FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING

Computer Networks
ENCS3320

Project 1 Report

Prepared by:

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Sec: 2

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Date: 11th November 2021

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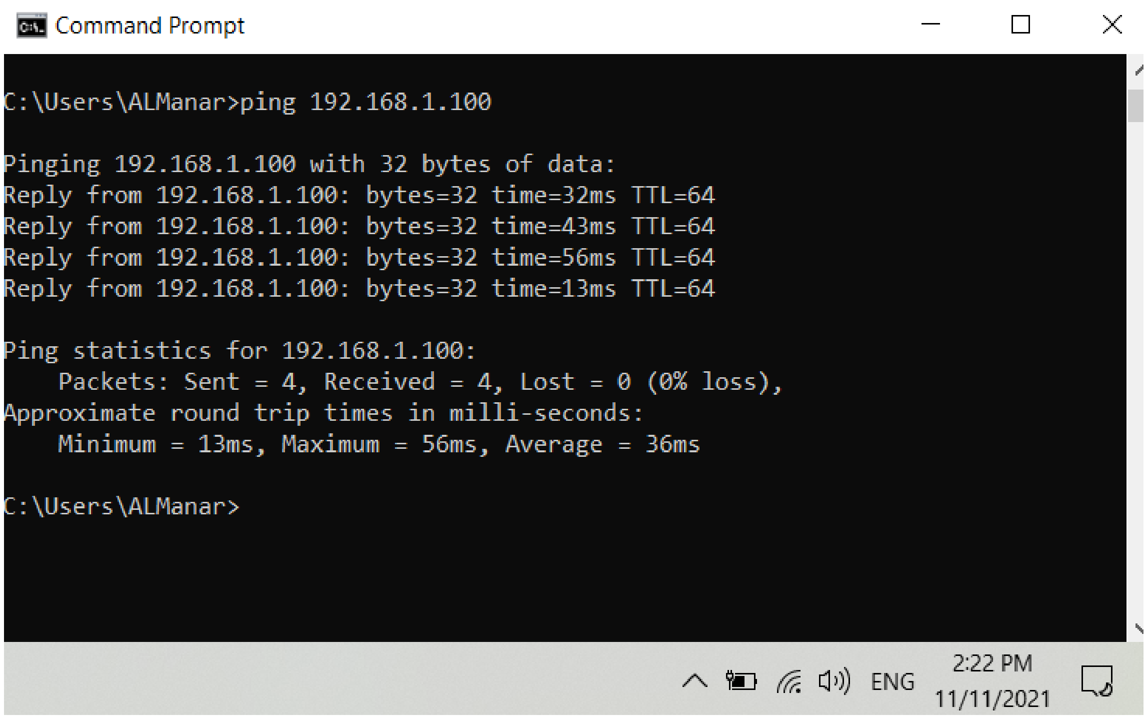
1. Part I:

1.1. Ping a device in the same network

As we can see the result in figure 1, it displays the total number of packets sent. As a result, the number of packets received is displayed (here we sent 4 packets where all packets have the same TTL, we received a response from 192.168.1.100), All packets are received with different delays. Also, we sent out 32 bytes of data and we got back 32 bytes and this is stable connection.

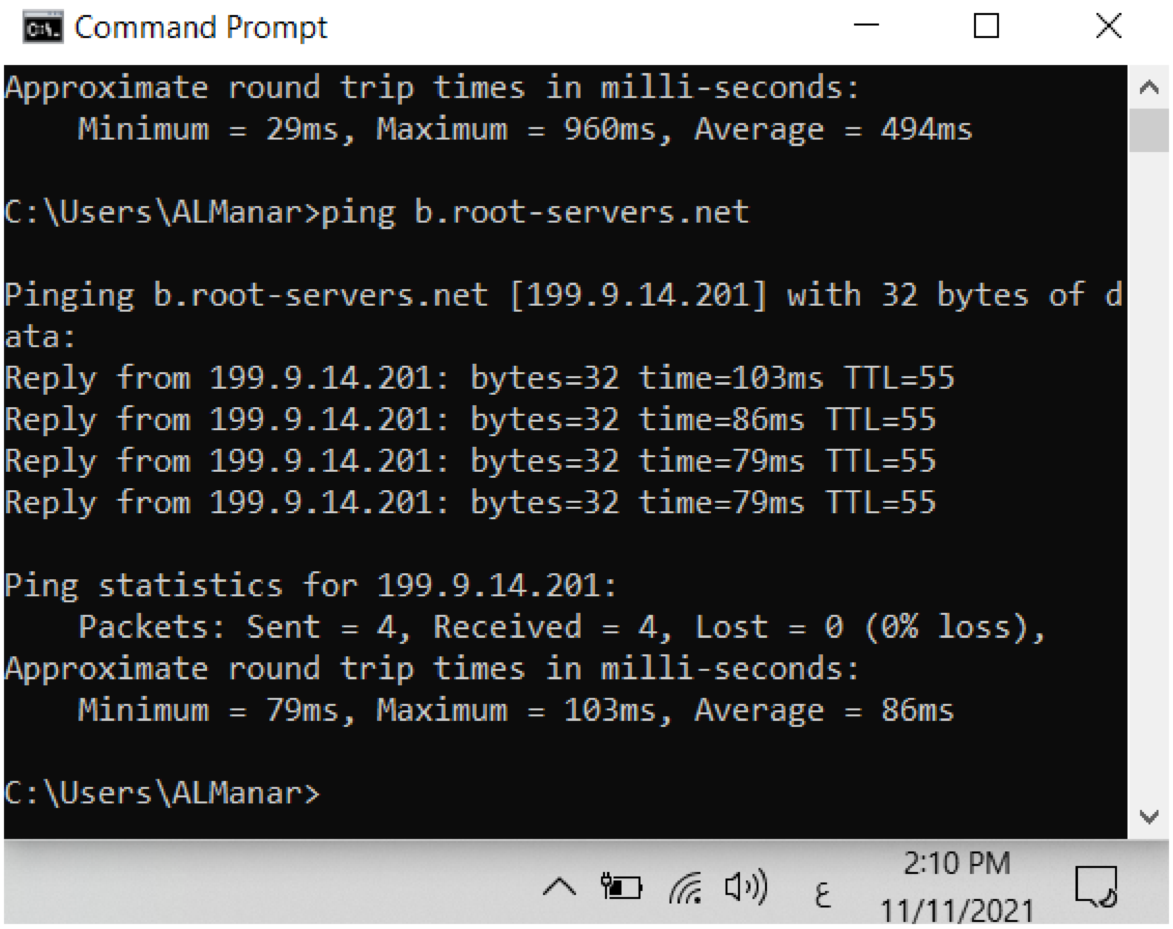


```
C:\Users\ALManar>ping 192.168.1.100

Pinging 192.168.1.100 with 32 bytes of data:
Reply from 192.168.1.100: bytes=32 time=32ms TTL=64
Reply from 192.168.1.100: bytes=32 time=43ms TTL=64
Reply from 192.168.1.100: bytes=32 time=56ms TTL=64
Reply from 192.168.1.100: bytes=32 time=13ms TTL=64

Ping statistics for 192.168.1.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 13ms, Maximum = 56ms, Average = 36ms

C:\Users\ALManar>
```

Figure 1: ping Command - Device on the same Network

1.2. ping b.root-servers.net

As we can see the result in figure 2, it displays the total number of packets sent. As a result, the number of packets received is displayed (here we sent 4 packets where all packets have the same TTL, we sent to b.root-server.net four packets to the destination with IP 199.9.14.201 and the destination response back with the same four packets, all packets are received with different delays. Also, we sent out 32 bytes of data and we got back 32 bytes and this is stable connection.

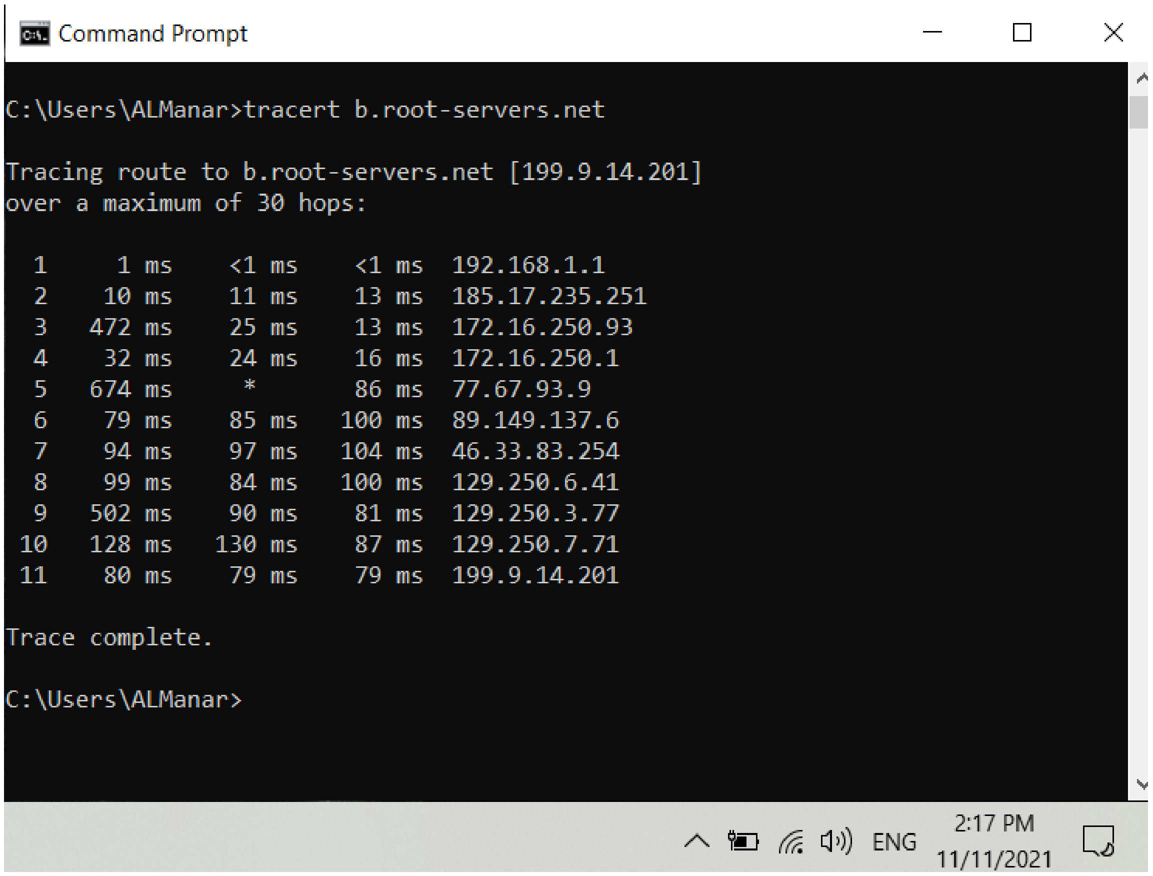


```
Approximate round trip times in milli-seconds:
    Minimum = 29ms, Maximum = 960ms, Average = 494ms

C:\Users\ALManar>ping b.root-servers.net

Pinging b.root-servers.net [199.9.14.201] with 32 bytes of d
ata:
Reply from 199.9.14.201: bytes=32 time=103ms TTL=55
Reply from 199.9.14.201: bytes=32 time=86ms TTL=55
Reply from 199.9.14.201: bytes=32 time=79ms TTL=55
Reply from 199.9.14.201: bytes=32 time=79ms TTL=55

Ping statistics for 199.9.14.201:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 79ms, Maximum = 103ms, Average = 86ms

C:\Users\ALManar>
```

Figure 2: ping b.root-servers.net

1.3. tracert b.root-servers.net

The tracer command was used to display several details about a packet's path from the computer or device you're on to the destination you select. and this command sends 3 messages for every router and waits the response from the router, it continues in this process until it reaches the chosen IP. There are 5 columns in the end result, the number one is the hop number (TTL) and the time it takes for packets to make each hop is shown in the 3columns below (TTL), The last column is the server at the specified hop.

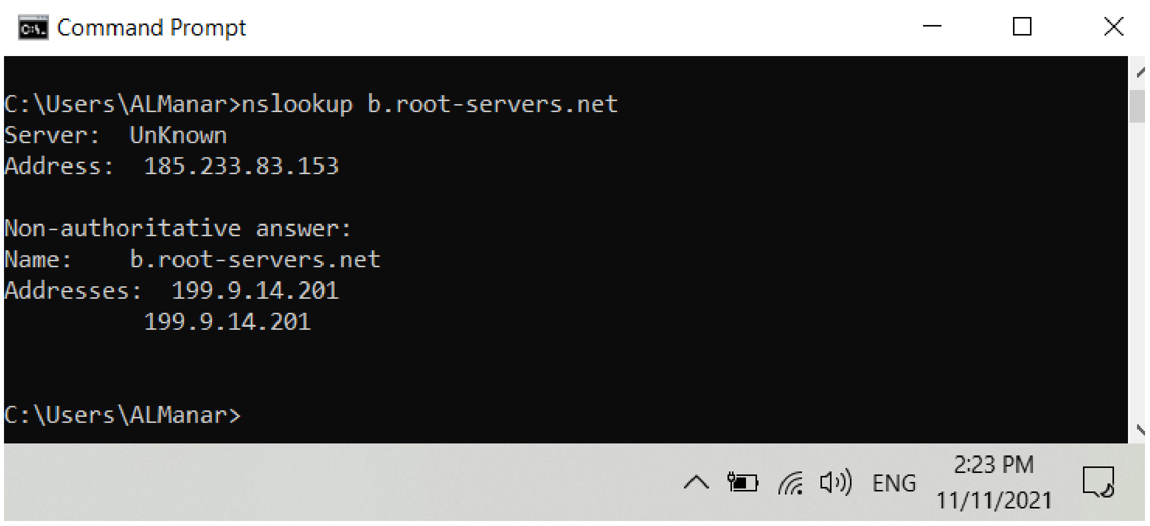


```
C:\Users\ALManar>tracert b.root-servers.net

Tracing route to b.root-servers.net [199.9.14.201]
over a maximum of 30 hops:

  1     1 ms    <1 ms    <1 ms  192.168.1.1
  2    10 ms    11 ms    13 ms  185.17.235.251
  3   472 ms    25 ms    13 ms  172.16.250.93
  4    32 ms    24 ms    16 ms  172.16.250.1
  5   674 ms     *       86 ms  77.67.93.9
  6    79 ms    85 ms   100 ms  89.149.137.6
  7    94 ms    97 ms   104 ms  46.33.83.254
  8    99 ms    84 ms   100 ms  129.250.6.41
  9   502 ms    90 ms    81 ms  129.250.3.77
 10   128 ms   130 ms    87 ms  129.250.7.71
 11    80 ms    79 ms    79 ms  199.9.14.201

Trace complete.

C:\Users\ALManar>
```

Figure 3: tracert Command

1.4. nslookup b.root-servers.net

As we can see in finger 4, when we used nslookup that is used to diagnose DNS problems first it prints the server and the address Unknown server is my router with the address 192.168.1.1 and prints the name and the 3 addresses of the server which is the host that we sent.



```
C:\Users\ALManar>nslookup b.root-servers.net
Server:  UnKnown
Address:  185.233.83.153

Non-authoritative answer:
Name:    b.root-servers.net
Addresses:  199.9.14.201
          199.9.14.201


C:\Users\ALManar>
```

