LAB 6: The Web, HTTP and DNS

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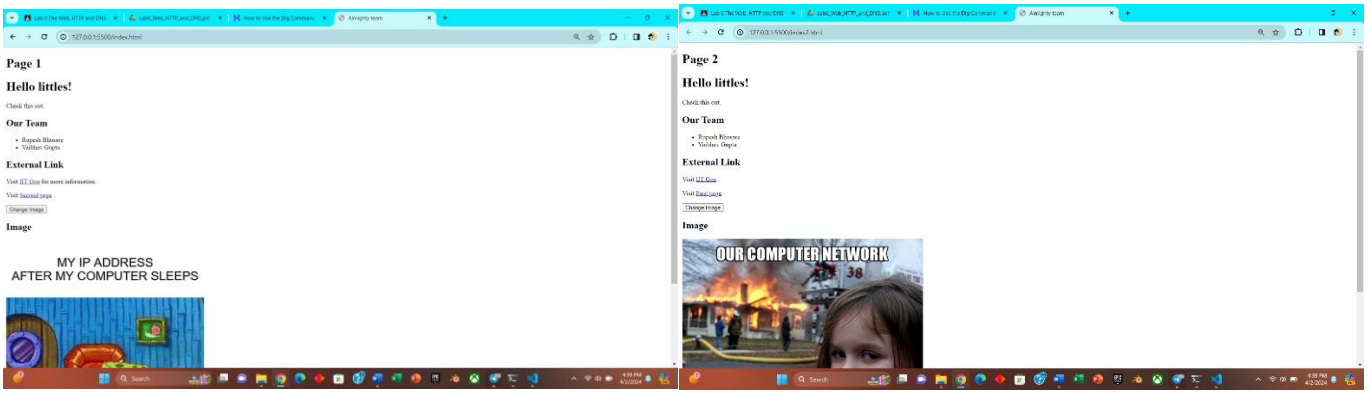
PART 1: Creating Webpages using HTML and Javascript

Q1. & Q2.:



PART 2: Creating a Web-server and observing HTTP traffic

Q3.

Changes that are made:

- Changed the self.path according to my files name.
- Changed the localhost to my device ip address.

```python
def do_GET(self):
    # check if the request contained a cookie called "FOO123"
    self.cookieHeader = self.headers.get('Cookie')
    if self.cookieHeader and "FOO" in self.cookieHeader:
        # add some extra text to the html file
        if "index" in self.path:
            self.path = '/index2.html'
        elif "index2" in self.path:
            self.path = '/index.html'
    SimpleHTTPRequestHandler.do_GET(self)
```

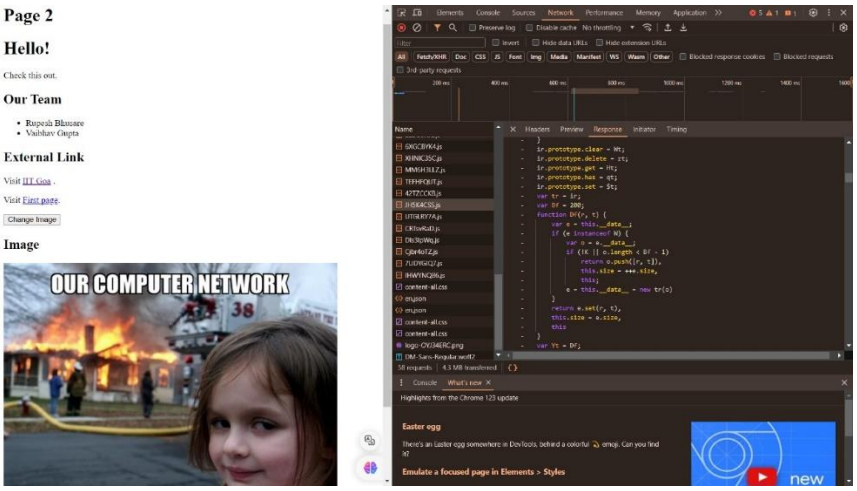
```python
server = ThreadingSimpleServer(('10.196.35.18', PORT), MyHTTPRequestHandler)
try:
```

We checked, and our website can be accessed from another machine. We started the webserver and searched “http://10.196.35.18:9096” on browser of different machine. We get result as shown in following Images on host machine (whenever some action is done on other machine).

