

# CN Lab Midsem

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NOTE: While testing the code, if after running the server once, and you get “Cannot bind -1” error while running again, then wait for some time.

If you run **netstat --tcp --numeric | grep 4444** you will see that the socket on the port 4444 is in TIME\_WAIT state. Meaning that connection is closed, so it will be terminated in the timeout specified by the OS. After the timeout expires, the program executes without the error.

# Q1

```
samaritan@pop-os:~/Desktop/3-2/cn/labs/midsem-lab$ ./server
> Enter port number : 4343
> Server bound to IP : 127.0.0.1 and PORT : 4343
> New connection

> Client's campus id: 31120190021

> The equation corresponding to  $y = 128$  is 749-584
> Enter name in lowercase : Arun
> Enter name in lowercase : arun

> Closing connection...

> ===== Waiting for a new client... =====

> New connection

> Client's campus id: 31120190021

> The equation corresponding to  $y = 128$  is 749-584
> Enter name in lowercase : Ganti
> Enter name in lowercase : ganti

> Closing connection...

> ===== Waiting for a new client... =====
```

```
samaritan@pop-os:~/Desktop/3-2/cn/labs/midsem-lab$ ./client
> Enter port number : 4343
> Enter server address : 127.0.0.1
> Connected to server IP = 127.0.0.1 and PORT = 4343

> Enter campus id : 31120190021

> Server response: 165
> Server response: arun

> arun 31120190021 165

> Closing client...
samaritan@pop-os:~/Desktop/3-2/cn/labs/midsem-lab$ ./client
> Enter port number : 4343
> Enter server address : 127.0.0.1
> Connected to server IP = 127.0.0.1 and PORT = 4343

> Enter campus id : 31120190021

> Server response: 165
> Server response: ganti

> ganti 31120190021 165

> Closing client...
samaritan@pop-os:~/Desktop/3-2/cn/labs/midsem-lab$
```

## Q2 1.

http						
No.	Time	Source	Destination	Protocol	Length	Info
809	53.522258727	10.0.2.15	103.144.92.50	HTTP	481	GET / HTTP/1.1
1170	88.268515623	10.0.2.15	3.33.152.147	HTTP	405	GET / HTTP/1.1
35	42.817550973	10.0.2.15	34.107.221.82	HTTP	355	GET /canonical.html HTTP/1.1
2323	102.833106848	10.0.2.15	34.107.221.82	HTTP	355	GET /canonical.html HTTP/1.1
896	69.264887360	10.0.2.15	103.144.92.50	HTTP	442	GET /favicon.ico HTTP/1.1
1227	89.268583504	10.0.2.15	3.33.152.147	HTTP	364	GET /favicon.ico HTTP/1.1
58	42.876469143	10.0.2.15	34.107.221.82	HTTP	357	GET /success.txt?ipv4 HTTP/1.1
2426	103.020537167	10.0.2.15	34.107.221.82	HTTP	357	GET /success.txt?ipv4 HTTP/1.1
37	42.859895616	34.107.221.82	10.0.2.15	HTTP	437	HTTP/1.1 200 OK (text/html)
1175	88.804525910	3.33.152.147	10.0.2.15	HTTP	729	HTTP/1.1 200 OK (text/html)
2341	102.861507229	34.107.221.82	10.0.2.15	HTTP	437	HTTP/1.1 200 OK (text/html)
64	42.915221152	34.107.221.82	10.0.2.15	HTTP	355	HTTP/1.1 200 OK (text/plain)
2448	103.056081525	34.107.221.82	10.0.2.15	HTTP	355	HTTP/1.1 200 OK (text/plain)
859	68.816224280	103.144.92.50	10.0.2.15	HTTP	13128	HTTP/1.1 502 Connection refused (text/html)

