

# ADVANCED COMPUTER NETWORKS

## ASSIGNMENT 01

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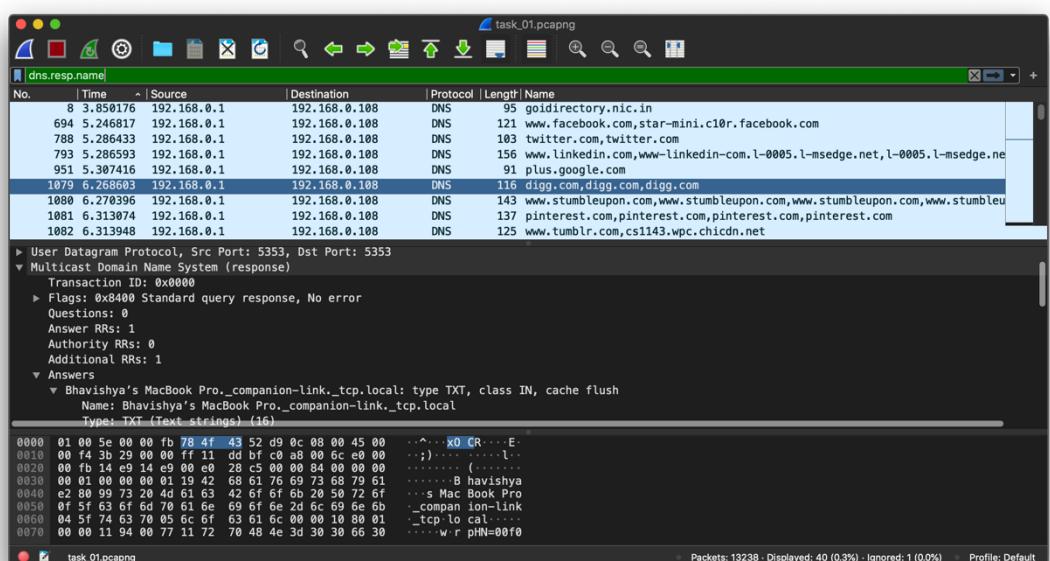
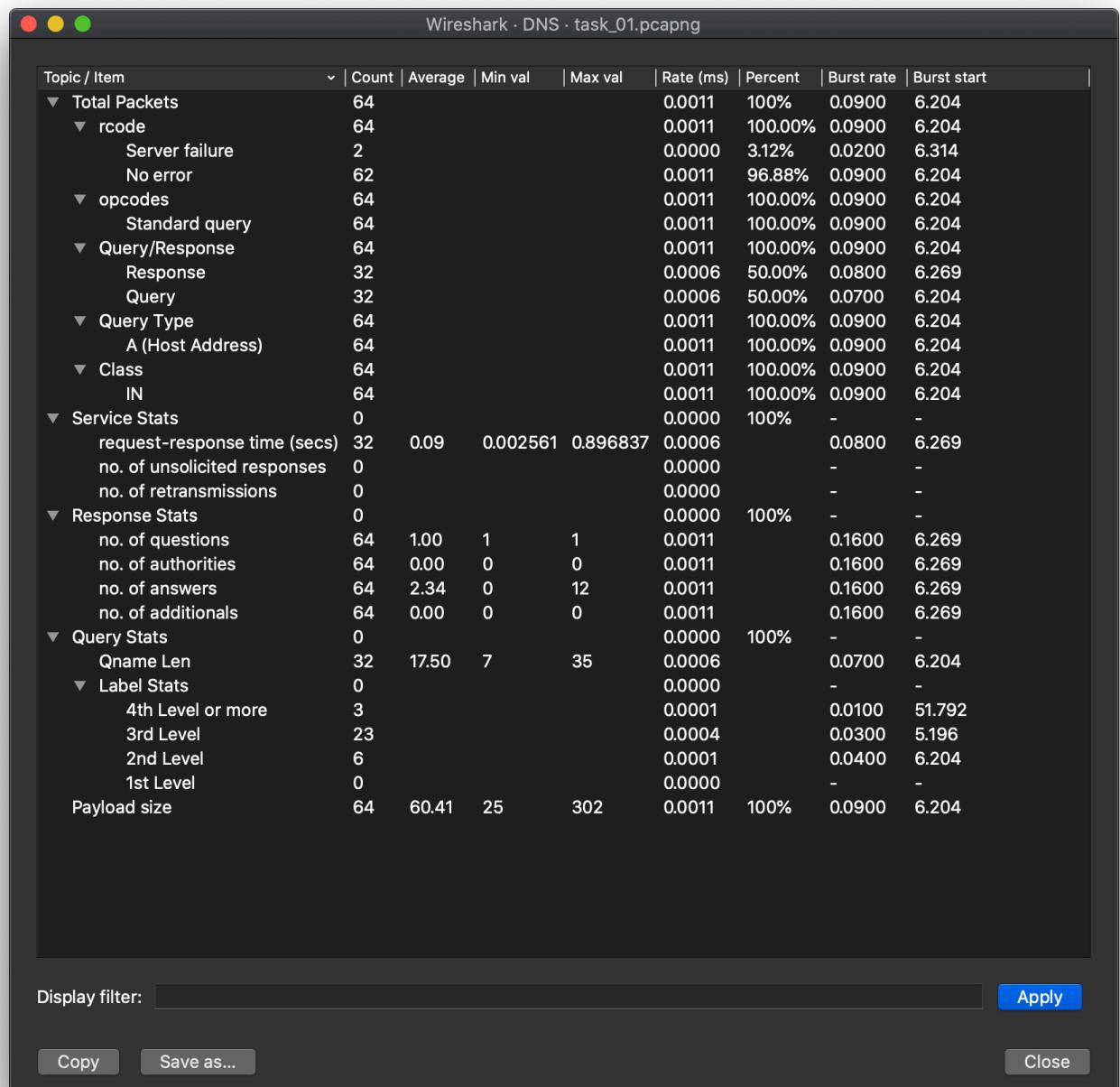
### Task 01