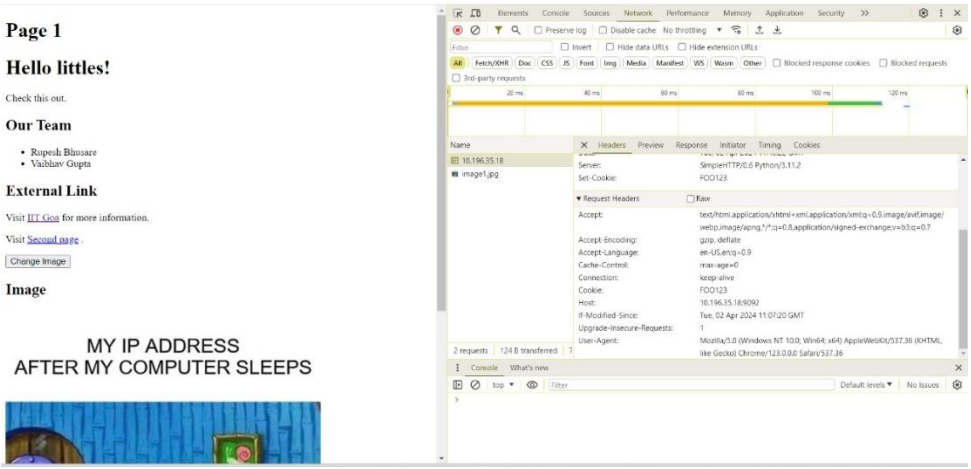
```
PROBLEMS 8   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS                Code

PS D:\Academic\CS212\LAB6> python -u "d:\Academic\CS212\LAB6\webserver.py"
127.0.0.1 - - [02/Apr/2024 13:23:07] "GET / HTTP/1.1" 304 -
127.0.0.1 - - [02/Apr/2024 13:23:07] "GET /image1.jpg HTTP/1.1" 304 -
127.0.0.1 - - [02/Apr/2024 13:23:10] "GET /image2.jpg HTTP/1.1" 304 -
127.0.0.1 - - [02/Apr/2024 13:23:13] "GET /index2.html HTTP/1.1" 304 -
127.0.0.1 - - [02/Apr/2024 13:23:13] "GET /image3.png HTTP/1.1" 304 -
127.0.0.1 - - [02/Apr/2024 13:23:15] "GET /image4.jpeg HTTP/1.1" 304 -
127.0.0.1 - - [02/Apr/2024 13:23:18] "GET /index.html HTTP/1.1" 304 -
```

Q4.

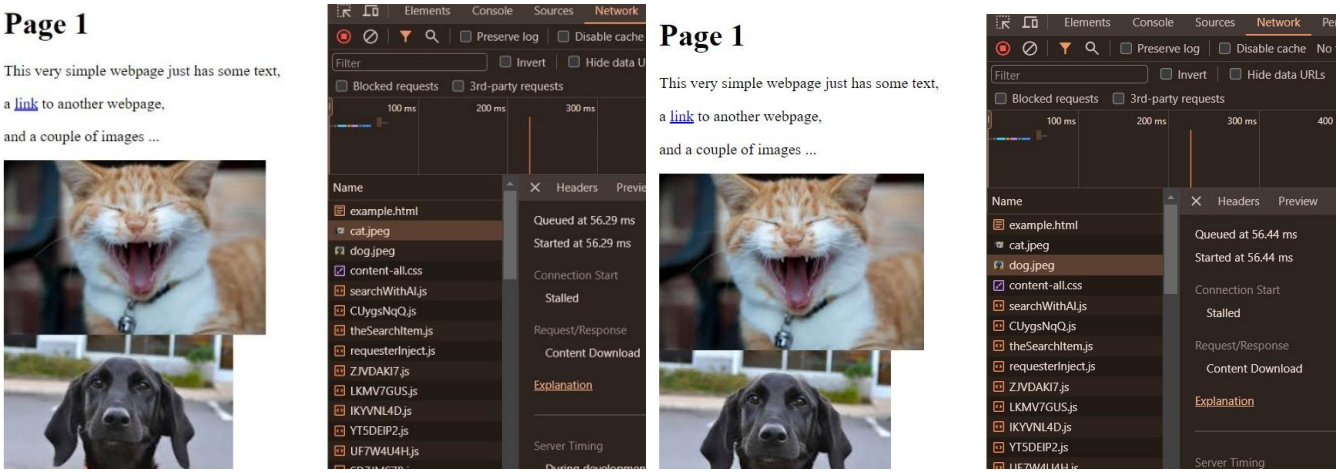
- Yes, we can able to see the “raw” HTTP requests and responses.



