

Proof of starting:-

```
Lab midsem — server 4444 — 80x24
(base) kunalkariwala@kunals-MacBook-Air Lab midsem % ./server 4444
Server: Enter your campus ID
█

Lab midsem — client 4444 127.0.0.1 — 85x24
(base) kunalkariwala@kunals-MacBook-Air Lab midsem % ./client 4444 127.0.0.1
Client : server sent this : Enter your campus ID
Client : Enter your campus ID
█
```

Proof that entered campus id gives the correct value

```
Lab midsem — server 4444 — 80x24
(base) kunalkariwala@kunals-MacBook-Air Lab midsem % ./server 4444
Server: Enter your campus ID
Server: client sent this : 31120190134 is the ID
Server: The campus ID entered in int form is :- 31120190134
The value of y is :- 105
The value of calc is :- -210
Server : Enter your name:
█

Lab midsem — client 4444 127.0.0.1 — 85x24
(base) kunalkariwala@kunals-MacBook-Air Lab midsem % ./client 4444 127.0.0.1
Client : server sent this : Enter your campus ID
Client : Enter your campus ID
31120190134
█
```

Proof that after this, server does not accept names if even one character is uppercase

```
Lab midsem — server 4444 — 80x24
(base) kunalkariwala@kunals-MacBook-Air Lab midsem % ./server 4444
Server: Enter your campus ID
Server: client sent this : 31120190134 is the ID
Server: The campus ID entered in int form is :- 31120190134
The value of y is :- 105
The value of calc is :- -210
Server : Enter your name:
Kunal
Server : The name entered is : Kunal
Server : ERROR The name entered is not all lowercaps : Kunal
Server : Enter your name:
kUnal
Server : The name entered is : kUnal
Server : ERROR The name entered is not all lowercaps : kUnal
Server : Enter your name:
█

Lab midsem — client 4444 127.0.0.1 — 85x24
(base) kunalkariwala@kunals-MacBook-Air Lab midsem % ./client 4444 127.0.0.1
Client : server sent this : Enter your campus ID
Client : Enter your campus ID
31120190134
█
```

Proof that the client prints the calculated value, the server prints the value of y, finally the client prints the value of everything

```
(base) kunalkariwala@kunals-MacBook-Air Lab midsem % ./server 4445
Server: Enter your campus ID
Server: client sent this : 31120190134 is the ID
Server: The campus ID entered in int form is :- 31120190134
The value of y is :- 105
The value of calc is :- -210
String value of calc is : -210
Server : Enter your name:
kunal
Server : The name entered is : kunal
String value of y is : 105

(base) kunalkariwala@kunals-MacBook-Air Lab midsem % ./client 4445 127.0.0.1
Client : server sent this : Enter your campus ID
Client : Enter your campus ID
31120190134
Client : the value of calcval is: -210
Client : the value of yval is: 105
Client : Name : kunal, CAMPUS ID : 31120190134, VALUE OF Y : 105
(base) kunalkariwala@kunals-MacBook-Air Lab midsem % █
```

Question 2:

IP Address = 10.0.2.15

Number of requests = 17 (Displayed in bottom right corner of status bar)

The screenshot shows a Wireshark packet capture of HTTP requests. The packet list pane displays 17 requests, all originating from 10.0.2.15. The packet details pane shows the structure of a selected HTTP request, including the Hypertext Transfer Protocol section. The status bar at the bottom indicates that 2375 packets were captured, with 17 requests displayed (0.7% of the total).