Figure 4: nslookup Command

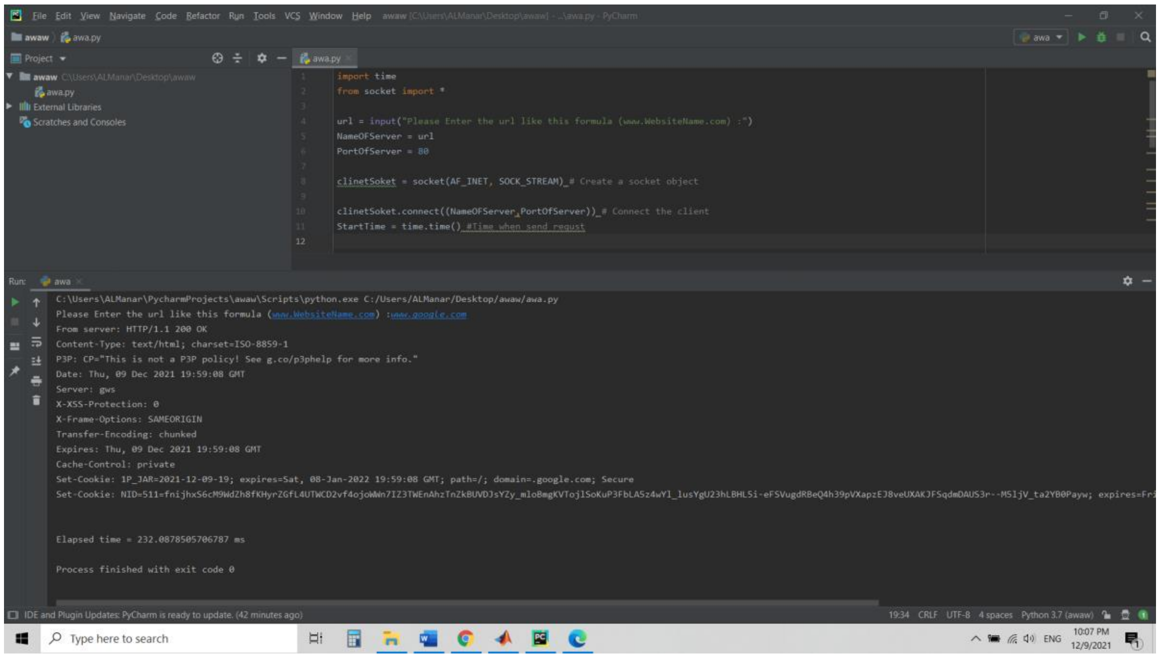
2. Part II

2.1. Explanation

In this part we are asking the user to enter the website name to calculate the http response for this webserver. First, we will create a socket object then we sent data and started the time and received data to finish the time and finally we found the response time. In addition, we will display the response using HEAD method.

2.2. Response

The response information shows that HTTP response status codes is 200 OK (request succeeded, requested object later in this message), with content type (text/html) and response time = 232.08 ms.



```python
import time
from socket import *

url = input("Please Enter the url like this formula (www.WebsiteName.com) :")
NameOFServer = url
PortOfServer = 80

clinetSoket = socket(AF_INET, SOCK_STREAM) # Create a socket object

clinetSoket.connect((NameOFServer,PortOfServer)) # Connect the client
StartTime = time.time() #Time when send requst
```

```
C:\Users\ALManar\PycharmProjects\awaw\Scripts\python.exe C:/Users/ALManar/Desktop/awaw/awa.py
Please Enter the url like this formula (www.WebsiteName.com) :www.google.com
From server: HTTP/1.1 200 OK
Content-Type: text/html; charset=ISO-8859-1
P3P: CP="This is not a P3P policy! See g.co/p3phelp for more info."
Date: Thu, 09 Dec 2021 19:59:08 GMT
Server: gws
X-XSS-Protection: 0
X-Frame-Options: SAMEORIGIN
Transfer-Encoding: chunked
Expires: Thu, 09 Dec 2021 19:59:08 GMT
Cache-Control: private
Set-Cookie: 1P_JAR=2021-12-09-19; expires=Sat, 08-Jan-2022 19:59:08 GMT; path=/; domain=.google.com; Secure
Set-Cookie: NID=511=fnijhxS6cM9WdZh8fKHyrZGfL4UTWCD2vf4ojoWWn7IZ3TWEnAhzTnZkBUVDJsYZy_mloBmgKVTojlSoKuP3FbLA5z4wYl_lusYgU23hLBHL5i-eFSVugdRBeQ4h39pVXapzEJ8veUXAKJFSqdmDAUS3r--M5ljV_ta2YB0Payw; expires=Fri


Elapsed time = 232.0878505706787 ms

Process finished with exit code 0
```

File Edit View Navigate Code Refactor Run Tools VCS Window Help awaw [C:\Users\ALManar\Desktop\awaw] - ...\awa.py - PyCharm
awaw awa.py
Project
awaw C:\Users\ALManar\Desktop\awaw
awa.py
External Libraries
Scratches and Consoles
Run: awa
IDE and Plugin Updates: PyCharm is ready to update. (42 minutes ago)
19:34 CRLF UTF-8 4 spaces Python 3.7 (awaw)
Type here to search
ENG 10:07 PM 12/9/2021

Figure 5: HTTP requests printed on command Line

2.3. Full Code with comments

```
import time
from socket import *

url = input("Please Enter the url like this formula (www.WebsiteName.com) :")
NameOFServer = url
PortOfServer = 80

clinetSoket = socket(AF_INET, SOCK_STREAM) # Create a socket object

clinetSoket.connect((NameOFServer,PortOfServer)) # Connect the client
StartTime = time.time() #Time when send requst


clinetSoket.send("HEAD / HTTP/1.1 \r\n".encode()) # Send some data
clinetSoket.send(("Hostname:"+url+" \r\n\r\n").encode())

modifiedSentence = clinetSoket.recv(1024) # receive some data

EndTime = time.time() #Time when recive response

print("From server:", modifiedSentence.decode()) #Display the response

ElapsedTime = EndTime - StartTime  #Response time
print(f"Elapsed time = { ElapsedTime * 1000  } ms ") #Display the response
time

clinetSoket.close()
```

3. Part III

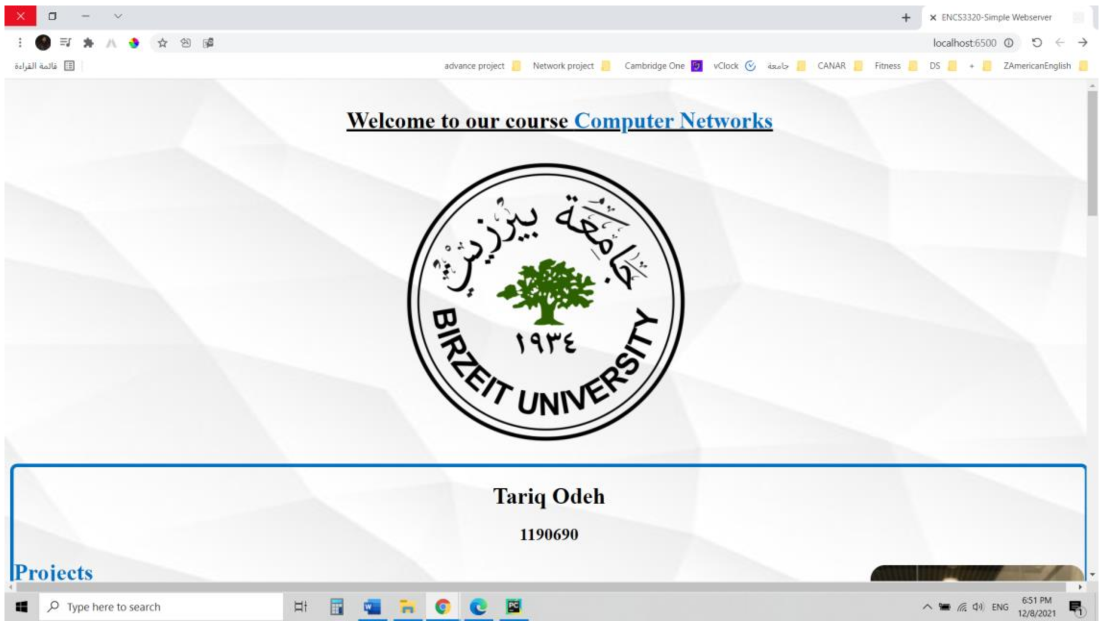
In this part we will use socket programming, implement a web server in python that is listening on port 6500.

3.1. Main Page

http://localhost:6500/ **or** http://localhost:6500/index.html **or** http://localhost:6500/main.html

In the main page we used html language to design it and to put names, numbers and information about each student we used css language to arrange the boxes and the full design.

Main Page in the browser window:



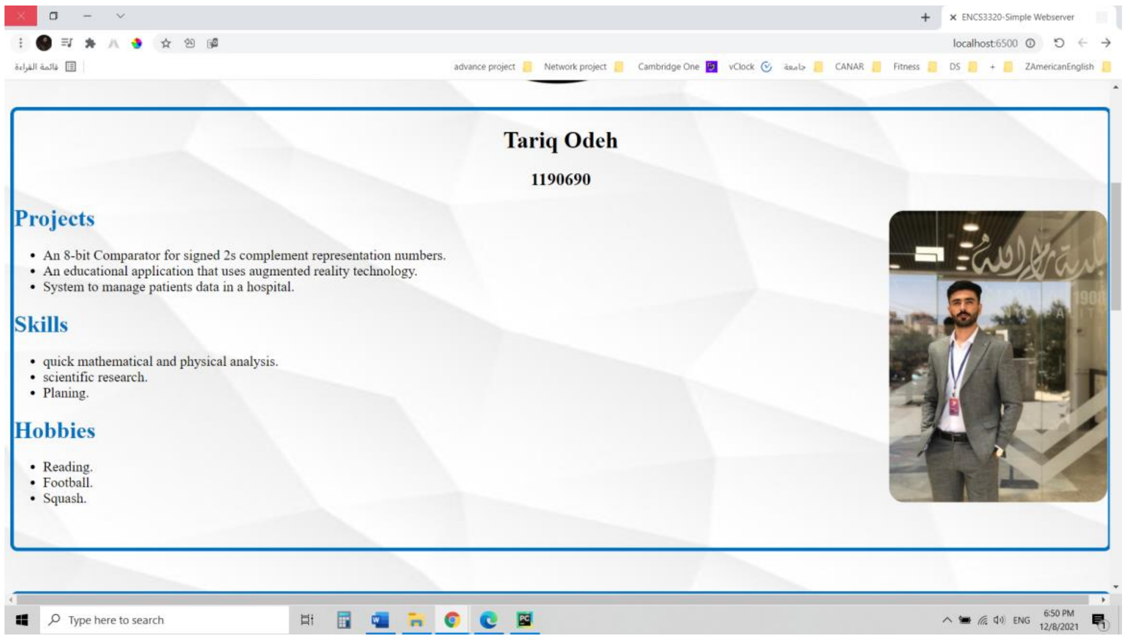
Welcome to our course Computer Networks

Tariq Odeh

1190690

Projects

Figure 6: localhost:6500 browser window – 1



Tariq Odeh

1190690

Projects

- An 8-bit Comparator for signed 2s complement representation numbers.
- An educational application that uses augmented reality technology.
- System to manage patients data in a hospital.

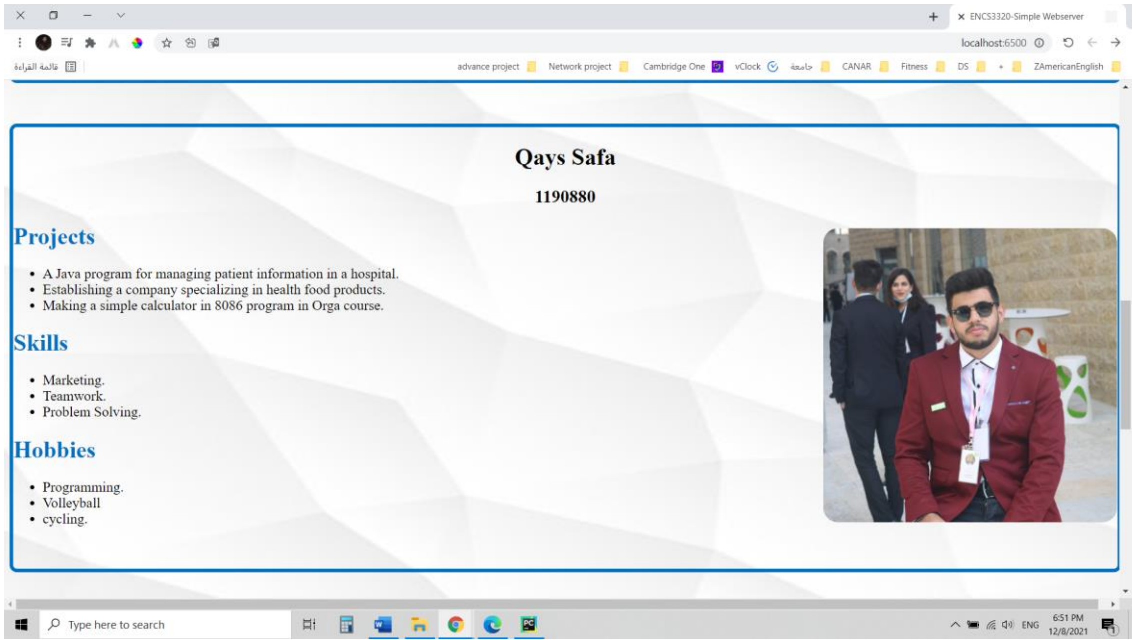
Skills

- quick mathematical and physical analysis.
- scientific research.
- Planing.

Hobbies

- Reading.
- Football.
- Squash.

Figure 7: localhost:6500 browser window – 2



Qays Safa

1190880

Projects

- A Java program for managing patient information in a hospital.
- Establishing a company specializing in health food products.
- Making a simple calculator in 8086 program in Orga course.

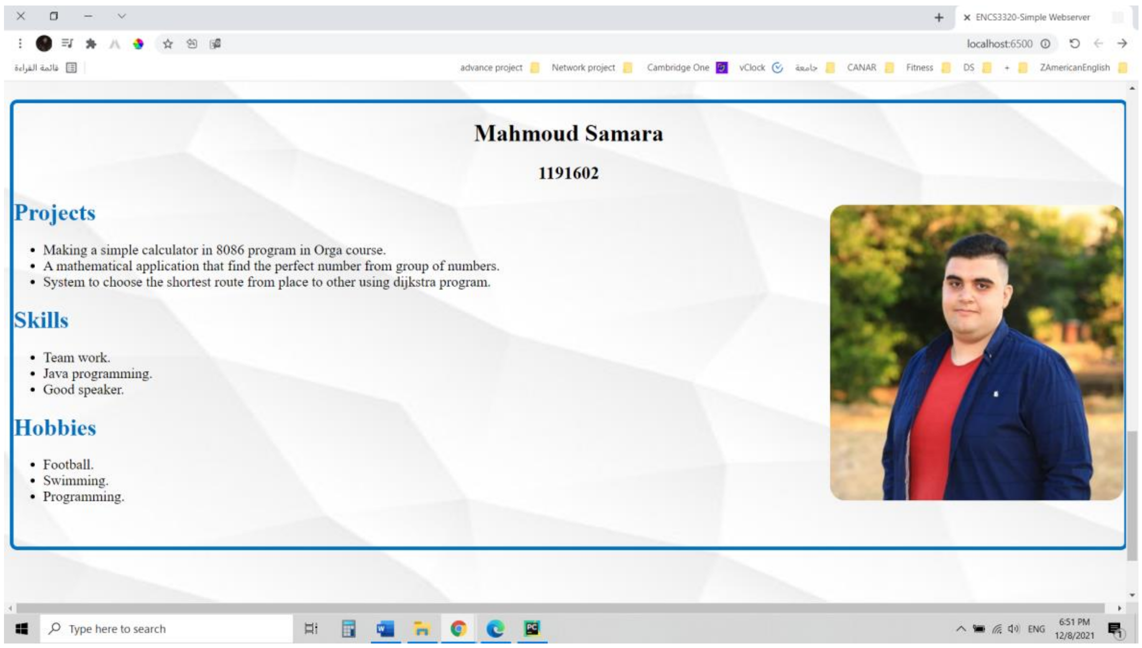
Skills

- Marketing.
- Teamwork.
- Problem Solving.