- Here persistent connection was used by the browser for viewing webpages. We came to this conclusion by looking at “connection: keep alive” shown in the request headers, image is attached below.



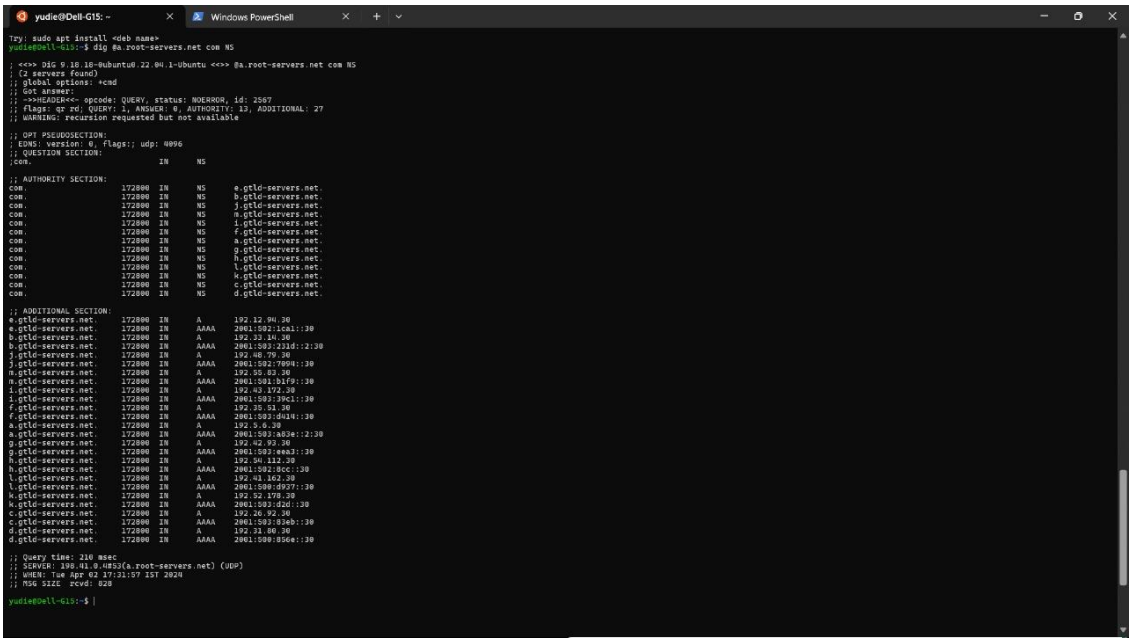
- We run https://www.iitgoa.ac.in/~nehak/example.html this webpage, for two images by looking at the time we come to conclusion that browser downloads the webpages components in sequential manner. Images is attached below.