The screenshot shows the GOI Web Directory homepage. The left sidebar includes links for Union Government, States & UTs, Districts, Legislature, Judiciary, International, Sectors (Agriculture, Education, Industry), and a logo for India.gov.in. The main content area features sections for Union Government, States & UTs, Legislature, and Judiciary. A highlighted section on the right is titled "Participate" and features the "National AYUSH Mission (NAM)". The NAM section includes a brief description, a "Site of the Week" thumbnail, and a "Last Updated" date of Sep 28, 2020.

Note: The data in tables was obtained by applying needed filters and adding appropriate columns to the view and then exporting those packets to CSV using “Export Packet Dissections” feature.

**Question 01** How many DNS queries are sent from your browser (host machine) to DNS Server(s)? How many DNS servers are involved? Which DNS Server replies with actual IP Address(es). Do all DNS servers respond? Clearly list the resource records involved in resolving the IP address of the site, mentioning, Name, value, type, TTL appropriately in the complete resolving process of this DNS conversation including query/queries and response/answer(s).

**Answer 01** Queries Sent: 32 (2 Empty Responses)  
DNS Servers Involved: 2



Queries				
Server	Name	Type	Class	Response Status
192.168.0.1	goidirectory.nic.in	A (Host Address)	IN	No error (0)
192.168.0.1	www.facebook.com	A (Host Address)	IN	No error (0)
192.168.0.1	twitter.com	A (Host Address)	IN	No error (0)
192.168.0.1	plus.google.com	A (Host Address)	IN	No error (0)
192.168.0.1	www.linkedin.com	A (Host Address)	IN	No error (0)
192.168.0.1	blogger.com	A (Host Address)	IN	No error (0)
192.168.0.1	pinterest.com	A (Host Address)	IN	No error (0)
192.168.0.1	www.reddit.com	A (Host Address)	IN	No error (0)
192.168.0.1	www.tumblr.com	A (Host Address)	IN	No error (0)
192.168.0.1	www.stumbleupon.com	A (Host Address)	IN	No error (0)
192.168.0.1	delicious.com	A (Host Address)	IN	Server failure (2)
192.168.0.1	digg.com	A (Host Address)	IN	No error (0)
8.8.8.8	delicious.com	A (Host Address)	IN	Server failure (2)
192.168.0.1	presidentofindia.gov.in	A (Host Address)	IN	No error (0)
192.168.0.1	www.google.com	A (Host Address)	IN	No error (0)
192.168.0.1	maps.googleapis.com	A (Host Address)	IN	No error (0)
192.168.0.1	www.gstatic.com	A (Host Address)	IN	No error (0)
192.168.0.1	platform.twitter.com	A (Host Address)	IN	No error (0)
192.168.0.1	syndication.twitter.com	A (Host Address)	IN	No error (0)
192.168.0.1	vicepresidentofindia.nic.in	A (Host Address)	IN	No error (0)
192.168.0.1	self-events-data.trafficmanager.net	A (Host Address)	IN	No error (0)
192.168.0.1	pmindia.gov.in	A (Host Address)	IN	No error (0)
192.168.0.1	outlook.office365.com	A (Host Address)	IN	No error (0)
192.168.0.1	login.windows.net	A (Host Address)	IN	No error (0)
192.168.0.1	www.pmindia.gov.in	A (Host Address)	IN	No error (0)
192.168.0.1	s.w.org	A (Host Address)	IN	No error (0)
192.168.0.1	cbpssubscriber.mygov.in	A (Host Address)	IN	No error (0)
192.168.0.1	www.google-analytics.com	A (Host Address)	IN	No error (0)
192.168.0.1	star-mini.c10r.facebook.com	A (Host Address)	IN	No error (0)
192.168.0.1	www.linkedin.com	A (Host Address)	IN	No error (0)
192.168.0.1	www.tumblr.com	A (Host Address)	IN	No error (0)
192.168.0.1	reddit.map.fastly.net	A (Host Address)	IN	No error (0)