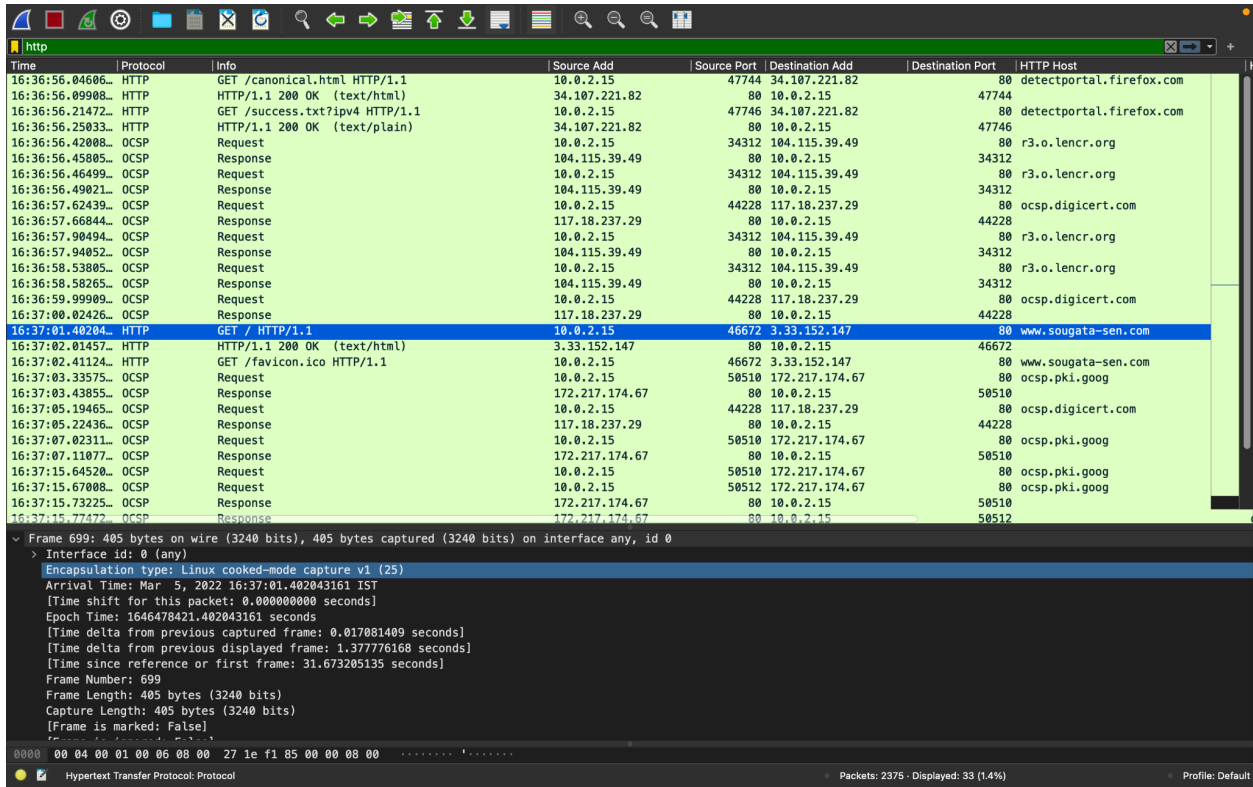
Time	Protocol	Source Add	Source Port	Destination Add	Destination Port	HTTP Host	HTTPS server
16:36:56.04686...	HTTP	10.0.2.15	47744	34.107.221.82	80	detectp...	
16:36:56.21472...	HTTP	10.0.2.15	47746	34.107.221.82	80	detectp...	
16:36:56.42008...	OCSP	10.0.2.15	34312	104.115.39.49	80	r3.o.le...	
16:36:56.46499...	OCSP	10.0.2.15	34312	104.115.39.49	80	r3.o.le...	
16:36:57.62439...	OCSP	10.0.2.15	44228	117.18.237.29	80	ocsp.di...	
16:36:57.90494...	OCSP	10.0.2.15	34312	104.115.39.49	80	r3.o.le...	
16:36:58.53805...	OCSP	10.0.2.15	34312	104.115.39.49	80	r3.o.le...	
16:36:59.99909...	OCSP	10.0.2.15	44228	117.18.237.29	80	ocsp.di...	
16:37:01.40204...	HTTP	10.0.2.15	46672	3.33.152.147	80	www.sou...	
16:37:02.41124...	HTTP	10.0.2.15	46672	3.33.152.147	80	www.sou...	
16:37:03.33575...	OCSP	10.0.2.15	50510	172.217.174.67	80	ocsp.pk...	
16:37:05.19465...	OCSP	10.0.2.15	44228	117.18.237.29	80	ocsp.di...	
16:37:07.02311...	OCSP	10.0.2.15	50510	172.217.174.67	80	ocsp.pk...	
16:37:15.64520...	OCSP	10.0.2.15	50510	172.217.174.67	80	ocsp.pk...	
16:37:15.67008...	OCSP	10.0.2.15	50512	172.217.174.67	80	ocsp.pk...	
16:37:32.95359...	OCSP	10.0.2.15	50514	172.217.174.67	80	ocsp.pk...	
16:37:34.77925...	HTTP	10.0.2.15	40684	98.137.11.164	80	yahoo.c...	