Hobbies

- Programming.
- Volleyball
- cycling.

Figure 8: localhost:6500 browser window – 3



Mahmoud Samara

1191602

Projects

- Making a simple calculator in 8086 program in Orga course.
- A mathematical application that find the perfect number from group of numbers.
- System to choose the shortest route from place to other using dijkstra program.

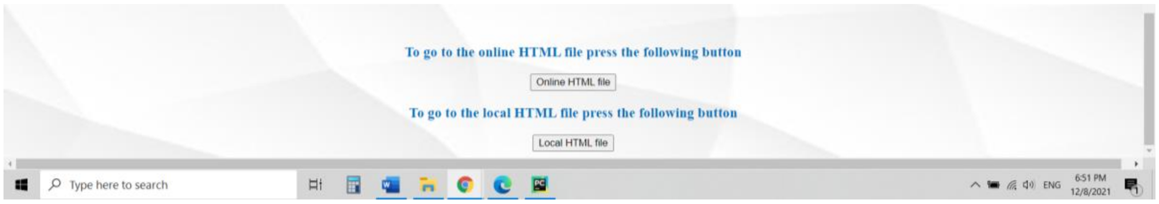
Skills

- Team work.
- Java programming.
- Good speaker.

Hobbies

- Football.
- Swimming.
- Programming.

Figure 9: localhost:6500 browser window – 4

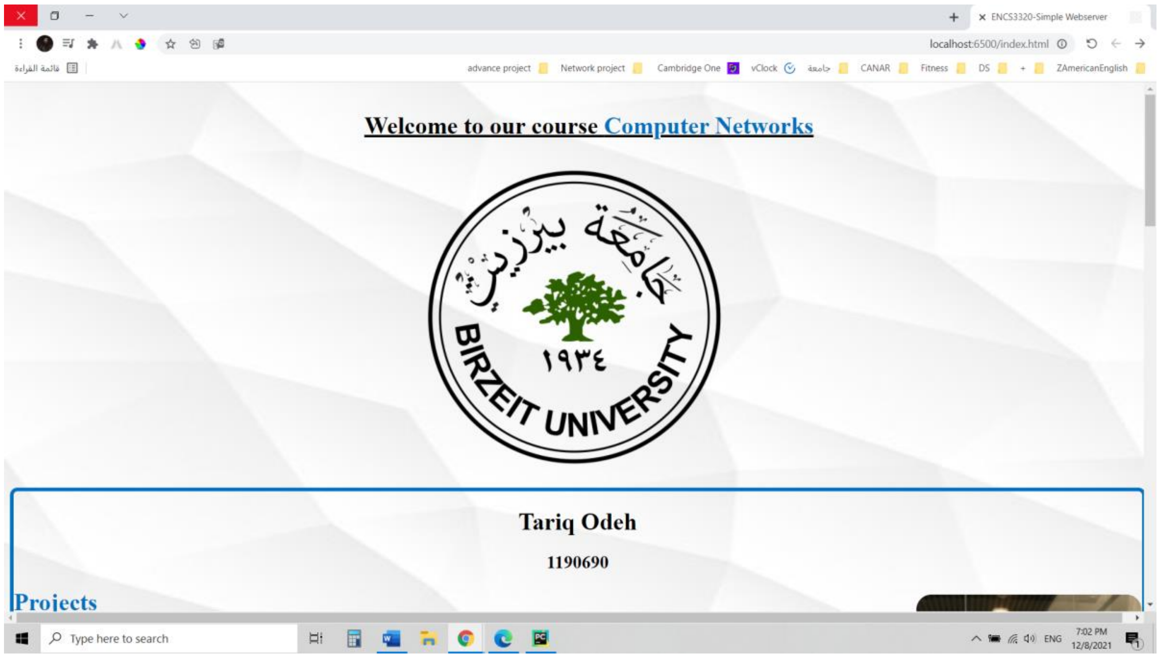


To go to the online HTML file press the following button

To go to the local HTML file press the following button

Figure 10: localhost:6500 browser window - 5

In the following figures, it will give the same results as the previous figures, but it will be using localhost:6500/index.html and localhost:6500/main.html in the browser.


localhost:6500/index.html
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Tariq Odeh
1190690
Projects

Figure 11: localhost:6500/index.html browser window

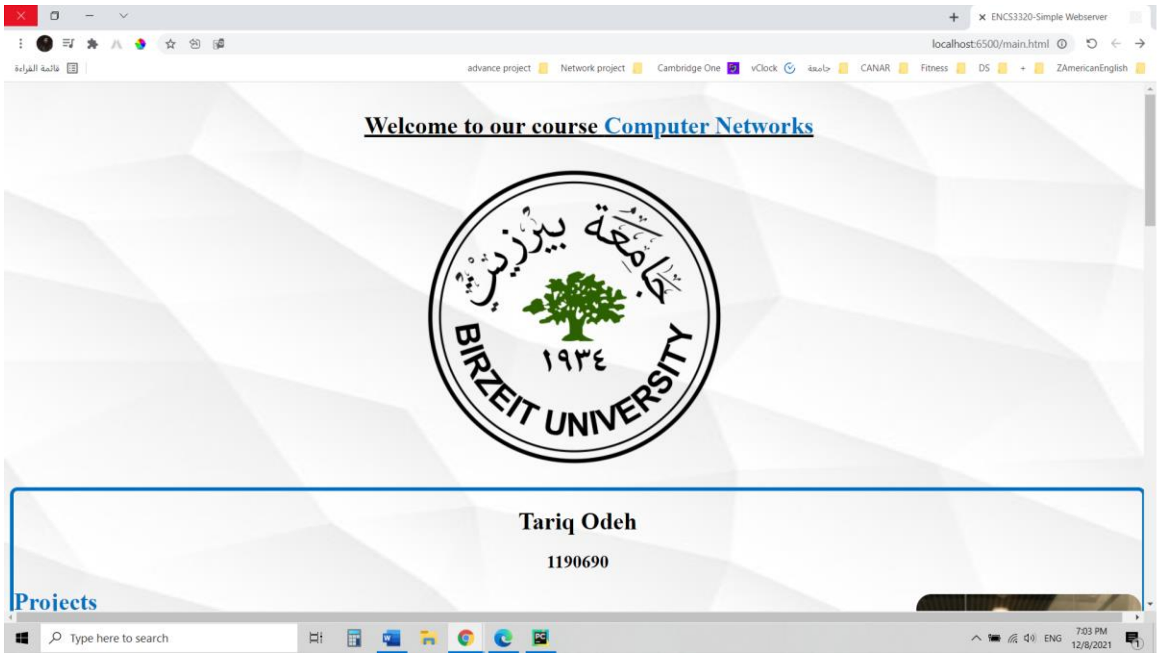
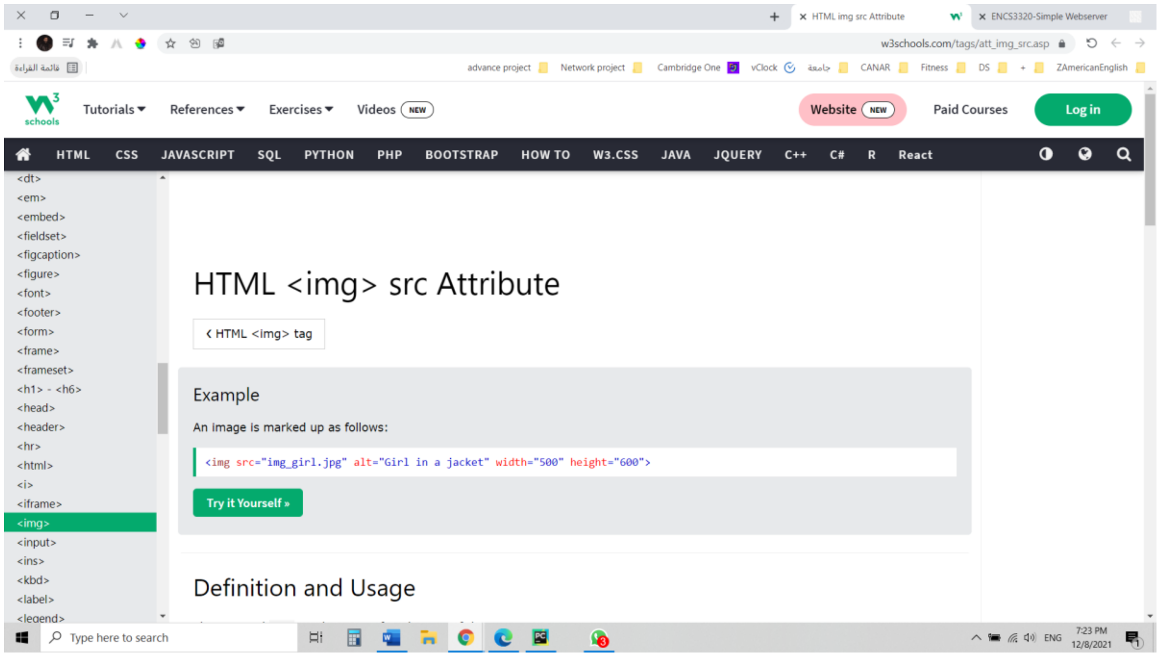


Figure 12: localhost:6500/main.html browser window

In the following figures we will see where we will go when we press online html file button and same thing for local html file button.


HTML img src Attribute
ENCS3320-Simple Webserver
w3schools.com/tags/att_img_src.asp
Tutorials
References
Exercises
Videos
Website
Paid Courses
Log in
HTML CSS JAVASCRIPT SQL PYTHON PHP BOOTSTRAP HOW TO W3.CSS JAVA JQUERY C++ C# R React
<dt> <em> <embed> <fieldset> <figcaption> <figure> <font> <footer> <form> <frame> <frameset> <h1> - <h6> <head> <header> <hr> <html> <i> <iframe> <img> <input> <ins> <kbd> <label> <legend>
Try it Yourself »
Type here to search
7:23 PM
12/8/2021

HTML <img> src Attribute

❮ HTML <img> tag

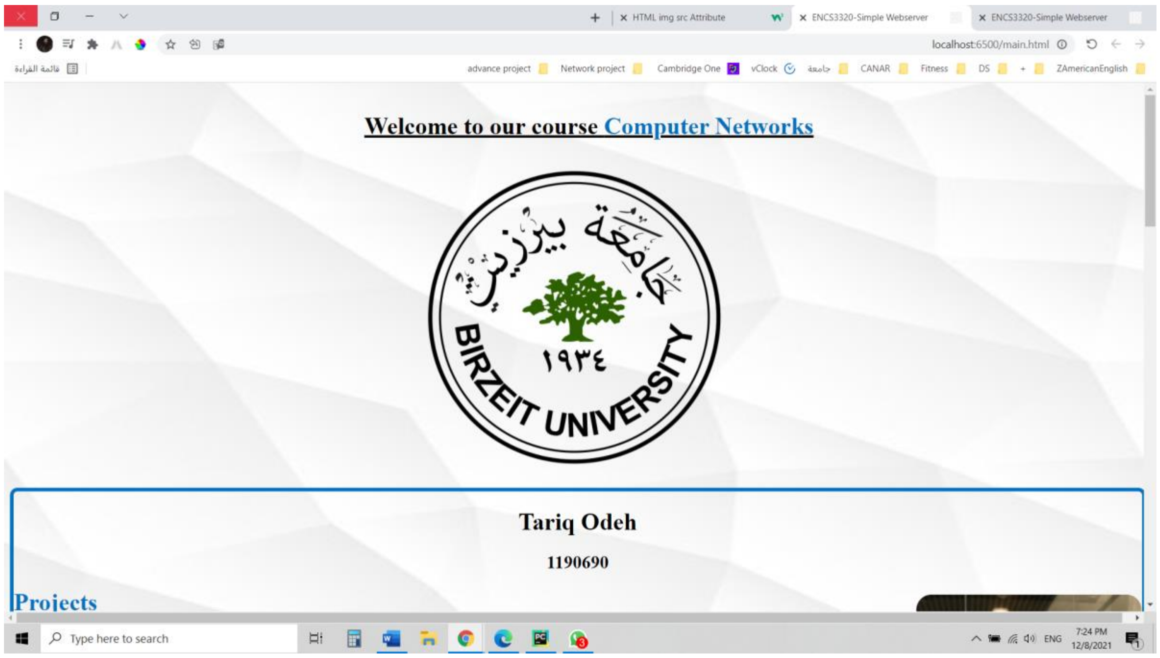
Example

An image is marked up as follows:

```
<img src="img_girl.jpg" alt="Girl in a jacket" width="500" height="600">
```

Definition and Usage

Figure 13: Online HTML file browser window (button)



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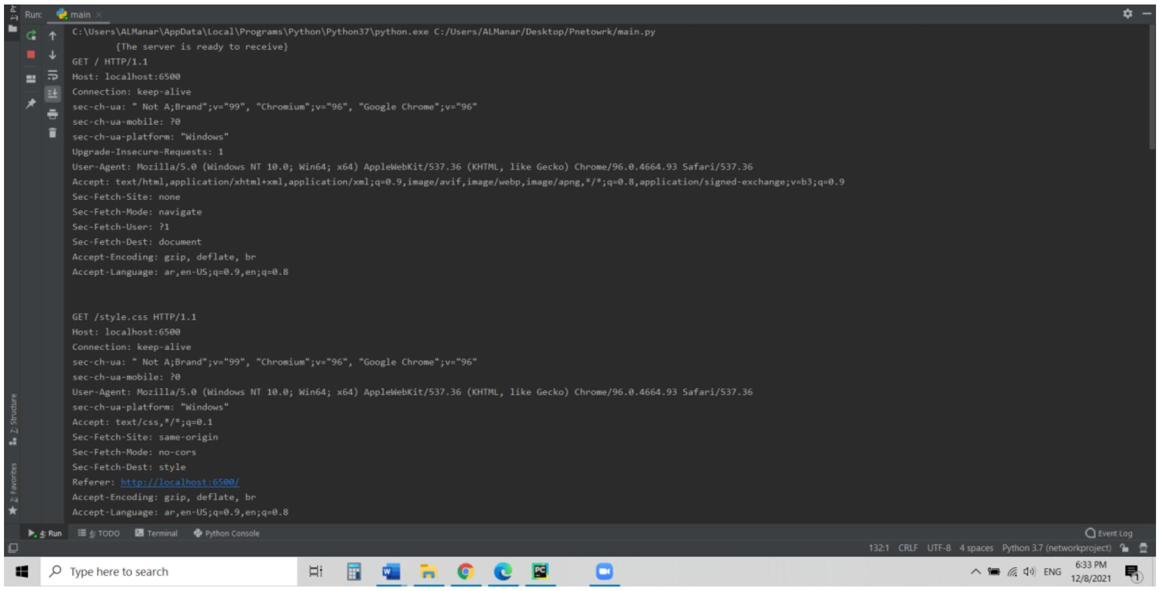
Projects

Figure 14: Local HTML file browser window (button)

Requests:

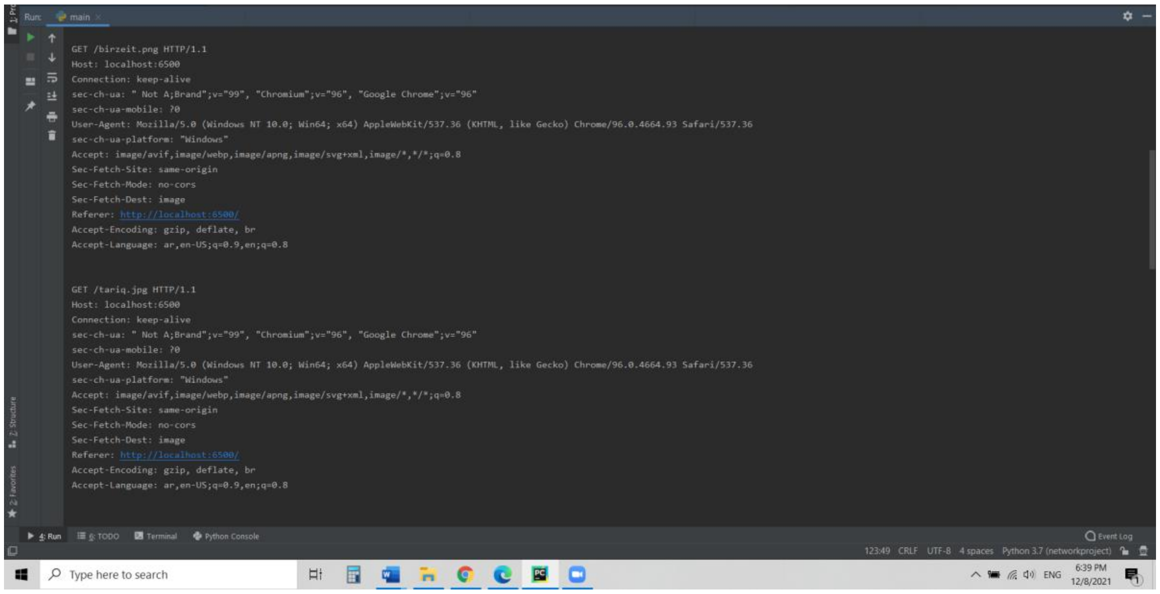
As we can see in the figures below that shown the http request for localhost:6500. We can see that http request is OK and everything is right, and keepalive means persistent, after that it specified all the contents in localhost with accepted content type. As we can see there are many responses like mahmoud or tariq image also the css file (style.css), and the method that we use is GETmethod.



```
C:\Users\ALManar\AppData\Local\Programs\Python\Python37\python.exe C:/Users/ALManar/Desktop/Pnetowrk/main.py
        {The server is ready to receive}
GET / HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
sec-ch-ua-platform: "Windows"
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9
Sec-Fetch-Site: none
Sec-Fetch-Mode: navigate
Sec-Fetch-User: ?1
Sec-Fetch-Dest: document
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8


GET /style.css HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
sec-ch-ua-platform: "Windows"
Accept: text/css,*/*;q=0.1
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: style
Referer: http://localhost:6500/
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8
```

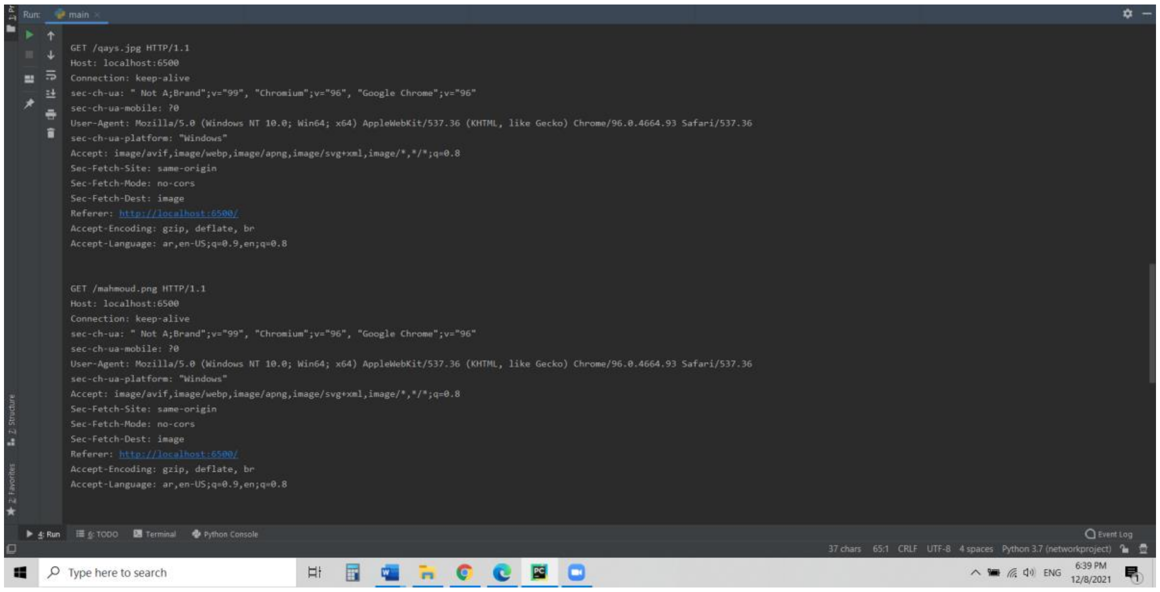
Figure 15: Main Page HTTP requests printed on command Line - 1



```
GET /birzeit.png HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6500/
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8


GET /tariq.jpg HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6500/
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8
```

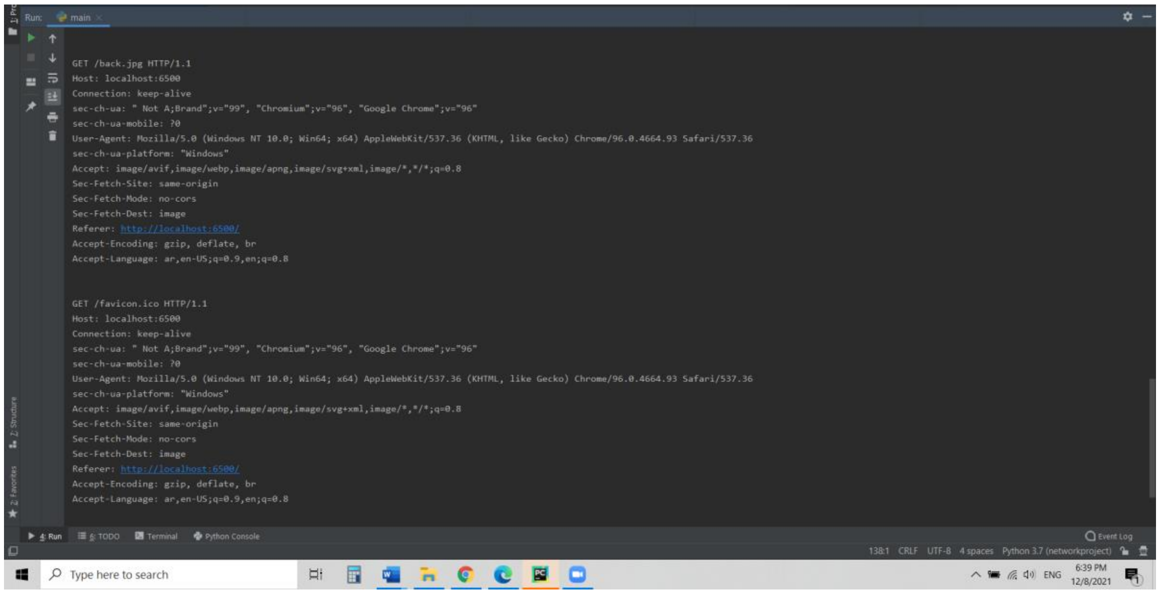
Figure 16: Main Page HTTP requests printed on command Line - 2



```
GET /qays.jpg HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6500/
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8


GET /mahmoud.png HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6500/
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8
```

Figure 17: Main Page HTTP requests printed on command Line - 3



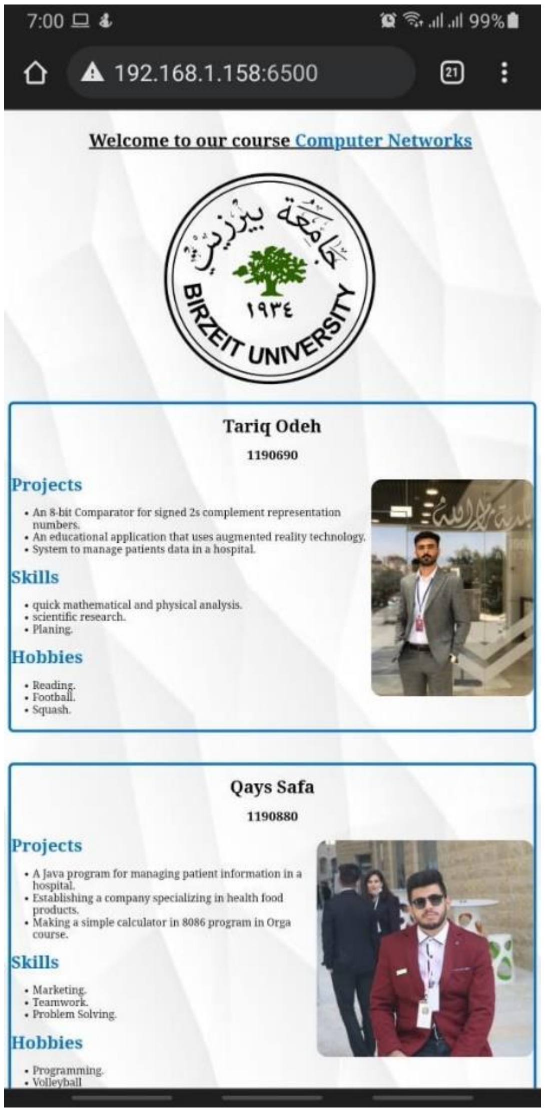
```
GET /back.jpg HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6500/
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8


GET /favicon.ico HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6500/
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8
```

Figure 18: Main Page HTTP requests printed on command Line - 4

Screenshot from another device (phone):

To test our program from other divide: first we must know ipv4 for the device we work on it (origin device), then we make run for the code and note that both origin device and other device are on the same network. Finally, we used the following IP address to open the project: 192.168.1.1.158:6500.



Welcome to our course Computer Networks

Tariq Odeh

1190690

Projects

- An 8-bit Comparator for signed 2s complement representation numbers.
- An educational application that uses augmented reality technology.
- System to manage patients data in a hospital.

Skills

- quick mathematical and physical analysis.
- scientific research.
- Planing.

Hobbies

- Reading.
- Football.
- Squash.

Qays Safa

1190880

Projects

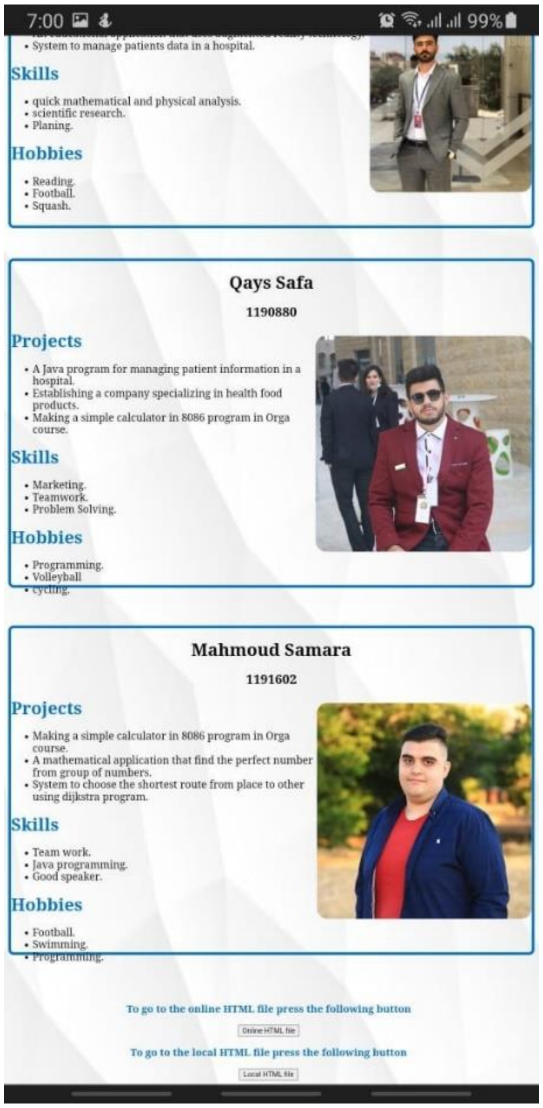
- A Java program for managing patient information in a hospital.
- Establishing a company specializing in health food products.
- Making a simple calculator in 8086 program in Orga course.

Skills

- Marketing.
- Teamwork.
- Problem Solving.

Hobbies

- Programming.
- Volleyball



- System to manage patients data in a hospital.

Skills

- quick mathematical and physical analysis.
- scientific research.
- Planing.

Hobbies

- Reading.
- Football.
- Squash.

Qays Safa

1190880

Projects

- A Java program for managing patient information in a hospital.
- Establishing a company specializing in health food products.
- Making a simple calculator in 8086 program in Orga course.

Skills

- Marketing.
- Teamwork.
- Problem Solving.

Hobbies

- Programming.
- Volleyball
- cycling.

Mahmoud Samara

1191602

Projects

- Making a simple calculator in 8086 program in Orga course.
- A mathematical application that find the perfect number from group of numbers.
- System to choose the shortest route from place to other using dijkstra program.

Skills

- Team work.
- Java programming.
- Good speaker.

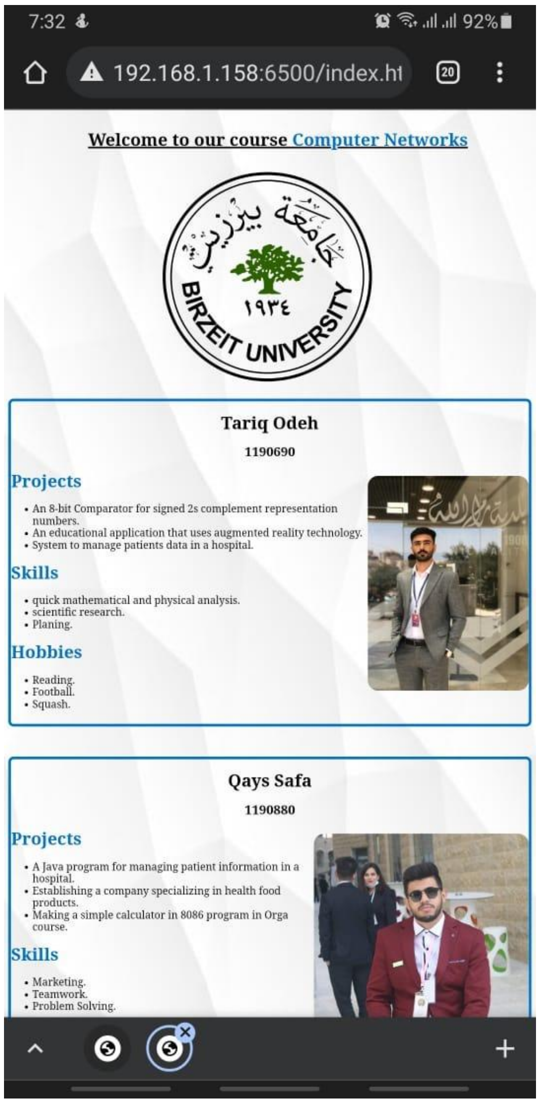
Hobbies

- Football.
- Swimming.
- Programming.

To go to the online HTML file press the following button

To go to the local HTML file press the following button

Figure 19: Localhost:6500 or Localhost:6500/index.html From phone


7:32

192.168.1.158:6500/index.ht

Welcome to our course Computer Networks

Tariq Odeh

1190690

Projects

- An 8-bit Comparator for signed 2s complement representation numbers.
- An educational application that uses augmented reality technology.
- System to manage patients data in a hospital.