IP address of client = 10.0.2.15

Number of http requests SENT by the client = 8

## Q2 2.

http						
No.	Time	Source	Destination	Protocol	Length	Info
809	53.522258727	10.0.2.15	103.144.92.50	HTTP	481	GET / HTTP/1.1
1170	88.268515623	10.0.2.15	3.33.152.147	HTTP	405	GET / HTTP/1.1
35	42.817550973	10.0.2.15	34.107.221.82	HTTP	355	GET /canonical.html HTTP/1.1
2323	102.833106848	10.0.2.15	34.107.221.82	HTTP	355	GET /canonical.html HTTP/1.1
896	69.264887360	10.0.2.15	103.144.92.50	HTTP	442	GET /favicon.ico HTTP/1.1
1227	89.268583504	10.0.2.15	3.33.152.147	HTTP	364	GET /favicon.ico HTTP/1.1
58	42.876469143	10.0.2.15	34.107.221.82	HTTP	357	GET /success.txt?ipv4 HTTP/1.1
2426	103.020537167	10.0.2.15	34.107.221.82	HTTP	357	GET /success.txt?ipv4 HTTP/1.1
37	42.859895616	34.107.221.82	10.0.2.15	HTTP	437	HTTP/1.1 200 OK (text/html)
1175	88.804525910	3.33.152.147	10.0.2.15	HTTP	729	HTTP/1.1 200 OK (text/html)
2341	102.861507229	34.107.221.82	10.0.2.15	HTTP	437	HTTP/1.1 200 OK (text/html)
64	42.915221152	34.107.221.82	10.0.2.15	HTTP	355	HTTP/1.1 200 OK (text/plain)
2448	103.056081525	34.107.221.82	10.0.2.15	HTTP	355	HTTP/1.1 200 OK (text/plain)
859	68.816224280	103.144.92.50	10.0.2.15	HTTP	13128	HTTP/1.1 502 Connection refused (text/html)

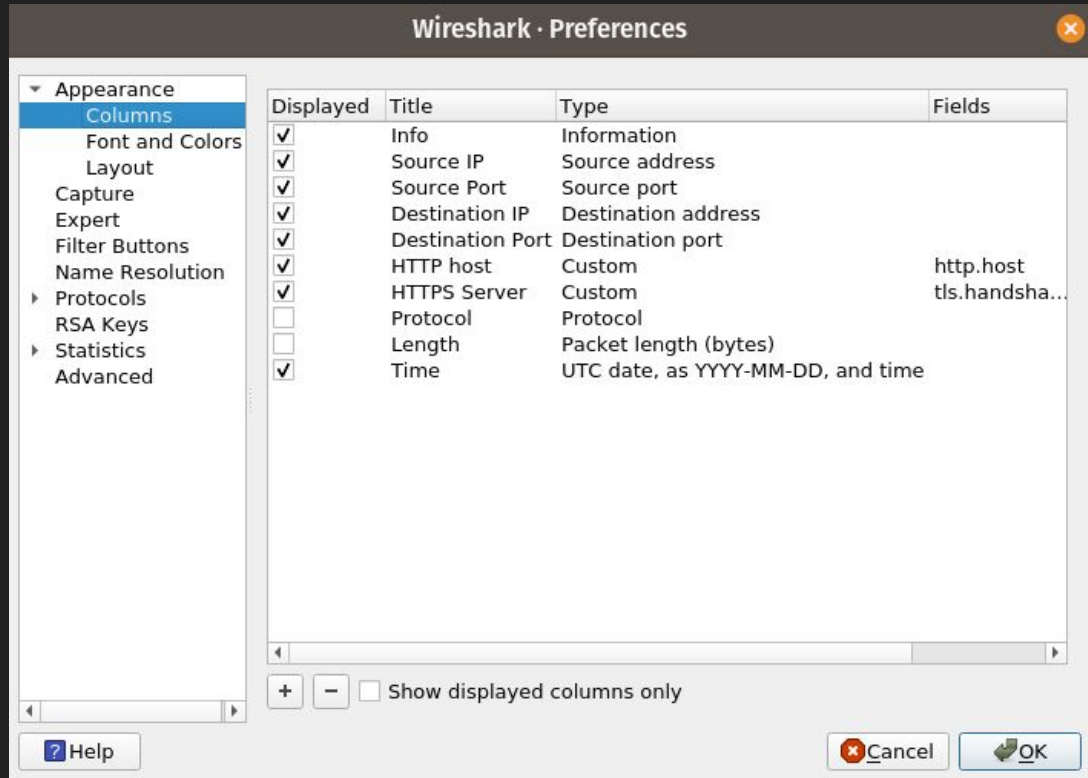
Number of http requests RECEIVED by the client = 5 OK + 1 Refused = 6