2) Number of responses = 16

The screenshot shows a Wireshark packet capture of HTTP responses. The packet list pane displays 16 responses, all destined for 10.0.2.15. The packet details pane shows the structure of a selected HTTP response, including the Hypertext Transfer Protocol section. The status bar at the bottom indicates that 2375 packets were captured, with 16 responses displayed (0.7% of the total).

Time	Protocol	Source Add	Source Port	Destination Add	Destination Port	HTTP Host	HTTPS server
16:36:56.89988...	HTTP	34.107.221.82	80	10.0.2.15	47744	nginx	
16:36:56.25033...	HTTP	34.107.221.82	80	10.0.2.15	47746	nginx	
16:36:56.45085...	OCSP	104.115.39.49	80	10.0.2.15	34312	nginx	
16:36:56.49021...	OCSP	104.115.39.49	80	10.0.2.15	34312	nginx	
16:36:57.66844...	OCSP	117.18.237.29	80	10.0.2.15	44228	ECS (nag/99A7)	
16:36:57.94052...	OCSP	104.115.39.49	80	10.0.2.15	34312	nginx	
16:36:58.58265...	OCSP	104.115.39.49	80	10.0.2.15	34312	nginx	
16:37:00.02426...	OCSP	117.18.237.29	80	10.0.2.15	44228	ECS (nag/99A7)	
16:37:02.01457...	HTTP	3.33.152.147	80	10.0.2.15	46672	ip-10-123-123-236.ec2.internal	
16:37:03.43855...	OCSP	172.217.174.67	80	10.0.2.15	50510	ocsp_responder	
16:37:05.22436...	OCSP	117.18.237.29	80	10.0.2.15	44228	ECS (nag/99A7)	
16:37:07.11077...	OCSP	172.217.174.67	80	10.0.2.15	50510	ocsp_responder	
16:37:15.73225...	OCSP	172.217.174.67	80	10.0.2.15	50510	ocsp_responder	
16:37:15.77472...	OCSP	172.217.174.67	80	10.0.2.15	50512	ocsp_responder	
16:37:33.06029...	OCSP	172.217.174.67	80	10.0.2.15	50514	ocsp_responder	
16:37:35.34880...	HTTP	98.137.11.164	80	10.0.2.15	40684	ATS	