Skills

- quick mathematical and physical analysis.
- scientific research.
- Planing.

Hobbies

- Reading.
- Football.
- Squash.

Qays Safa

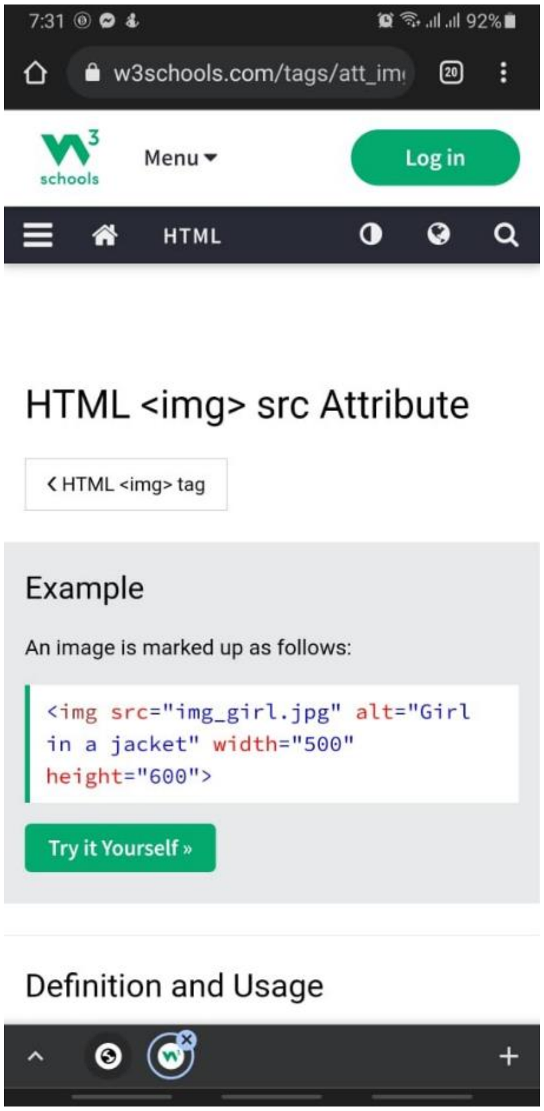
1190880

Projects

- A Java program for managing patient information in a hospital.
- Establishing a company specializing in health food products.
- Making a simple calculator in 8086 program in Orga course.

Skills

- Marketing.
- Teamwork.
- Problem Solving.


7:31

w3schools.com/tags/att_im

Menu Log in

HTML

HTML <img> src Attribute

< HTML <img> tag

Example

An image is marked up as follows:

```
<img src="img_girl.jpg" alt="Girl
in a jacket" width="500"
height="600">
```

Try it Yourself »

Definition and Usage

Figure 20: Local host:6500 and Online host (button) From phone

3.2. PNG Image

http://localhost:6500/mahmoud.png

Main Page in the browser window:

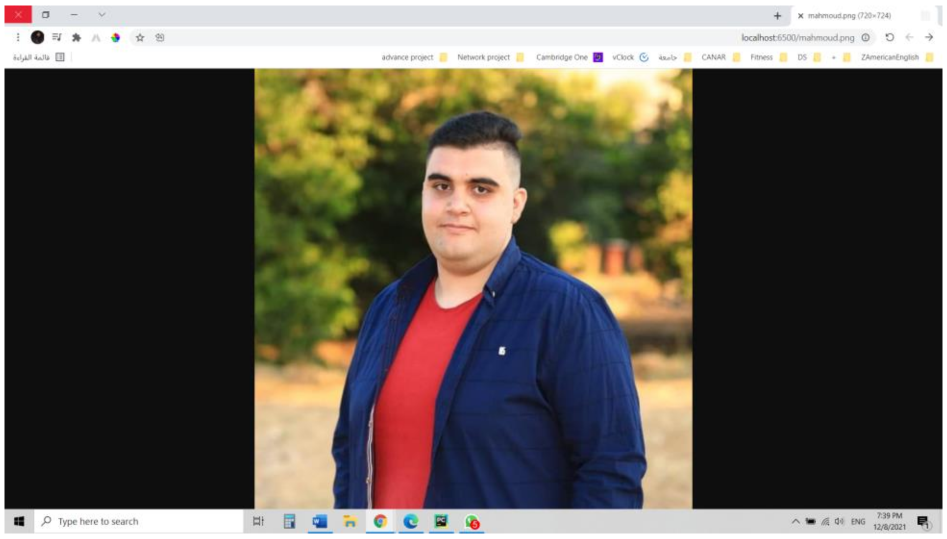
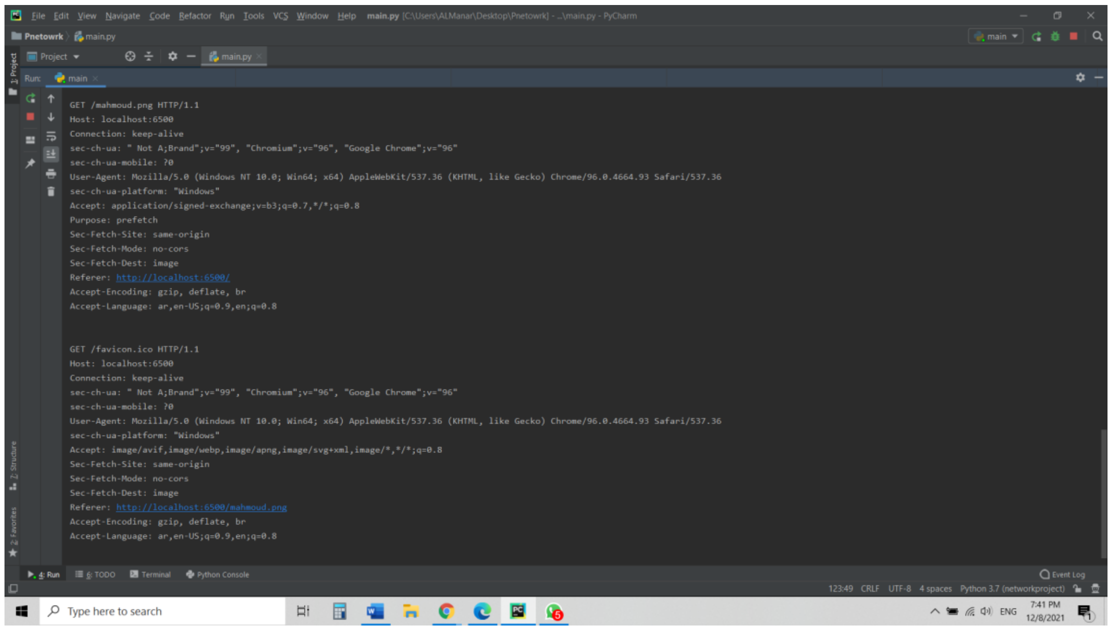


Figure 21: localhost:6500/mahmoud.png browser window

Requests:

As we can see in the figure below that shown the http request for an image with type (png). We can see that http request is OK and everything is right, and keepalive means persistent, after that it specified all the contents in localhost with accepted content type. As we can see there are a response for mahmoud image and in the website, it appears only the image as what we asked.



```
GET /mahmoud.png HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
sec-ch-ua-platform: "Windows"
Accept: application/signed-exchange;v=b3;q=0.7,*/*;q=0.8
Purpose: prefetch
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6500/
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8


GET /favicon.ico HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6500/mahmoud.png
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8
```

Figure 22: localhost:6500/mahmoud.png HTTP requests printed on command line

3.3. JPG Image

http://localhost:6500/qays.jpg

Main Page in the browser window:

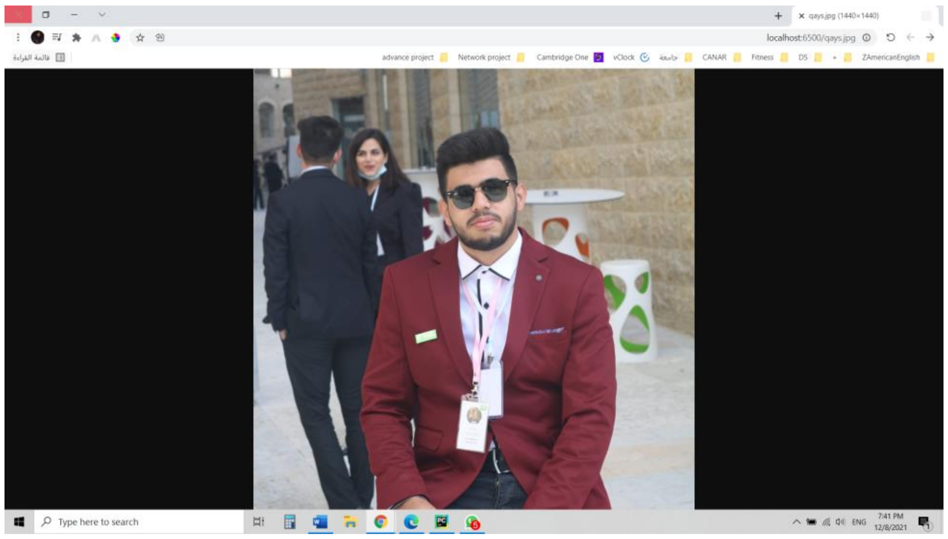
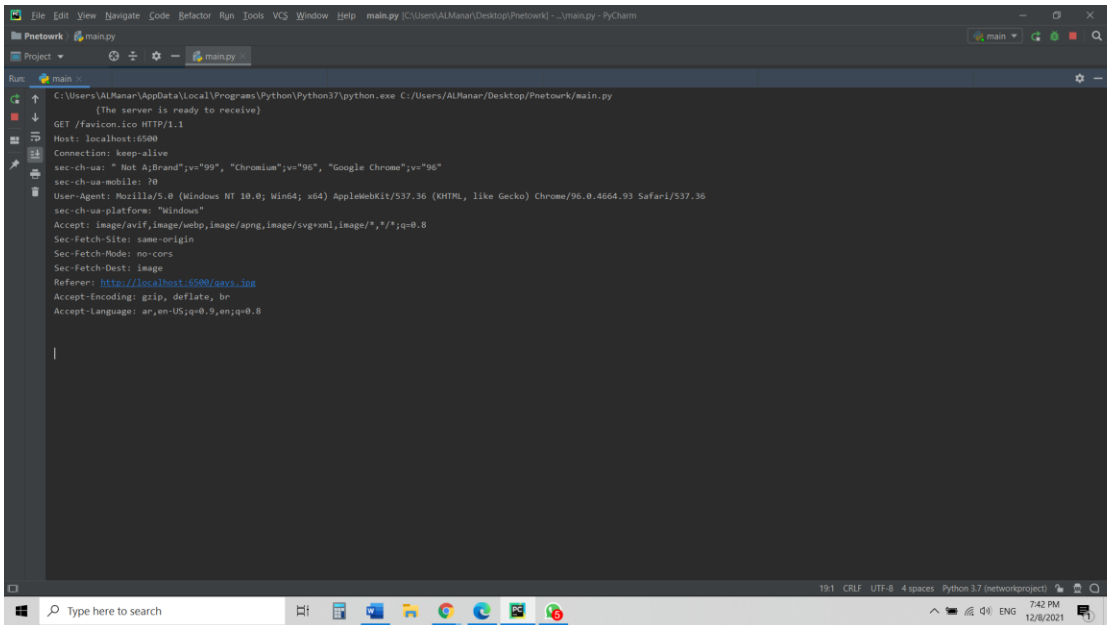


Figure 23: localhost:6500/qays.jpg browser window

Requests:

As we can see in the figure below that shown the http request for an image with type (jpg). We can see that http request is OK and everything is right, and keepalive means persistent, after that it specified all the contents in localhost with accepted content type. As we can see there are a response for qays image and in the website, it appears only the image as what we asked.



```
C:\Users\ALManar\AppData\Local\Programs\Python\Python37\python.exe C:/Users/ALManar/Desktop/Pnetowrk/main.py
        {The server is ready to receive}
GET /favicon.ico HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6500/qays.jpg
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8
```

Figure 24: localhost:6500/qays.jpg HTTP requests printed on command line

Screenshot from another device (phone):

We used the following IP address to open the project:
192.168.1.1.158:6500/qays.jpg
192.168.1.1.158:6500/mahmoud.png

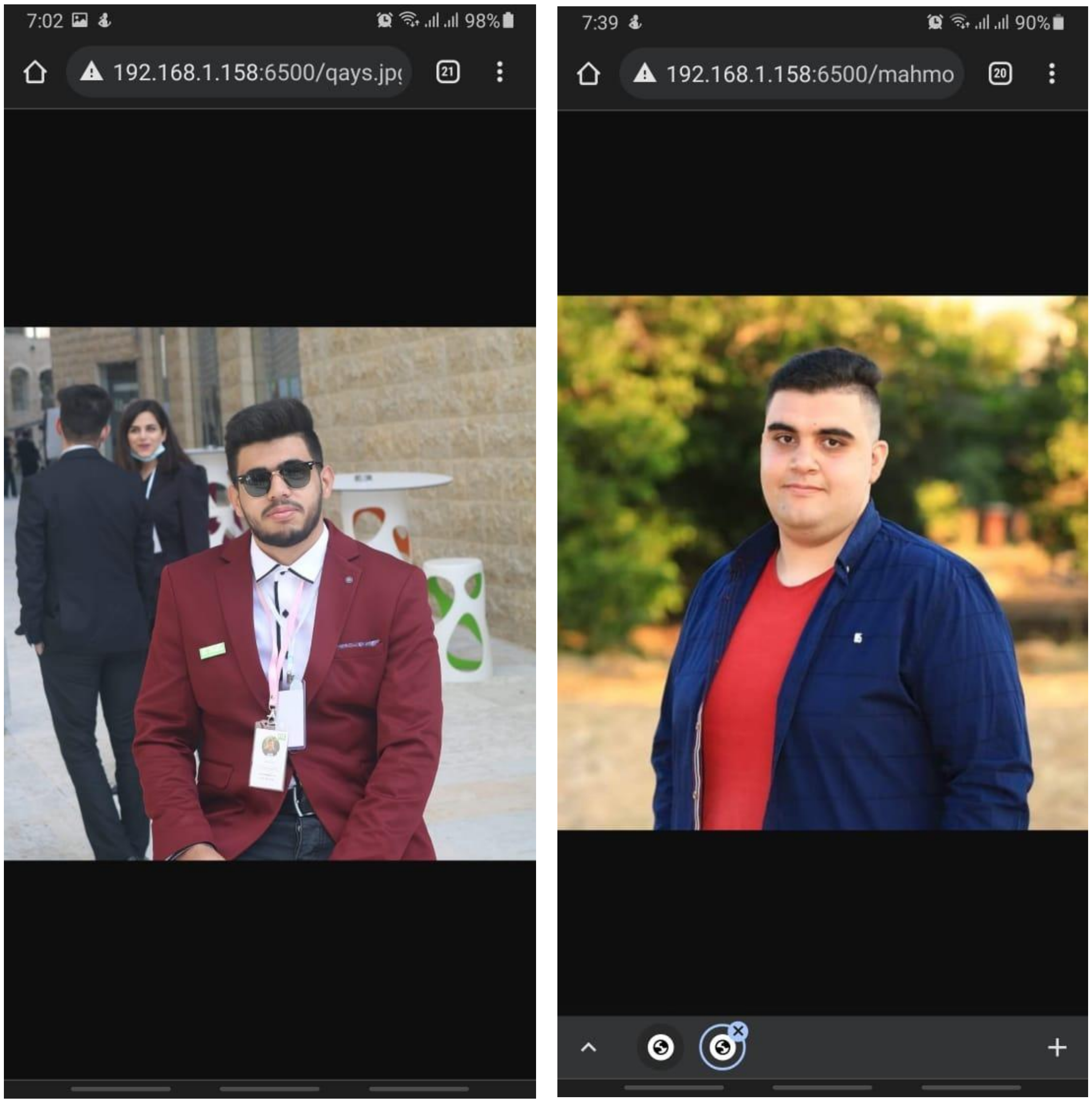
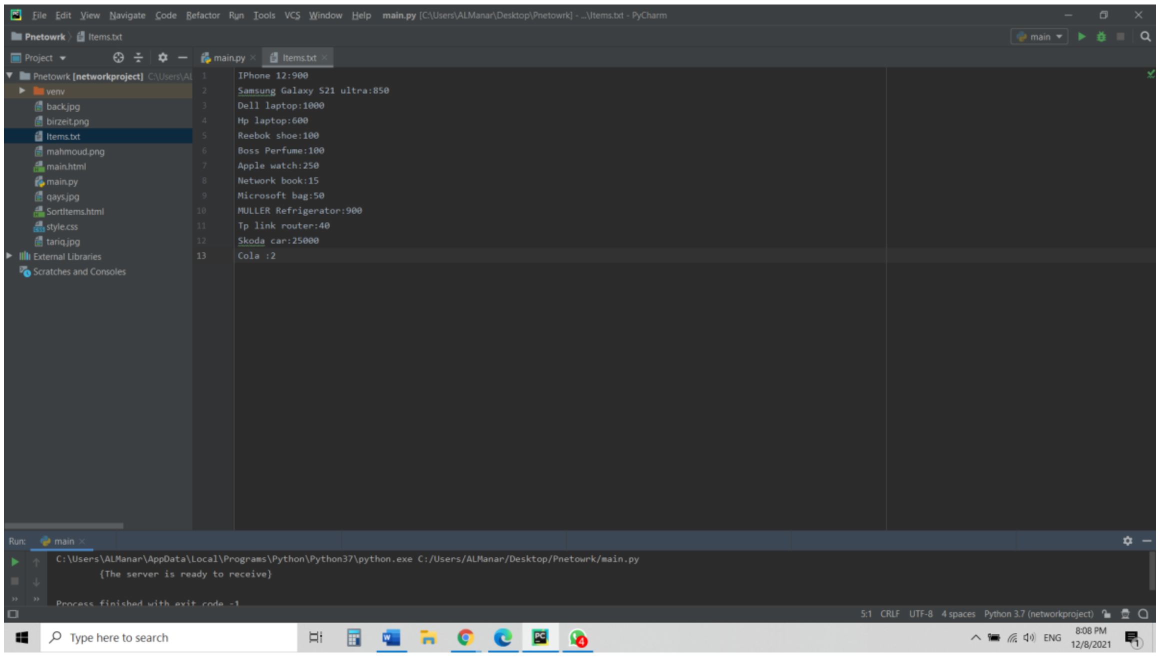


