



CN ASSIGNMENT - 02

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■ Ques_1

The question asks you to develop a web server that handles one HTTP request at a time by accepting, parsing the request, retrieving the requested file, sending an HTTP response, and handling missing files with a "404 Not Found" response.

■ Output

The output from the web server depends on the client's request. If the requested file (e.g., `HelloWorld.html`) exists, the server sends an HTTP response with a status code `200 OK` and the file's content to the browser. If the file is missing, it responds with a `404 Not Found` message.

SERVER - BROWSER

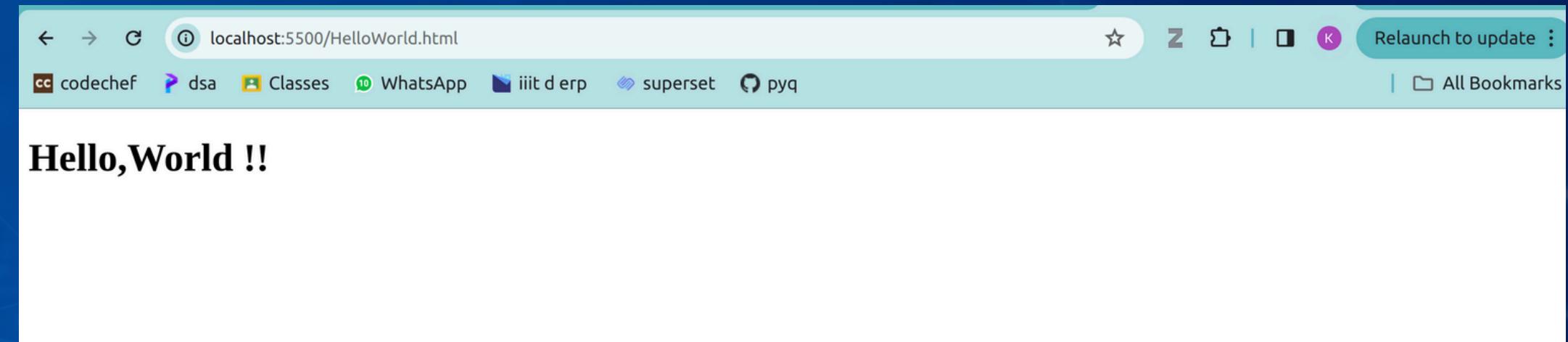


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BROWSER - SERVER - BROWSER



- Developed a basic web server to handle one HTTP request at a time, parsing the request and retrieving files from the server's file system.
- Sends an HTTP response with the requested content or returns a "404 Not Found" error if the file doesn't exist.
- Listens on a specified port, allowing the server to be tested by requesting an HTML file through a browser.



■ Ques_2

This question asked us to implement a multi-threaded web server capable of handling multiple HTTP requests simultaneously by creating separate threads for each client request and connection.

■ Output

When multiple requests come in simultaneously, the server is able to process each one individually. It displays the HTML webpage in response to browser requests and presents the HTML code for requests made by the client to the server.

MULTI-THREADED SERVER



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MULTI-THREADED SERVER



On different browsers (**Chrome and Microsoft edge**) the server is running simultaneously.

The screenshot illustrates a multi-threaded server application. In the foreground, two browser windows are open, both displaying the text "Hello,World !!". The left window is a Microsoft Edge browser with the URL "localhost:6786/HelloWor...". The right window is a Google Chrome browser with the URL "localhost:6786/HelloWorld.html". Both windows show standard browser controls like back, forward, and search. Below the browsers, a terminal window shows the server's log output:

```
ketangarg@KETAN-PC:/mnt/c/Users/KETAN GARG/Desktop/CN_A2/CN_A2$ python3 server2.py
Ready to serve...
('127.0.0.1', 54752) has connected with the server
('127.0.0.1', 54760) has connected with the server
file to be opened: HelloWorld.html
('127.0.0.1', 54770) has connected with the server
('127.0.0.1', 54778) has connected with the server
file to be opened: HelloWorld.html
('127.0.0.1', 54794) has connected with the server
('127.0.0.1', 54802) has connected with the server
```

■ Ques - 3

Ques. asks to build a TCP-based HTTP client that sends a GET request to a server and displays the response. It should take command line arguments for the server's hostname, port, and file path. Use the command format.

client.py server_host server_port filename

■ Terminal Output

The output in the terminal should indicate a successful connection and display the HTML code contained in HelloWorld.html.

HTTP CLIENT



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HTTP CLIENT FOR THE SERVER



Output on the terminal after the command “**python client.py localhost 5500 HelloWorld.html**” is run on the terminal by running server implemented in part 1.

```
ketangarg@KETAN-PC:/mnt/c/Users/KETAN GARG/Desktop/CN_A2$ python3 client.py localhost 5500 HelloWorld.html
HTTP/1.0 200 OK

<!DOCTYPE html>

<html lang="en">
<head>
    <meta charset="UTF-8">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
</head>
<body>
    <h1>Hello,World !!</h1>
</body>
</html>
ketangarg@KETAN-PC:/mnt/c/Users/KETAN GARG/Desktop/CN_A2$
```

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HTTP CLIENT FOR THE SERVER



Output on the terminal after the command “**python client.py localhost 6786 HelloWorld.html**” is run on the terminal by running the server implemented in Part 2.

The screenshot shows a terminal window with several tabs at the top: PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL (which is selected and highlighted in blue), and PORTS. The terminal output is as follows:

```
ketangarg@KETAN-PC:/mnt/c/Users/KETAN GARG/Desktop/CN_A2/CN_A2$ python3 server2.py
Ready to serve...
('127.0.0.1', 47668) has connected with the server
file to be opened: HelloWorld.html
('127.0.0.1', 56362) has connected with the server
file to be opened: HelloWorld.html
('127.0.0.1', 47338) has connected with the server
file to be opened: HelloWorld.html
[]
```

PS C:\Users\KETAN GARG\Desktop\CN_A2\CN_A2> bash

```
ketangarg@KETAN-PC:/mnt/c/Users/KETAN GARG/Desktop/CN_A2/CN_A2$ python3 client.py localhost 6786 HelloWorld.html
HTTP/1.0 200 OK

<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
</head>
<body>
    <h1>Hello,World !!</h1>
</body>
</html>
ketangarg@KETAN-PC:/mnt/c/Users/KETAN GARG/Desktop/CN_A2/CN_A2$
```



**THANK YOU FOR
YOUR ATTENTION**