## Q2 3.

- ▶ Frame 1175: 729 bytes on wire (5832 bits), 729 bytes captured (5832 bits) on interface any, id 0
- ▶ Linux cooked capture
- ▶ Internet Protocol Version 4, Src: 3.33.152.147, Dst: 10.0.2.15
- ▼ Transmission Control Protocol, Src Port: 80, Dst Port: 46676, Seq: 1, Ack: 350, Len: 673
  - Source Port: 80
  - Destination Port: 46676
  - [Stream index: 24]
  - [TCP Segment Len: 673]
  - Sequence number: 1 (relative sequence number)
  - Sequence number (raw): 2560968706
  - [Next sequence number: 674 (relative sequence number)]
  - Acknowledgment number: 350 (relative ack number)
  - Acknowledgment number (raw): 3592573404
  - 0101 .... = Header Length: 20 bytes (5)
  - ▶ Flags: 0x018 (PSH, ACK)
  - Window size value: 65535
  - [Calculated window size: 65535]
  - [Window size scaling factor: -2 (no window scaling used)]
  - Checksum: 0xfb64 [unverified]
  - [Checksum Status: Unverified]
  - Urgent pointer: 0
  - ▶ [SEQ/ACK analysis]

Size of frame = 729 bytes

## Q2 4.



## Q2 5.

→	HTTP	80	GET / HTTP/1.1	46676	10.0.2.15	3.33.152.147	www.sougata-...	2022-03-05 11:12:00.855485284
←	HTTP	46676	HTTP/1.1 200 OK (text/html)	80	3.33.152.147	10.0.2.15		2022-03-05 11:12:01.391495571

HTTP 80 GET / HTTP/1.1  
46676 10.0.2.15  
3.33.152.147  
www.sougata-sen.com  
2022-03-05 11:12:00.855485284

HTTP 46676 HTTP/1.1 200  
OK (text/html) 80 3.33.152.147  
10.0.2.15  
2022-03-05 11:12:01.391495571



## Q2 6.

```
▶ Frame 1175: 729 bytes on wire (5832 bits), 729 bytes captured (5832 bits) on interface any, id 0
▶ Linux cooked capture
▶ Internet Protocol Version 4, Src: 3.33.152.147, Dst: 10.0.2.15
▼ Transmission Control Protocol, Src Port: 80, Dst Port: 46676, Seq: 1, Ack: 350, Len: 673
    Source Port: 80
    Destination Port: 46676
    [Stream index: 24]
    [TCP Segment Len: 673]
    Sequence number: 1      (relative sequence number)
    Sequence number (raw): 2560968706
    [Next sequence number: 674      (relative sequence number)]
    Acknowledgment number: 350      (relative ack number)
    Acknowledgment number (raw): 3592573404
    0101 .... = Header Length: 20 bytes (5)
    ▶ Flags: 0x018 (PSH, ACK)
    Window size value: 65535
    [Calculated window size: 65535]
    [Window size scaling factor: -2 (no window scaling used)]
    Checksum: 0xfb64 [unverified]
    [Checksum Status: Unverified]
    Urgent pointer: 0
    ▶ [SEQ/ACK analysis]
    ▶ [Timestamps]
    TCP payload (673 bytes)
```

Hex value of Destination Port = 46676