendix E: Error404 HTTP code

```
<!DOCTYPE html>
<html>
<head>
    <title>Error 404</title>
</head>
<body>
    <h1 style="color: red;">HTTP/1.1 404 Not Found</h1>
    <p>The file is not found</p>
    <p><strong>Student 1: Hazar Michael</strong></p>
    <p><strong>ID:1201838</strong></p>
    <p><strong>Student 2:Tala Flaifel </strong></p>
    <p><strong>ID: 1201107</strong></p>
    <p><strong>Student 3: Hajar Alsouqi</strong></p>
    <p><strong>ID: 1203257</strong></p>
    <p><strong>Client Port: {client_port}</strong></p>
</body>
</html>
```