3) 405 Bytes



Time	Protocol	Info	Source Add	Source Port	Destination Add	Destination Port	HTTP Host
16:36:56.04686...	HTTP	GET /canonical.html HTTP/1.1	10.0.2.15	47744	34.107.221.82	80	detectportal.firefox.com
16:36:56.09988...	HTTP	HTTP/1.1 200 OK (text/html)	34.107.221.82	80	10.0.2.15	47744	
16:36:56.21472...	HTTP	GET /success.txt?ip=4 HTTP/1.1	10.0.2.15	47746	34.107.221.82	80	detectportal.firefox.com
16:36:56.25033...	HTTP	HTTP/1.1 200 OK (text/plain)	34.107.221.82	80	10.0.2.15	47746	
16:36:56.42088...	OCSP	Request	10.0.2.15	34312	104.115.39.49	80	r3.o.lencr.org
16:36:56.45885...	OCSP	Response	104.115.39.49	80	10.0.2.15	34312	
16:36:56.46499...	OCSP	Request	10.0.2.15	34312	104.115.39.49	80	r3.o.lencr.org
16:36:56.49021...	OCSP	Response	104.115.39.49	80	10.0.2.15	34312	
16:36:57.62439...	OCSP	Request	10.0.2.15	44228	117.18.237.29	80	ocsp.digicert.com
16:36:57.66844...	OCSP	Response	117.18.237.29	80	10.0.2.15	44228	
16:36:57.90494...	OCSP	Request	10.0.2.15	34312	104.115.39.49	80	r3.o.lencr.org
16:36:57.94052...	OCSP	Response	104.115.39.49	80	10.0.2.15	34312	
16:36:58.53885...	OCSP	Request	10.0.2.15	34312	104.115.39.49	80	r3.o.lencr.org
16:36:58.58265...	OCSP	Response	104.115.39.49	80	10.0.2.15	34312	
16:36:59.99989...	OCSP	Request	10.0.2.15	44228	117.18.237.29	80	ocsp.digicert.com
16:37:00.02426...	OCSP	Response	117.18.237.29	80	10.0.2.15	44228	
16:37:01.40204...	HTTP	GET / HTTP/1.1	10.0.2.15	46672	3.33.152.147	80	www.sougata-sen.com
16:37:02.01457...	HTTP	HTTP/1.1 200 OK (text/html)	3.33.152.147	80	10.0.2.15	46672	
16:37:02.41124...	HTTP	GET /favicon.ico HTTP/1.1	10.0.2.15	46672	3.33.152.147	80	www.sougata-sen.com
16:37:03.33575...	OCSP	Request	10.0.2.15	50510	172.217.174.67	80	ocsp.pki.goog
16:37:03.43855...	OCSP	Response	172.217.174.67	80	10.0.2.15	50510	
16:37:05.19465...	OCSP	Request	10.0.2.15	44228	117.18.237.29	80	ocsp.digicert.com
16:37:05.22436...	OCSP	Response	117.18.237.29	80	10.0.2.15	44228	
16:37:07.02311...	OCSP	Request	10.0.2.15	50510	172.217.174.67	80	ocsp.pki.goog
16:37:07.11077...	OCSP	Response	172.217.174.67	80	10.0.2.15	50510	
16:37:15.64520...	OCSP	Request	10.0.2.15	50510	172.217.174.67	80	ocsp.pki.goog
16:37:15.67088...	OCSP	Request	10.0.2.15	50512	172.217.174.67	80	ocsp.pki.goog
16:37:15.73225...	OCSP	Response	172.217.174.67	80	10.0.2.15	50510	
16:37:15.77477...	OCSP	Response	172.217.174.67	80	10.0.2.15	50512	

Frame 699: 405 bytes on wire (3240 bits), 405 bytes captured (3240 bits) on interface any, id 0

Interface id: 0 (any)

Encapsulation type: Linux cooked-mode capture v1 (25)

Arrival Time: Mar 5, 2022 16:37:01.402043161 IST

[Time shift for this packet: 0.000000000 seconds]

Epoch Time: 1646478421.402043161 seconds

[Time delta from previous captured frame: 0.017081409 seconds]

[Time delta from previous displayed frame: 1.377776168 seconds]

[Time since reference or first frame: 31.673205135 seconds]

Frame Number: 699

Frame Length: 405 bytes (3240 bits)

Capture Length: 405 bytes (3240 bits)

[Frame is marked: False]

0000 00 04 00 01 00 06 08 00 27 1e f1 85 00 00 08 00

Hypertext Transfer Protocol: Protocol

Packets: 2375 - Displayed: 33 (1.4%)

Profile: Default

4) Column header-> column preferences

New column-> renames as source port

Number->type(Source port unresolved)

Similar procedure to be followed for destination port

The image shows the Wireshark interface with a packet capture of an HTTP request. A 'Wireshark - Preferences' dialog box is open, showing the 'Columns' tab. The 'Columns' tab has several fields checked, including 'Destination Port'. The main packet list shows a packet with destination port 34312.