Figure 25: localhost:6500/qays.jpg and localhost:6500/ mahmoud.png browser from phone

3.4. Sort By Price

http://localhost:6500/SortByPrice

Text file:



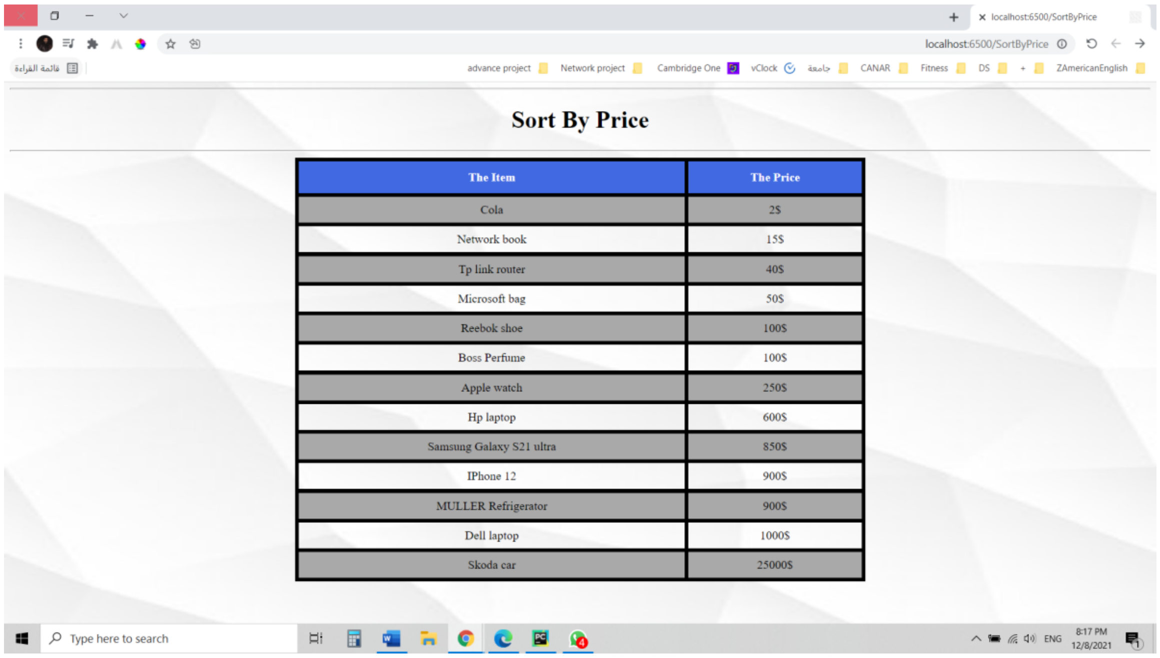
```
IPhone 12:900
Samsung Galaxy S21 ultra:850
Dell laptop:1000
Hp laptop:600
Reebok shoe:100
Boss Perfume:100
Apple watch:250
Network book:15
Microsoft bag:50
MULLER Refrigerator:900
Tp link router:40
Skoda car:25000
Cola :2
```

```
C:\Users\ALManar\AppData\Local\Programs\Python\Python37\python.exe C:/Users/ALManar/Desktop/Pnetowrk/main.py
        {The server is ready to receive}

Process finished with exit code -1
```

Figure 26: text file that contains the names of the items

Main Page in the browser window:



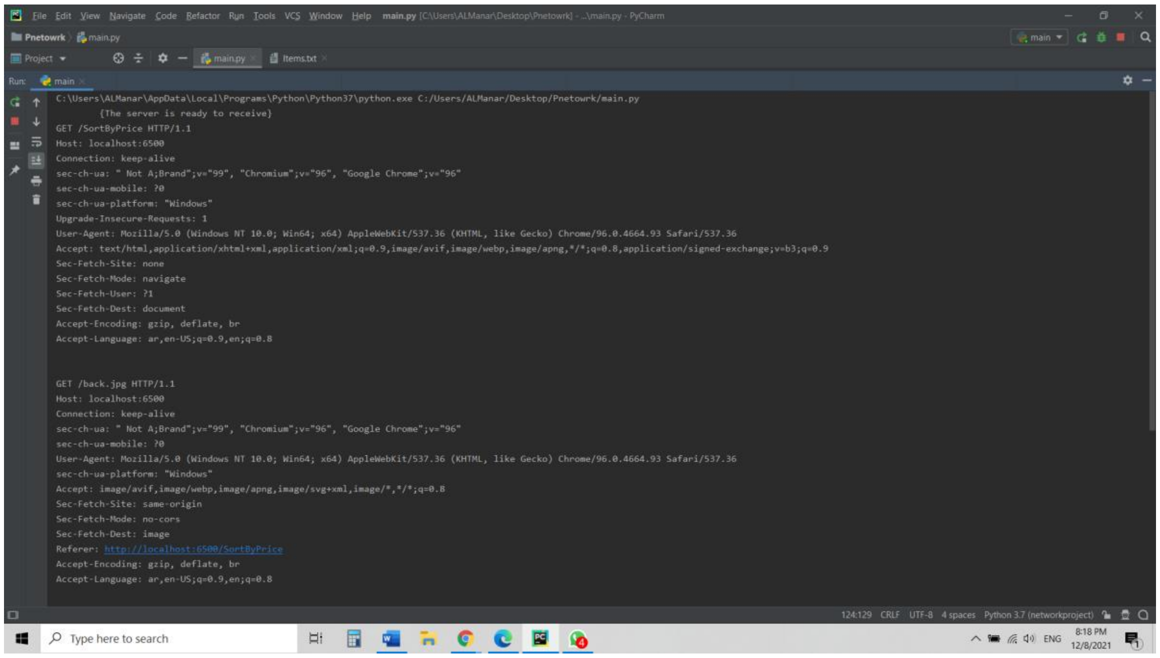
Sort By Price

The Item	The Price
Cola	2$
Network book	15$
Tp link router	40$
Microsoft bag	50$
Reebok shoe	100$
Boss Perfume	100$
Apple watch	250$
Hp laptop	600$
Samsung Galaxy S21 ultra	850$
IPhone 12	900$
MULLER Refrigerator	900$
Dell laptop	1000$
Skoda car	25000$

Figure 27: localhost:6500/SortByPrice browser window

Requests:

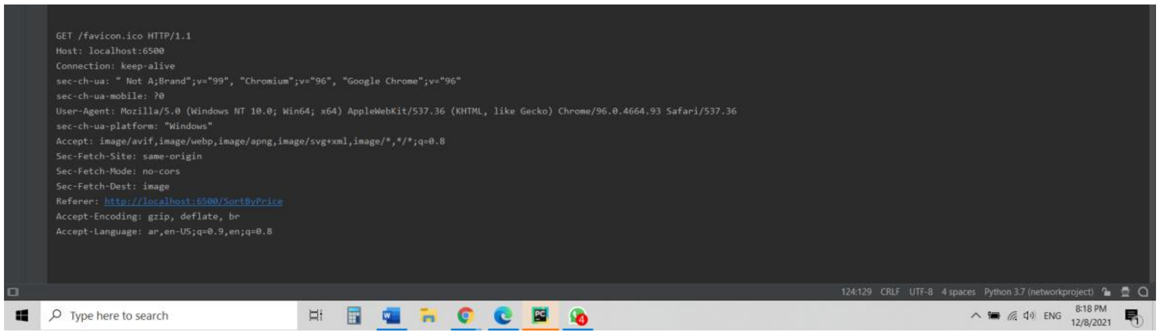
In the figure below we can see the http response for sort by price it accepted content type of text/plain, and the design of the page was arranged using html code and it was put in the main python. Note that the items were read from a text file in the python program.



```
C:\Users\ALManar\AppData\Local\Programs\Python\Python37\python.exe C:/Users/ALManar/Desktop/Pnetowrk/main.py
        {The server is ready to receive}
GET /SortByPrice HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
sec-ch-ua-platform: "Windows"
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9
Sec-Fetch-Site: none
Sec-Fetch-Mode: navigate
Sec-Fetch-User: ?1
Sec-Fetch-Dest: document
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8


GET /back.jpg HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6500/SortByPrice
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8
```

Figure 28: SortByPrice HTTP requests printed on command line - 1



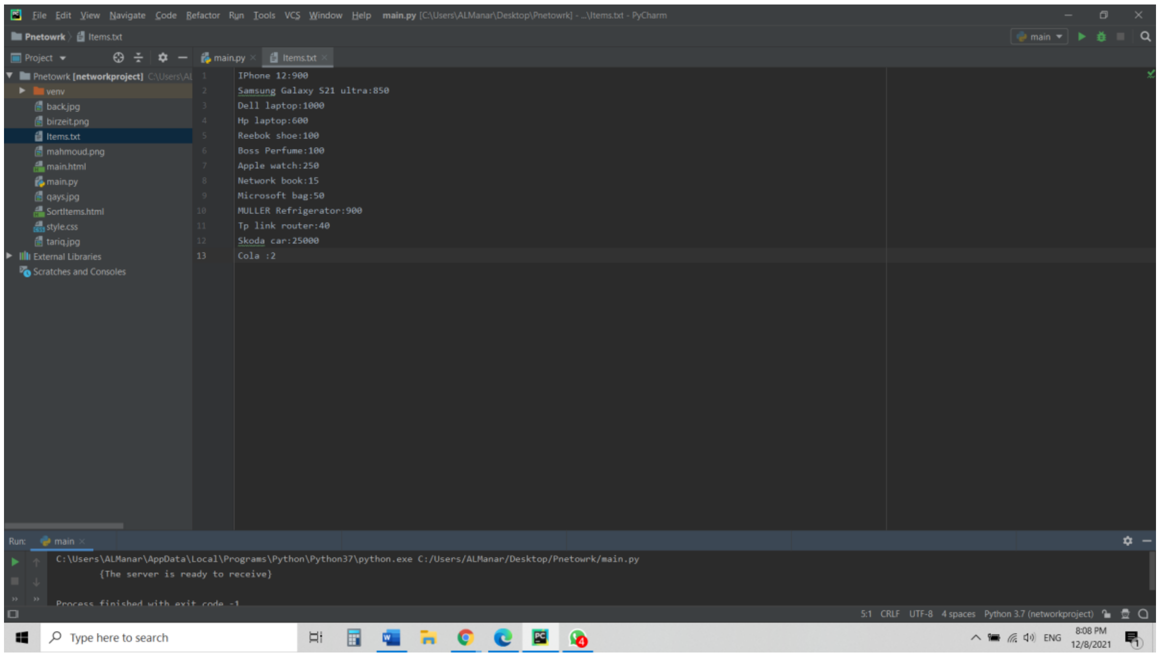
```
GET /favicon.ico HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6500/SortByPrice
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8
```

Figure 29: SortByPrice HTTP requests printed on command line – 2

3.5. Sort By Name

http://localhost:6500/SortByName

Text file:



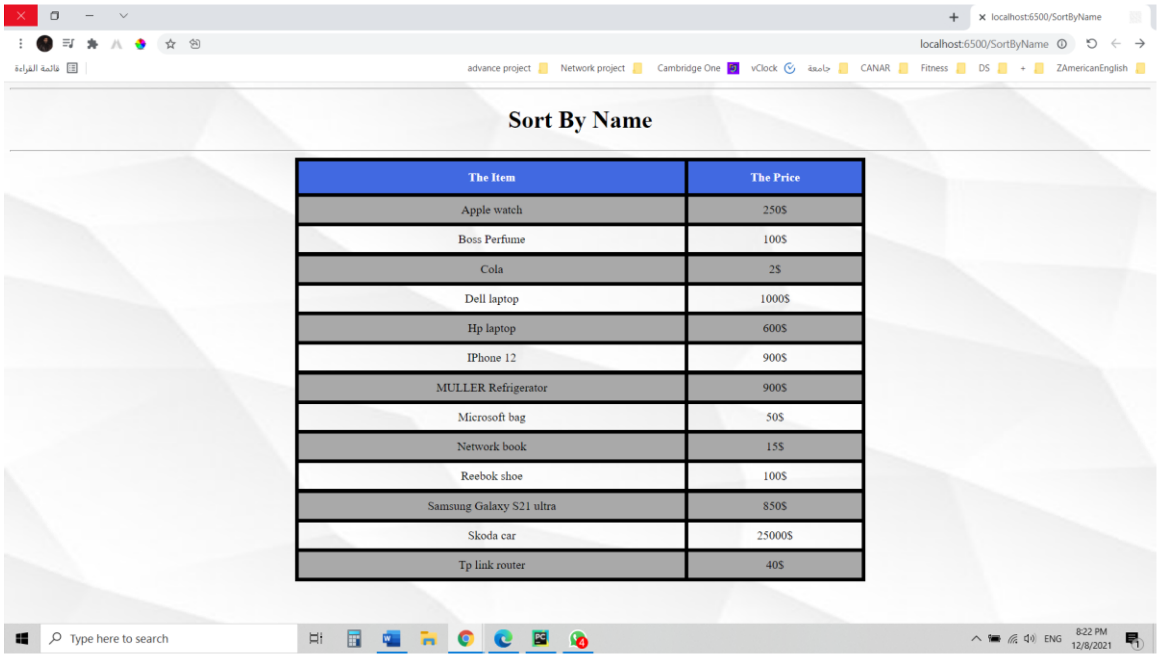
```
IPhone 12:900
Samsung Galaxy S21 ultra:850
Dell laptop:1000
Hp laptop:600
Reebok shoe:100
Boss Perfume:100
Apple watch:250
Network book:15
Microsoft bag:50
MULLER Refrigerator:900
Tp link router:40
Skoda car:25000
Cola :2
```

```
C:\Users\ALManar\AppData\Local\Programs\Python\Python37\python.exe C:/Users/ALManar/Desktop/Pnetowrk/main.py
        {The server is ready to receive}

Process finished with exit code -1
```