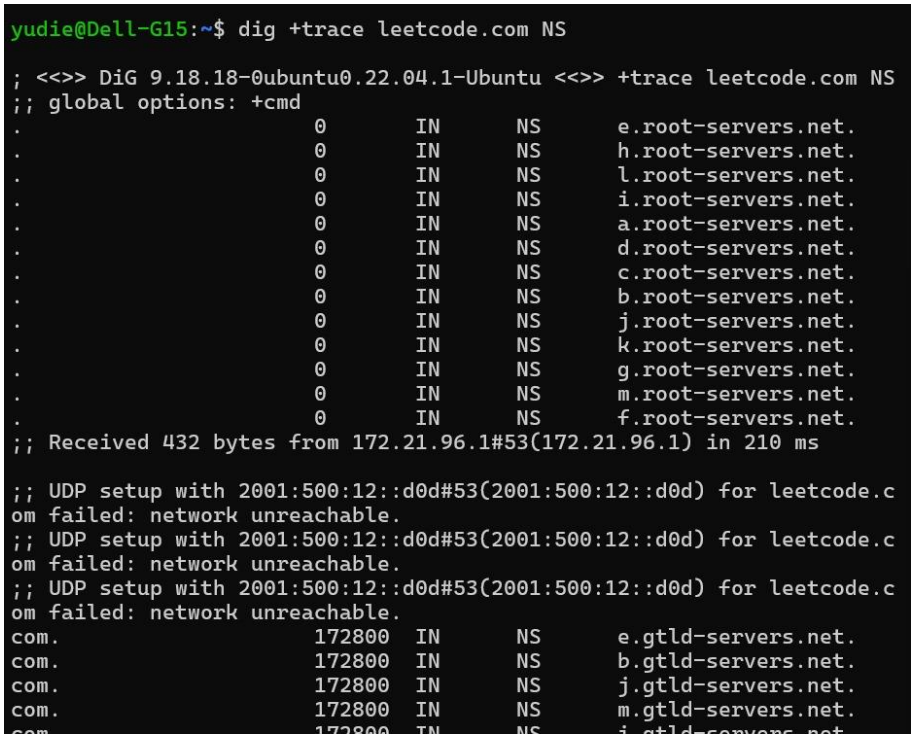
PART 3: DNS

Q5.

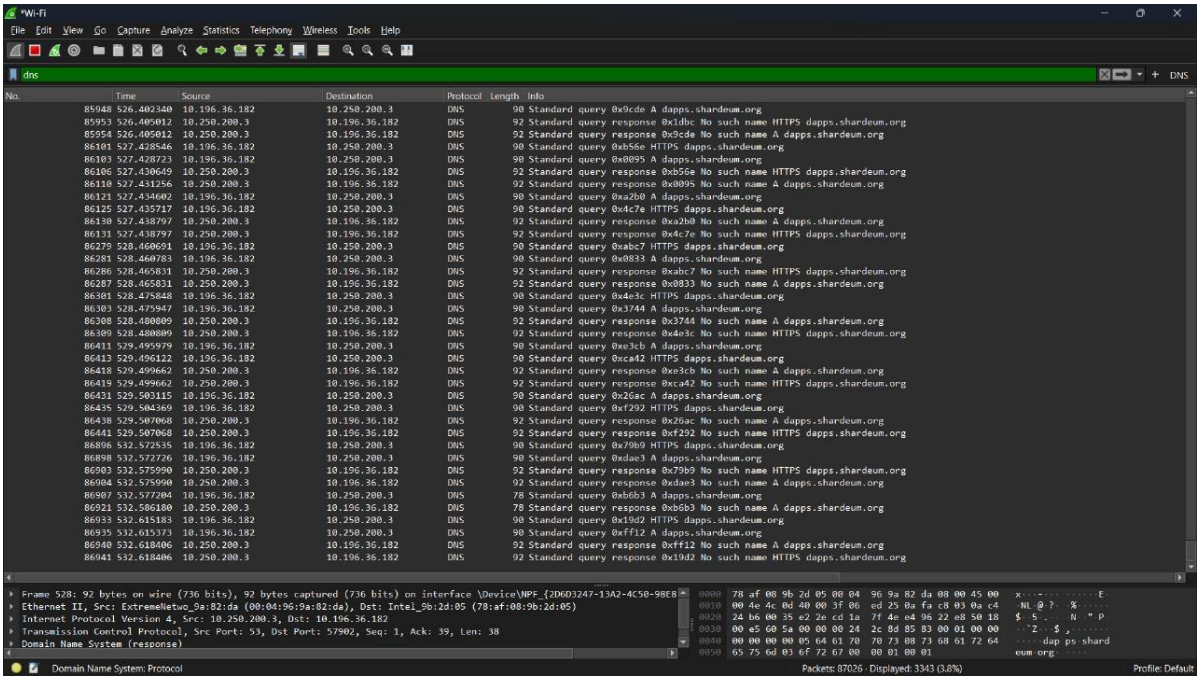
- the appropriate command options (for dig) to send a DNS query to the root server “a.root-servers.net”, requesting for the address of all name-servers (NS) for the “com” top-level domains.



- This output traces the DNS resolution for "leetcode.com" from the root servers to the authoritative name servers (rob.ns.cloudflare.com and melinda.ns.cloudflare.com). It confirms the NS records and encounters some unsuccessful attempts with IPv6 addresses before successfully resolving using IPv4.



- Open Wireshark and observe the DNS traffic on your computer using the filter “dns”



- Find address of your local DNS server

```
Default Gateway . . . . . . . . . : 10.196.63.250
```

- Find out addresses of any 3 root-level DNS servers:
  d.root-servers.net (IPv4): 199.7.91.13
  e.root-servers.net (IPv4): 192.203.230.10
  f.root-servers.net (IPv4): 192.5.5.241