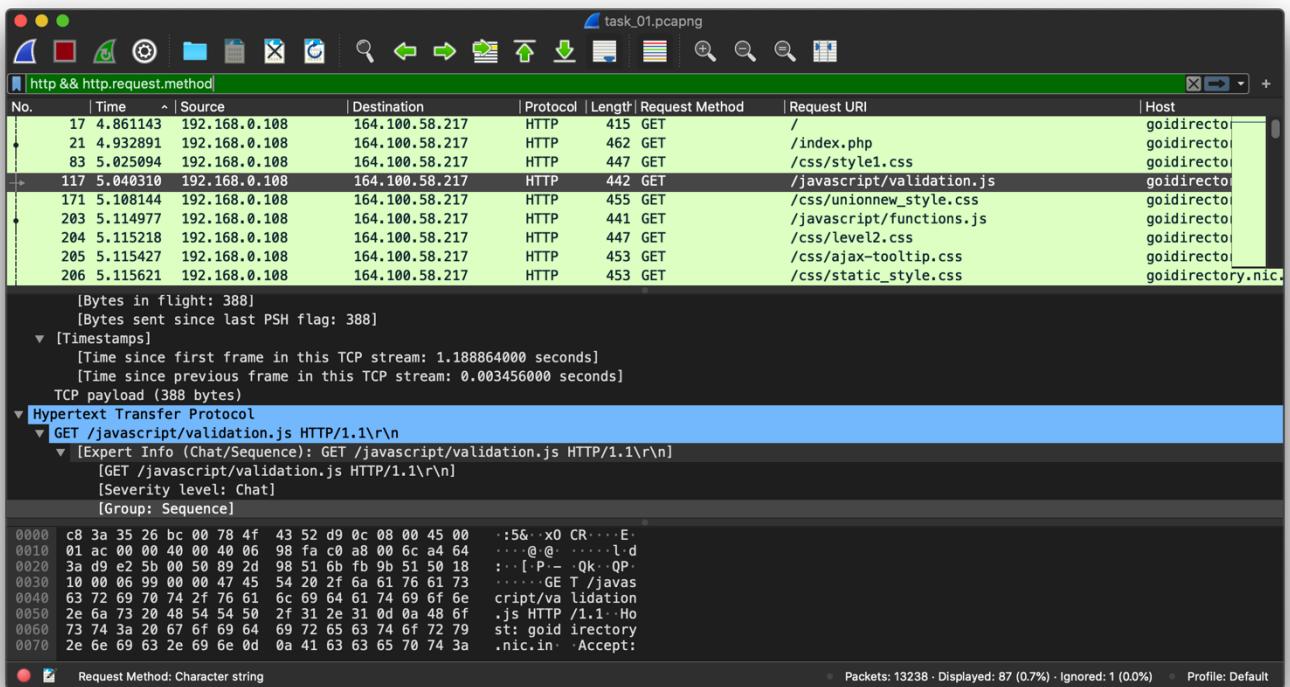
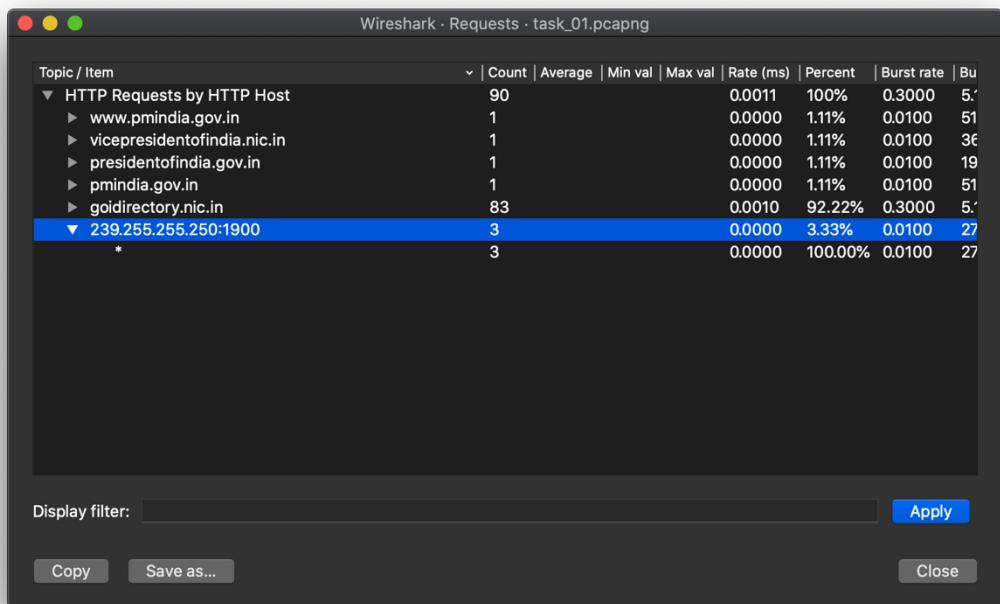
Failed Queries		
Server	Query Name	Error Code
192.168.0.1	delicious.com	Server failure (2)
8.8.8.8	Delicious.com	Server failure (2)

Resource Records				
Server	Name	Type	TTL	Value
192.168.0.1	goidirectory.nic.in	A (Host Address)	1690	164.100.58.217
192.168.0.1	www.facebook.com, star-mini.c10r.facebook.com	CNAME, A (Host Address)	3432, 2	star-mini.c10r.facebook.com, 157.240.16.35
192.168.0.1	twitter.com, twitter.com	A (Host Address), A (Host Address)	1621, 1621	104.244.42.1, 104.244.42.65
192.168.0.1	www.linkedin.com, www-linkedin-com.l-0005.l-msedge.net, l-0005.l-msedge.net	CNAME, CNAME, A (Host Address)	1, 7, 7	www-linkedin-com.l-0005.l-msedge.net, l-0005.l-msedge.net, 13.107.42.14
192.168.0.1	plus.google.com	A (Host Address)	299	172.217.27.174
192.168.0.1	digg.com, digg.com, digg.com	A (Host Address), A (Host Address), A (Host Address)	190, 190, 190	172.67.33.204, 104.20.10.174, 104.20.9.174
192.168.0.1	www.stumbleupon.com, www.stumbleupon.com, www.stumbleupon.com, www.stumbleupon.com	A (Host Address), A (Host Address), A (Host Address), A (Host Address)	59, 59, 59, 59	54.192.155.16, 54.192.155.8, 54.192.155.14, 54.192.155.74
192.168.0.1	pinterest.com, pinterest.com, pinterest.com, pinterest.com	A (Host Address), A (Host Address), A (Host Address), A (Host Address)	257, 257, 257, 257	151.101.0.84, 151.101.64.84, 151.101.128.84, 151.101.192.84
192.168.0.1	www.tumblr.com, cs1143.wpc.chicdn.net	CNAME, A (Host Address)	1, 2313	cs1143.wpc.chicdn.net, 152.199.43.87
192.168.0.1	blogger.com	A (Host Address)	299	172.217.167.201