Figure 30: text file that contains the names of the items

Main Page in the browser window:



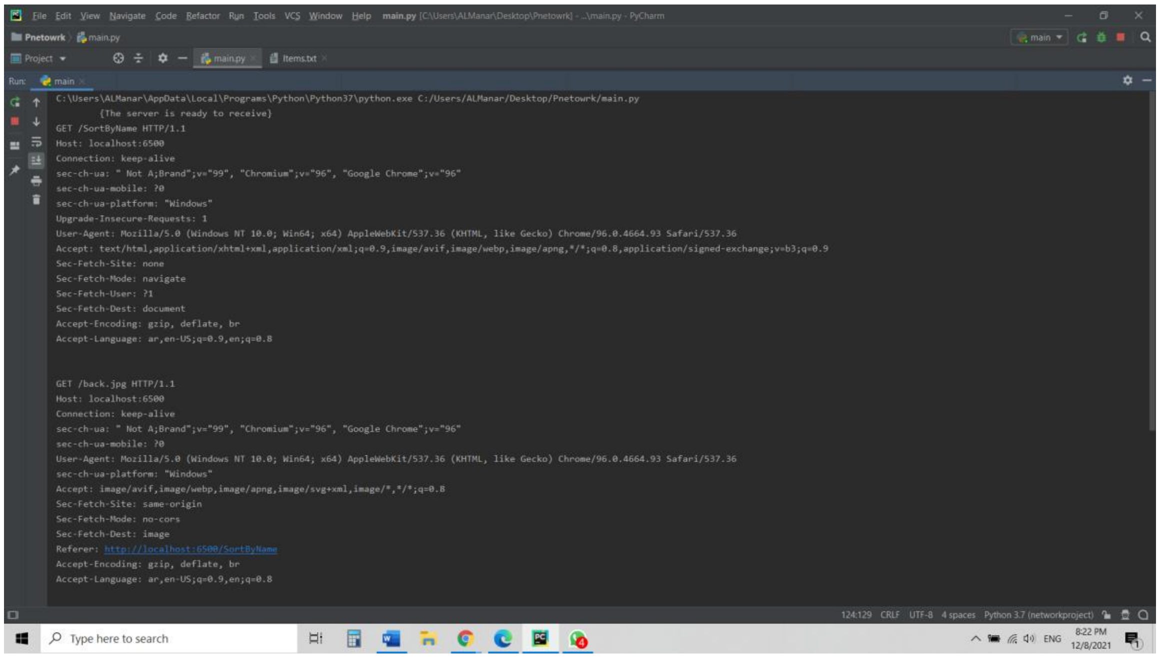
Sort By Name

The Item	The Price
Apple watch	250$
Boss Perfume	100$
Cola	2$
Dell laptop	1000$
Hp laptop	600$
IPhone 12	900$
MULLER Refrigerator	900$
Microsoft bag	50$
Network book	15$
Reebok shoe	100$
Samsung Galaxy S21 ultra	850$
Skoda car	25000$
Tp link router	40$

Figure 31: localhost:6500/SortByName browser window

Requests:

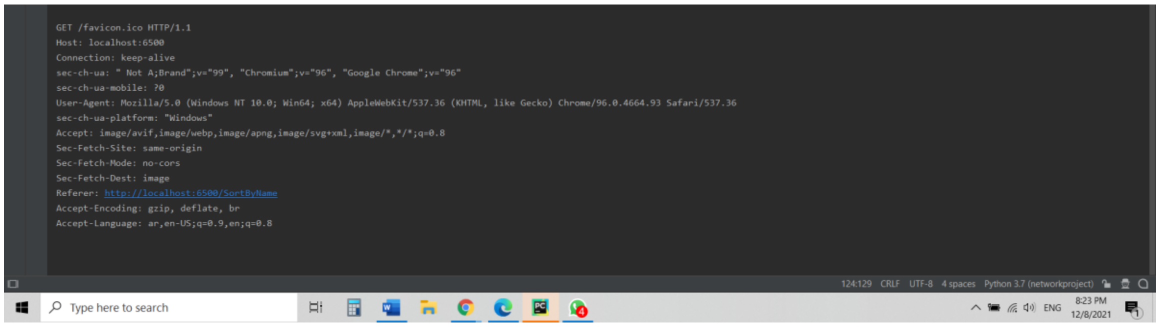
In the figure below we can see the http response for sort by name it accepted content type of text/plain, and the design of the page was arranged using html code and it was put in the main python. Note that the items were read from a text file in the python program.



```
C:\Users\ALManar\AppData\Local\Programs\Python\Python37\python.exe C:/Users/ALManar/Desktop/Pnetowrk/main.py
        {The server is ready to receive}
GET /SortByName HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
sec-ch-ua-platform: "Windows"
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9
Sec-Fetch-Site: none
Sec-Fetch-Mode: navigate
Sec-Fetch-User: ?1
Sec-Fetch-Dest: document
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8


GET /back.jpg HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6500/SortByName
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8
```

Figure 32: SortByName HTTP requests printed on command line - 1

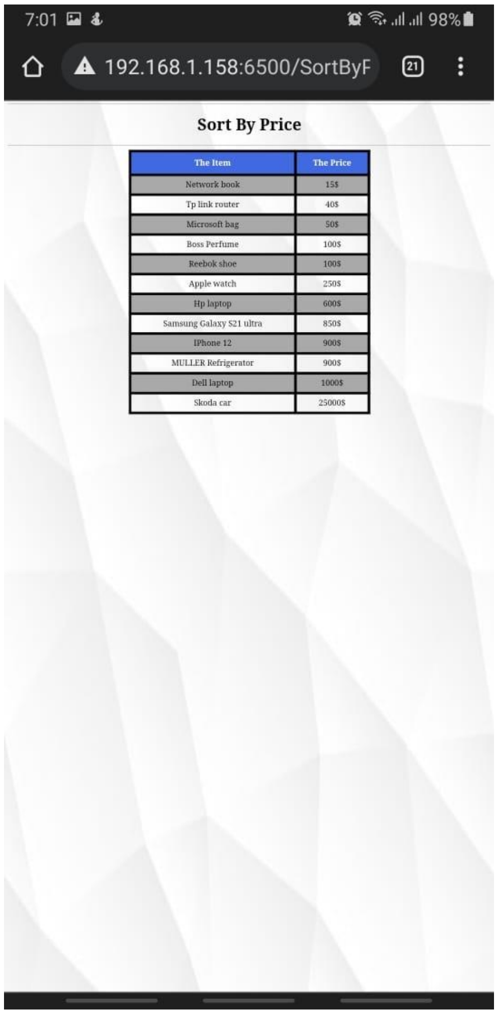


```
GET /favicon.ico HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6500/SortByName
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8
```

Figure 33: SortByName HTTP requests printed on command line - 2

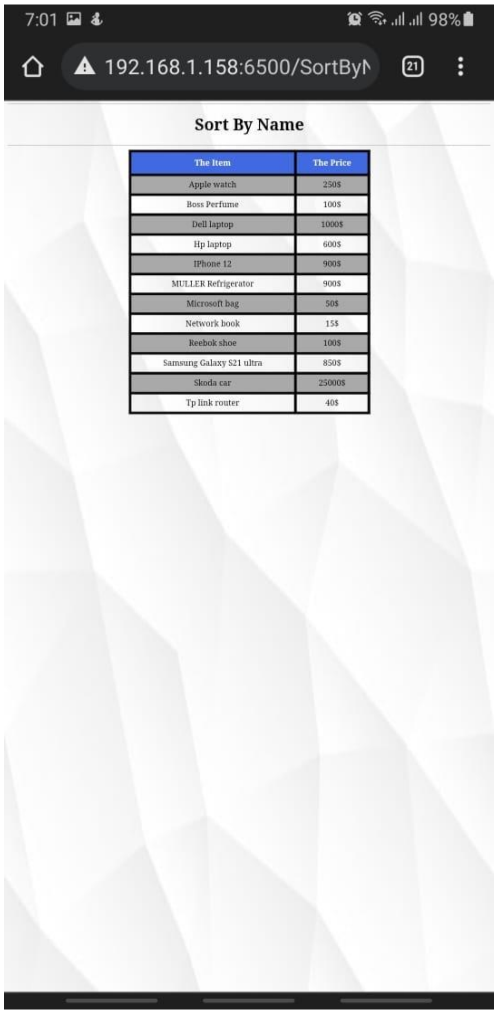
Screenshot from another device (phone):

We used the following IP address to open the project:
192.168.1.1.158:6500/SortByPrice
192.168.1.1.158:6500/ SortByName



Sort By Price

The Item	The Price
Network book	15$
Tp link router	40$
Microsoft bag	50$
Boss Perfume	100$
Reebok shoe	100$
Apple watch	250$
Hp laptop	600$
Samsung Galaxy S21 ultra	850$
IPhone 12	900$
MULLER Refrigerator	900$
Dell laptop	1000$
Skoda car	25000$



Sort By Name

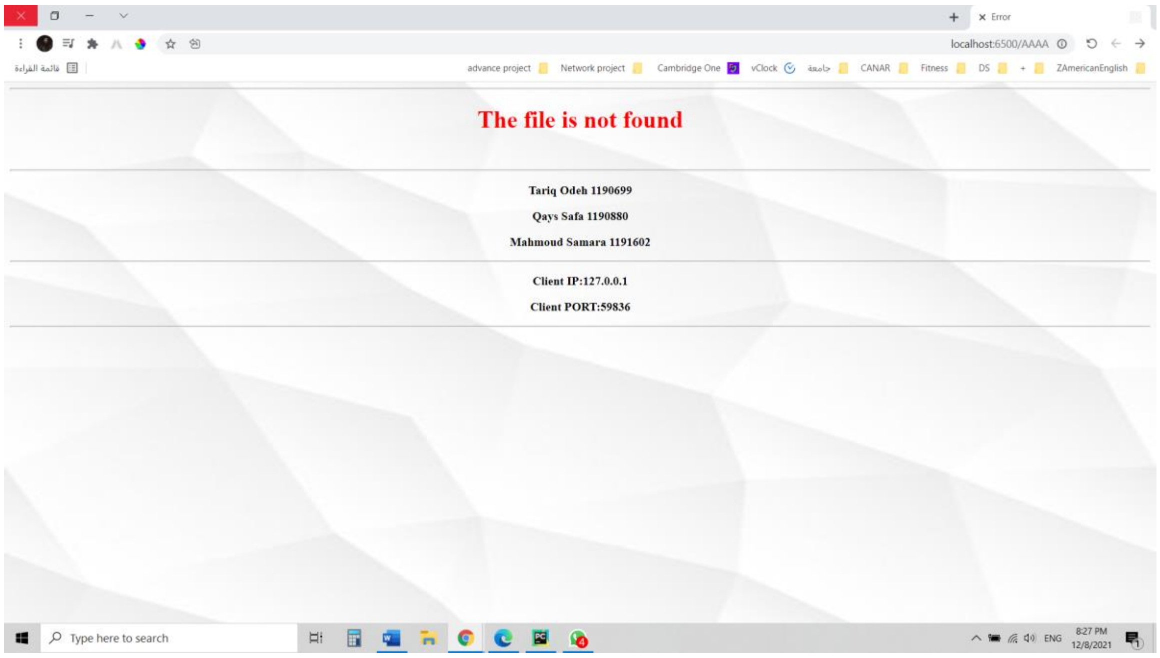
The Item	The Price
Apple watch	250$
Boss Perfume	100$
Dell laptop	1000$
Hp laptop	600$
IPhone 12	900$
MULLER Refrigerator	900$
Microsoft bag	50$
Network book	15$
Reebok shoe	100$
Samsung Galaxy S21 ultra	850$
Skoda car	25000$
Tp link router	40$

Figure 34: localhost:6500/SortByPrice and localhost:6500/SortByName browser from phone

3.6. Error 404

http://localhost:6500/AAAA

Main Page in the browser window:



The file is not found

Tariq Odeh 1190699

Qays Safa 1190880

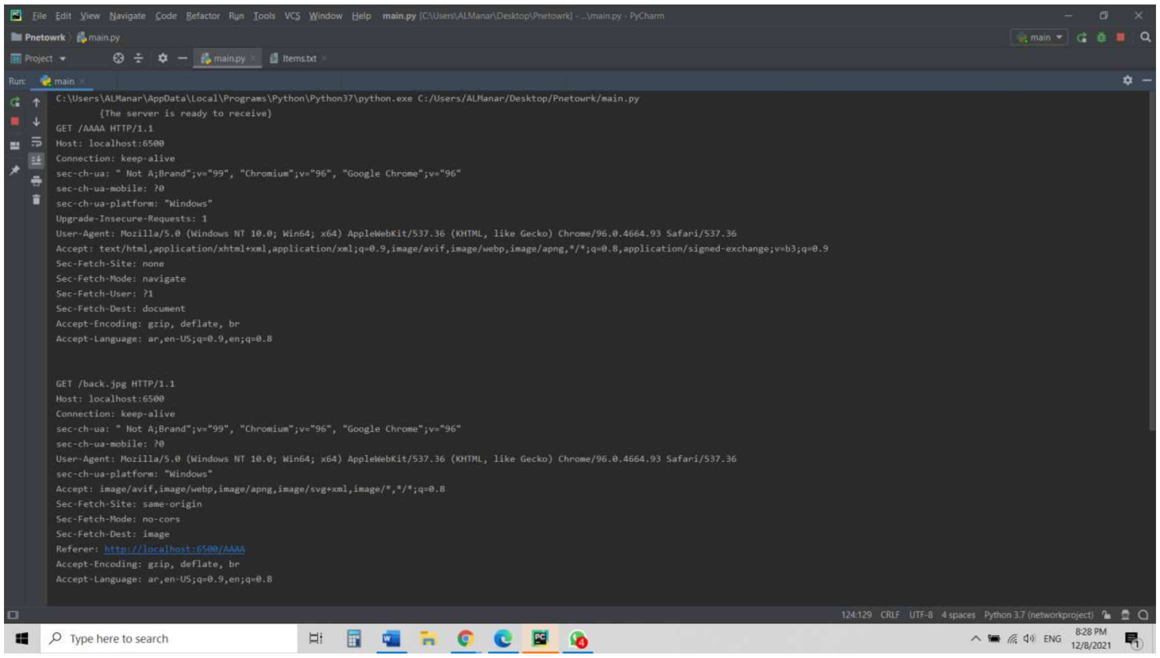
Mahmoud Samara 1191602

Client IP:127.0.0.1

Client PORT:59836

Figure 35: localhost:6500/AAAA browser window

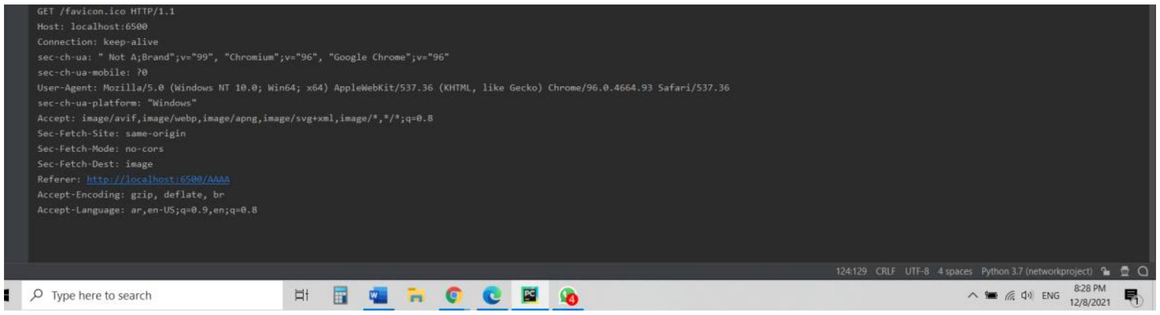
Requests:



```
C:\Users\ALManar\AppData\Local\Programs\Python\Python37\python.exe C:/Users/ALManar/Desktop/Pnetowrk/main.py
        {The server is ready to receive}
GET /AAAA HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
sec-ch-ua-platform: "Windows"
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9
Sec-Fetch-Site: none
Sec-Fetch-Mode: navigate
Sec-Fetch-User: ?1
Sec-Fetch-Dest: document
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8


GET /back.jpg HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6500/AAAA
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8
```