Time	Protocol	Info	Source Add	Source Port	Destination Add	Destination Port	HTTP Host
16:36:56.04686...	HTTP	GET /canonical.html HTTP/1.1	10.0.2.15	47744	34.107.221.82	80	detectportal.firefox.com
16:36:56.09988...	HTTP	HTTP/1.1 200 OK (text/html)	34.107.221.82	80	10.0.2.15	47744	detectportal.firefox.com
16:36:56.21472...	HTTP	GET /success.txt?ip4 HTTP/1.1	10.0.2.15	47746	34.107.221.82	80	detectportal.firefox.com
16:36:56.25033...	HTTP	HTTP/1.1 200 OK (text/plain)	34.107.221.82	80	10.0.2.15	47746	detectportal.firefox.com
16:36:56.42088...	OCSP	Request	10.0.2.15	34312	104.115.39.49	80	r3.o.lencr.org
16:36:56.45805...	OCSP	Response	104.115.39.49	80	10.0.2.15	34312	r3.o.lencr.org
16:36:56.46499...	OCSP	Request	10.0.2.15	44228	117.18.237.29	80	ocsp.digicert.com
16:36:56.49021...	OCSP	Response	117.18.237.29	80	10.0.2.15	44228	ocsp.digicert.com
16:36:57.62439...	OCSP	Request	10.0.2.15	34312	104.115.39.49	80	r3.o.lencr.org
16:36:57.66844...	OCSP	Response	104.115.39.49	80	10.0.2.15	34312	r3.o.lencr.org
16:36:57.90494...	OCSP	Request	10.0.2.15	44228	117.18.237.29	80	ocsp.digicert.com
16:36:57.94052...	OCSP	Response	117.18.237.29	80	10.0.2.15	44228	ocsp.digicert.com
16:36:58.53805...	OCSP	Request	10.0.2.15	34312	104.115.39.49	80	r3.o.lencr.org
16:36:58.58265...	OCSP	Response	104.115.39.49	80	10.0.2.15	34312	r3.o.lencr.org
16:36:59.99909...	OCSP	Request	10.0.2.15	44228	117.18.237.29	80	ocsp.digicert.com
16:37:00.02426...	OCSP	Response	117.18.237.29	80	10.0.2.15	44228	ocsp.digicert.com

5) 0.003406364seconds

6) destination port is : 36130 corresponding hexcode is 8d22

The image shows the Wireshark interface with a packet capture of an HTTP request. The 'Packet Details' pane shows the 'Transmission Control Protocol' section with the destination port 34312. The 'Packet Bytes' pane shows the raw data of the packet.

Time	Protocol	Info	Source Add	Source Port	Destination Add	Destination Port	HTTP Host
16:36:56.04686...	HTTP	GET /canonical.html HTTP/1.1	10.0.2.15	47744	34.107.221.82	80	detectportal.firefox.com
16:36:56.09988...	HTTP	HTTP/1.1 200 OK (text/html)	34.107.221.82	80	10.0.2.15	47744	detectportal.firefox.com
16:36:56.21472...	HTTP	GET /success.txt?ip4 HTTP/1.1	10.0.2.15	47746	34.107.221.82	80	detectportal.firefox.com
16:36:56.25033...	HTTP	HTTP/1.1 200 OK (text/plain)	34.107.221.82	80	10.0.2.15	47746	detectportal.firefox.com
16:36:56.42088...	OCSP	Request	10.0.2.15	34312	104.115.39.49	80	r3.o.lencr.org
16:36:56.45805...	OCSP	Response	104.115.39.49	80	10.0.2.15	34312	r3.o.lencr.org
16:36:56.46499...	OCSP	Request	10.0.2.15	34312	104.115.39.49	80	r3.o.lencr.org
16:36:56.49021...	OCSP	Response	104.115.39.49	80	10.0.2.15	34312	r3.o.lencr.org
16:36:57.62439...	OCSP	Request	10.0.2.15	44228	117.18.237.29	80	ocsp.digicert.com
16:36:57.66844...	OCSP	Response	117.18.237.29	80	10.0.2.15	44228	ocsp.digicert.com
16:36:57.90494...	OCSP	Request	10.0.2.15	34312	104.115.39.49	80	r3.o.lencr.org
16:36:57.94052...	OCSP	Response	104.115.39.49	80	10.0.2.15	34312	r3.o.lencr.org
16:36:58.53805...	OCSP	Request	10.0.2.15	34312	104.115.39.49	80	r3.o.lencr.org
16:36:58.58265...	OCSP	Response	104.115.39.49	80	10.0.2.15	34312	r3.o.lencr.org
16:36:59.99909...	OCSP	Request	10.0.2.15	44228	117.18.237.29	80	ocsp.digicert.com
16:37:00.02426...	OCSP	Response	117.18.237.29	80	10.0.2.15	44228	ocsp.digicert.com