

Evaluation report:

1st question:

(in capture.pcapng file i first accessed minvera website and then nitc website)

a) It took (9.04s-4.35s) nearly 5 seconds between first GET HTTP request and the corresponding response packet for browsing nitc.ac.in. Time stamp is present in 2nd column itself for every packet.

here i talked only about first GET http and first OK packets only. there can be many more get and ok packet pairs after this pair.

64	4.353375	192.168.0.168	14.139.185.121	HTTP	519 GET / HTTP/1.1
190	9.043407	14.139.185.121	192.168.0.168	HTTP	1350 HTTP/1.1 200 OK (text/html)

1st HTTP request packet:

```
> Frame 64: 519 bytes on wire (4152 bits), 519 bytes captured (4152 bits) on interface \Device\NPF_{119CC4C4-5D12-40B9-BEF8-019E6C28127F}, id 0
> Ethernet II, Src: IntelCor_0c:48:b0 (d8:f2:ca:0c:48:b0), Dst: D-LinkIn_dd:32:c2 (f0:b4:d2:dd:32:c2)
> Internet Protocol Version 4, Src: 192.168.0.168, Dst: 14.139.185.121
> Transmission Control Protocol, Src Port: 62664, Dst Port: 80, Seq: 2266438347, Ack: 3454801064, Len: 465
< Hypertext Transfer Protocol
  < GET / HTTP/1.1\r\n
    Host: www.nitc.ac.in\r\n
    Connection: keep-alive\r\n
    Upgrade-Insecure-Requests: 1\r\n
    User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/89.0.4389.90 Safari/537.36\r\n
    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\r\n
    Accept-Encoding: gzip, deflate\r\n
    Accept-Language: en-IN,en-GB;q=0.9,en-US;q=0.8,en;q=0.7,te;q=0.6\r\n
    \r\n
    [Full request URI: http://www.nitc.ac.in/]
```

corresponding HTTP response packet:

```
> Frame 190: 1350 bytes on wire (10800 bits), 1350 bytes captured (10800 bits) on interface \Device\NPF_{119CC4C4-5D12-40B9-BEF8-019E6C28127F}, id 0
> Ethernet II, Src: D-LinkIn_dd:32:c2 (f0:b4:d2:dd:32:c2), Dst: IntelCor_0c:48:b0 (d8:f2:ca:0c:48:b0)
> Internet Protocol Version 4, Src: 14.139.185.121, Dst: 192.168.0.168
> Transmission Control Protocol, Src Port: 80, Dst Port: 62664, Seq: 3454828351, Ack: 2266438812, Len: 1296
> [29 Reassembled TCP Segments (28583 bytes): #144(1367), #145(1367), #146(146), #148(1367), #150(1367), #151(146), #152(1367), #153(1367), #154(146), #156(1367), #
< Hypertext Transfer Protocol
  < HTTP/1.1 200 OK\r\n
    Date: Mon, 22 Mar 2021 08:09:21 GMT\r\n
    Server: Apache\r\n
    X-Powered-By: PHP/5.2.10\r\n
    Set-Cookie: CAKEPHP=utgfo79h34np9dn2av6kh2fcv5; expires=Mon, 29-Mar-2021 08:09:21 GMT; path=/index.php/\r\n
    P3P: CP="NOI ADM DEV PSAi COM NAV OUR OTRo STP IND DEM"\r\n
    Connection: close\r\n
    Content-Type: text/html; charset=UTF-8\r\n
```

b) I searched for any HTTP packets in the stream. Minerva.com used Transport Layer Security (TLSv1.2) protocol in Application Layer so there are no specific GET and OK responses. No HTTP packets in entire stream of packets capture.

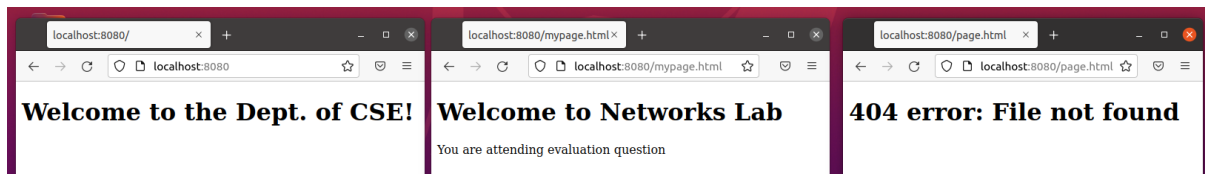
2nd question:

Creating those 3 response strings in VSWS_eval program i dont know,just took them from subbu anna program.Refer tcp_VSWS_eval.c program.

Whole point of this question is using the first line of request msgs received from browser and accordingly sending html pages which are already predefined as response strings.This is just extension of task2.nothing to do with apache server here also.

Run of same program 3 times but browser asking 3 different requests each.

Browser requests and responses in 3 runs of program(or same run 3 requests also possible bcz server can accept clients one after other bcz of while loop)



1st run: "localhost:8080"

```
sudharshan@sudharshanb190512cs:~/Desktop$ gcc vswse.c
sudharshan@sudharshanb190512cs:~/Desktop$ ./a.out
New Client connected

Http request message received from browser:
[GET / HTTP/1.1
Host: localhost:8080
User-Agent: Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:100.0) Gecko/20100101 Firefox/100.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate, br
Connection: keep-alive
Upgrade-Insecure-Requests: 1
Sec-Fetch-Dest: document
Sec-Fetch-Mode: navigate
Sec-Fetch-Site: none
Sec-Fetch-User: ?1
]
Http response(wel to cse) sent
Connection closed
```

2nd run: "localhost:8080/mypage.html"

```
sudharshan@sudharshanb190512cs:~/Desktop$ gcc vswse.c
sudharshan@sudharshanb190512cs:~/Desktop$ ./a.out
New Client connected

Http request message received from browser:
[GET /mypage.html HTTP/1.1
Host: localhost:8080
User-Agent: Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:100.0) Gecko/20100101 Firefox/100.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate, br
Connection: keep-alive
Upgrade-Insecure-Requests: 1
Sec-Fetch-Dest: document
Sec-Fetch-Mode: navigate
Sec-Fetch-Site: none
Sec-Fetch-User: ?1
]
Http mypage.html sent
Connection closed
```

3rd run: "localhost:8080/page.html"

Enter localhost:8080/(any other name except mypage.html), This will show file not found message (a html file).

```
New Client connected
Http request message received from browser:
[GET /page.html HTTP/1.1
Host: localhost:8080
User-Agent: Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:100.0) Gecko/20100101 Firefox/100.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate, br
Connection: keep-alive
Upgrade-Insecure-Requests: 1
Sec-Fetch-Dest: document
Sec-Fetch-Mode: navigate
Sec-Fetch-Site: none
Sec-Fetch-User: ?1
]
File not found msg sent
Connection closed
```