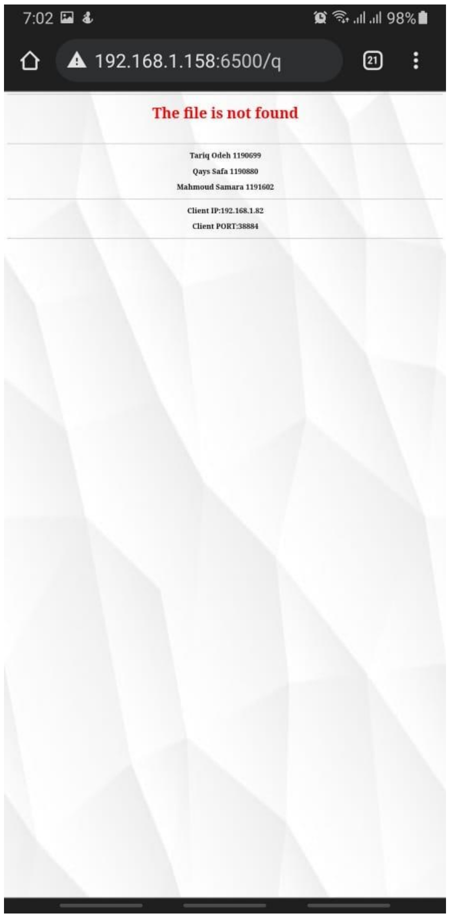
Figure 36: AAAA HTTP requests printed on command line - 1



```
GET /favicon.ico HTTP/1.1
Host: localhost:6500
Connection: keep-alive
sec-ch-ua: " Not A;Brand";v="99", "Chromium";v="96", "Google Chrome";v="96"
sec-ch-ua-mobile: ?0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/96.0.4664.93 Safari/537.36
sec-ch-ua-platform: "Windows"
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: no-cors
Sec-Fetch-Dest: image
Referer: http://localhost:6500/AAAA
Accept-Encoding: gzip, deflate, br
Accept-Language: ar,en-US;q=0.9,en;q=0.8
```

Figure 37: AAAA HTTP requests printed on command line – 2

Screenshot from another device (phone):



The file is not found

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Client IP:192.168.1.82

Client PORT:38884

Figure 38: localhost:6500/AAAA browser window from phone

3.7. Full Code with comments

```
# project done by:
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# Qays Safa (1190880)
# Mahmoud Samara (1191602)

from socket import *
# Include Python’s socket library.

items = []
# Intialise an array to put all items in it.
PORT = 6500
# Listening on port 6500.
serverSocket = socket(AF_INET, SOCK_STREAM)
# Create TCP socket for server, remote port 6500.
serverSocket.bind(("", PORT))
serverSocket.listen(1)
# Server begins listening for  incoming TCP requests.
print("\t\t{The server is ready to receive}")


# function to read the items file and cut it to items and prices

def readfile(filename):

   with open(filename) as f:
# Create inputfile to read the data in items.txt .
    item = f.readlines()
# Read the data in Items.txt line.
    for sentences in item:
# Split the data from the file and append it to a new list, then cut the data
based on ☺) .
        line = sentences.split(":")
        line[1] = str(line[1]).replace("\n", "")
        line[1] = int(line[1])
        items.append(line)
# Add item in items array.
readfile('items.txt')


while True:

    connectionSocket, address = serverSocket.accept()
# Server waits on accept() for incoming requests, new socket created on return
.
    sentence = connectionSocket.recv(1024).decode()
# Read bytes from socket.
    requestFile = sentence.split(' ')[1]

    printedfile = requestFile.lstrip('/')
# Removing the first( / )to get the requested file name .
    connectionSocket.send(f"HTTP/1.1 200 OK\r\n".encode())

    if printedfile == '' or printedfile == 'index.html':
        printedfile = 'main.html'
# Load main.html file as default so if the request is / or /index.html then
```

```
the server should send main.html file.

    try:

# Accepting different file formats
        if printedfile.endswith(".html"):
# If the request is a .html then the server should send the html file with
Content-Type: text/html.
            requestedType = 'text/html'

        elif printedfile.endswith(".css"):
# If the request is a .css then the server should send the css file with
Content-Type: text/css.
            requestedType = 'text/css'

        elif printedfile.endswith(".png"):
# If the request is a .jpg then the server should send the png image with
Content-Type: image/png.
             requestedType = 'image/png'

        elif printedfile.endswith(".jpg"):
# If the request is a .jpg then the server should send the jpg image with
Content-Type: image/jpg.
            requestedType = 'image/jpeg'

        elif printedfile == "SortByName" or printedfile == "SortByPrice":
# If the request is SortByName or SortByPrice then the server should send text
page with Content-Type: text/plain.
            requestedType = 'text/plain'

        else:
# Else then server should send text page with Content-Type: text/html.
            requestedType = 'text/html'

        if printedfile == 'SortByName' or printedfile == 'SortByPrice':

# If the user requests to sort either by name or by price for the items, it
will enter this IF condition

# to know to show the sort price page or sortname page depend on what the user
request.

                if printedfile == 'SortByName':
# To sort the items depending on the names.
                    items.sort()
                    ST = '<!DOCTYPE html><html><head><style>body {background-
image: url(' \
                         '"back.jpg");background-repeat: no-repeat;background-
attachment: fixed; background-size: ' \
                         '100% 100%;}</style></head><head><style>#Items {font-
family: Times new roman, ' \
                         'sans-serif;text-align:center;border-collapse:
collapse;width: 50%;} #Items td,' \
                         '#Items th {border: 5px solid #000000;padding: 8px;}
#Items tr:nth-child(even){' \
                         'background-color: darkgrey;} #Items tr:hover
{background-color: darkgrey;}#Items th {' \
                         'padding-top: 12px;padding-bottom: 12px;text-align:
left;text-align:center;color: ' \
                         'white;}</style></head><body><hr><center><h1>Sort By 
Name</h1><table id="Items"><hr><tr ' \
                         'style="background-color: royalblue;"><th>The 
Item</th><th>The Price</th></tr> '

                else:

# To sort the items depending on the pricess.
                    items.sort(key=lambda items: items[1])
                    ST = '<!DOCTYPE html><html><head><style>body {background-
image: url(' \
                         '"back.jpg");background-repeat: no-repeat;background-
attachment: fixed; background-size: ' \
                         '100% 100%;}</style></head><head><style>#Items {font-
family: Times new roman, ' \
                         'sans-serif;text-align:center;border-collapse: 
collapse;width: 50%;} #Items td,' \
                         '#Items th {border: 5px solid #000000;padding: 8px;} 
#Items tr:nth-child(even){' \
                         'background-color: darkgrey;} #Items tr:hover 
{background-color: darkgrey;}#Items th {' \
                         'padding-top: 12px;padding-bottom: 12px;text-align: 
left;text-align:center;color: ' \
                         'white;}</style></head><body><hr><center><h1>Sort By 
Price</h1><table id="Items"><hr><tr ' \
                         'style="background-color: royalblue;"><th>The 
Item</th><th>The Price</th></tr> '


                for OurItems in items:
# To fill the table with items.

                   ST += '<td>' + OurItems[0] + '</td><td>' + str(OurItems[1]) + 
'$</td></tr>'
                ST += "</table></center></body></html>"
# End of html code.

                printedfile = 'SortItems.html'
# Set the requested file name is SortItems.html.
                Sortfile = open("SortItems.html","w")
# Create SortItems.html to write the html code after added sorrted item.
                Sortfile.write(ST)
                Sortfile.close()

        requestFile = open(printedfile,'rb')  # Open and read the requested 
file in byte format.
        ST = requestFile.read()
        requestFile.close()

        header = 'Content-Type: ' + str(requestedType) + '\r\n\r\n'

    except Exception as e:

# If the request is wrong or the file doesn’t exist the server should return a 
simple HTML webpage with our

# names and IDs and IP and port number of the client
        header = 'HTTP/1.1 404 Not Found\n\n'
        ST = ('<!DOCTYPE html><head><title>Error</title><style
type="text/css">h1 {text-align: center;}li {font-weight: '
                    'bold;}</style></head><head><style type="text/css">p
{text-align: '
                    'center;}li</style></head><head><style> body {background-
image: url("back.jpg"); '
                    'background-repeat: no-repeat;background-attachment:
fixed; background-size: 100% '
                    '100%;}</style></head><hr><body><h1 style="color:red">The
file is not found</h1><br><hr><p '
                    'style="color:black"><b>Tariq Odeh 1190699</b></p><p
style="color:black"><b>Qays Safa '
                    '1190880</b></p><p style="color:black"><b>Mahmoud Samara
1191602</b></p><hr><p><b>Client '
                    'IP:'+str(address[0])+'</b></p><p><b>Client
PORT:'+str(address[1])+'</b></p><hr> '
              '</body></html>').encode('utf-8')

    connectionSocket.send(f"\r\n".encode())
    connectionSocket.send(ST)
# Send the final response with all parts of header.
    connectionSocket.close()
# To closes a connectionSocket socket.
    print(sentence)
#Print the HTTP request on the terminal window.
```

3.8. HTML Code

```
<!DOCTYPE html>
<html>

<head>
  <title>ENCS3320-Simple Webserver</title>
  <link rel="stylesheet" href="style.css" type="text/css">
</head>

<head>
   <style>
   body {
     background-image: url('back.jpg');
     background-repeat: no-repeat;
     background-attachment: fixed;
     background-size: 100% 100%;
   }
   </style>
</head>

<body>
   <div class="header">
       <h1>
       <ins> Welcome to our course <span style="color: #0070C0">Computer Networks </ins>
       </span>
       </h1>
   </div>

   <img class ="b-img" src="birzeit.png" alt="Birzeit" >
   <br><br>
```

```
 <div class="informationBox">
    <div>
       <h1>Tariq Odeh</h1>
       <h2>1190690</h2>
       <img align = "right" src="tariq.jpg" alt="Tariq Odeh">

       <div align = "left">
          <h1 style="color: #0070C0" >Projects </h1>
          <ul>
             <li>An 8-bit Comparator for signed 2s complement representation numbers.</li>
             <li>An educational application that uses augmented reality technology.</li>
             <li>System to manage patients data in a hospital.</li>
          </ul>

          <h1 style="color: #0070C0" >Skills</h1>
          <ul>
             <li>quick mathematical and physical analysis.</li>
             <li>scientific research.</li>
             <li>Planing.</li>
          </ul>

          <h1 style="color: #0070C0" >Hobbies</h1>
          <ul>
             <li>Reading.</li>
             <li>Football.</li>
             <li>Squash.</li>
          </ul>
       </div>
   </div>
</div>
```

```
 <br><br><br><br>

<div class="informationBox">
    <div>
        <h1>Qays Safa</h1>
        <h2>1190880</h2>
        <img align = "right" src="qays.jpg" alt="Qays Safa">

        <div align = "left">
           <h1 style="color: #0070C0" >Projects </h1>
           <ul>
              <li>A Java program for managing patient information in a hospital.</li>
              <li>Establishing a company specializing in health food products.</li>
              <li>Making a simple calculator in 8086 program in Orga course.</li>
           </ul>

           <h1 style="color: #0070C0" >Skills</h1>
           <ul>
              <li>Marketing.</li>
              <li>Teamwork.</li>
              <li>Problem Solving.</li>
           </ul>

           <h1 style="color: #0070C0" >Hobbies</h1>
           <ul>
              <li>Programming.</li>
              <li>Volleyball</li>
              <li>cycling.</li>
           </ul>
        </div>
    </div>
  </div>

   <br><br><br><br>



   <div class="informationBox">
      <div>
         <h1>Mahmoud Samara</h1>
         <h2>1191602</h2>
         <img align = "right" src="mahmoud.png" alt="Mahmoud Samara">

         <div align = "left">
            <h1 style="color: #0070C0" >Projects </h1>
            <ul>
               <li>Making a simple calculator in 8086 program in Orga course.</li>
               <li>A mathematical application that find the perfect number from group of
numbers.</li>
               <li>System to choose the shortest route from place to other using dijkstra
program.</li>
            </ul>

            <h1 style="color: #0070C0" >Skills</h1>
            <ul>
               <li>Team work.</li>
               <li>Java programming.</li>
               <li>Good speaker.</li>
            </ul>

            <h1 style="color: #0070C0" >Hobbies</h1>
            <ul>
```

```
                <li>Football.</li>

                <li>Swimming.</li>

                <li>Programming.</li>

              </ul>

            </div>

         </div>

      </div>


       <br><br><br><br>


       <div align = "center">


          <h3 style="color: #0070C0" >To go to the online HTML file press the following button </h3>

          <form action="https://www.w3schools.com/tags/att_img_src.asp" target="_blank"
method="post">

             <input type="submit" value="Online HTML file">

          </form>


          <h3 style="color: #0070C0" >To go to the local HTML file press the following button </h3>

          <form action="main.html" target="_blank" method="post">

             <input type="submit" value="Local HTML file">

          </form>

       </div>




</body>


</html>
```

3.9. CSS Code

```
.header}
    text-align: center;
    height: 85px;
    width: 100%;
    padding: 10px 0 0 20px;
    border: 0px;
    border-radius: 0px;
{


h1}
   color: black;
{


li}
   font-size: 120%;
{


.informationBox}
    text-align: center ;
    height: 600px;
    width: 100%;
    border: 5px solid #0070C0;
    border-radius: 10px;
    display: inline-block  ;
{
```

```
.image}
    align : right;
    height: 100%;
{




img}
    height: 400px;
    position: relative;
    top: 10px;
    border-radius: 20px;
    align : right;
{


.b-img}
    width: 50;
    height: 50;
    display: block;
    margin-left: auto;
    margin-right: auto  ;
}
```

4. References

[1] CSS tutorial. (2019, April 8). Retrieved December 9, 2021, from https://www.w3schools.com/css/.

[2] HTML tutorial. (2020, May 7). Retrieved December 9, 2021, from https://www.w3schools.com/html/.

[3] *Python get current time*. Programiz. (2019, May 4). Retrieved December 9, 2021, from https://www.programiz.com/python-programming/datetime/current-time.

[4] Team, P. (2019, May 7). *Send get request python socket - pretag*. Pretag development team. Retrieved December 9, 2021, from https://pretagteam.com/question/send-get-request-python-socket?fbclid=IwAR1P5xcT_GNiONtJiv2ak2SEeKMn7t1hkibXK0R-PfMtU59m__wbKlIR8lY.