Resource Records				
Server	Name	Type	TTL	Value
192.168.0.1	www.reddit.com, reddit.map.fastly.net, reddit.map.fastly.net, reddit.map.fastly.net, reddit.map.fastly.net	CNAME, A (Host Address), A (Host Address), A (Host Address), A (Host Address)	133, 29, 29, 29, 29	reddit.map.fastly.net, 151.101.1.140, 151.101.65.140, 151.101.129.140, 151.101.193.140
192.168.0.1	presidentofindia.gov.in	A (Host Address)	3599	164.100.68.54
192.168.0.1	www.google.com	A (Host Address)	0	216.58.200.164
192.168.0.1	maps.googleapis.com	A (Host Address)	299	172.217.167.42
192.168.0.1	www.gstatic.com	A (Host Address)	103	216.58.197.35
192.168.0.1	platform.twitter.com, platform.twitter.map.fastly.net	CNAME, A (Host Address)	1, 1	platform.twitter.map.fastly.net, 151.101.8.157
192.168.0.1	syndication.twitter.com, syndication.twitter.com, syndication.twitter.com, syndication.twitter.com	A (Host Address), A (Host Address), A (Host Address), A (Host Address)	1088, 1088, 1088, 1088	104.244.42.136, 104.244.42.72, 104.244.42.200, 104.244.42.8
192.168.0.1	vicepresidentofindia.nic.in	A (Host Address)	300	164.100.58.171
192.168.0.1	self-events-data.trafficmanager.net, skypedataprdcoleus03.cloudapp.net	CNAME, A (Host Address)	52, 2	skypedataprdcoleus03.cloudapp.net, 52.114.132.23
192.168.0.1	pmindia.gov.in	A (Host Address)	17930	164.100.83.136
192.168.0.1	outlook.office365.com, outlook.ms-acdc.office.com, BOM-efz.ms-acdc.office.com, BOM-efz.ms-acdc.office.com, BOM-efz.ms-acdc.office.com	CNAME, CNAME, A (Host Address), A (Host Address), A (Host Address)	60, 51, 1, 1, 1	outlook.ms-acdc.office.com, BOM-efz.ms-acdc.office.com, 52.98.88.66, 40.100.140.18, 40.100.140.242
192.168.0.1	login.windows.net, a.privatelink.msidentity.com, prda.aadg.msidentity.com, www.tm.a.prd.aadg.trafficmanager.net, maa.current.a.prd.aadg.trafficmanager.net, maa.current.a.prd.aadg.trafficmanager.net, maa.current.a.prd.aadg.trafficmanager.net, maa.current.a.prd.aadg.trafficmanager.net, maa.current.a.prd.aadg.trafficmanager.net, maa.current.a.prd.aadg.trafficmanager.net, maa.current.a.prd.aadg.trafficmanager.net, maa.current.a.prd.aadg.trafficmanager.net, maa.current.a.prd.aadg.trafficmanager.net, maa.current.a.prd.aadg.trafficmanager.net, maa.current.a.prd.aadg.trafficmanager.net	CNAME, CNAME, CNAME, CNAME, CNAME, A (Host Address), A (Host Address)	18, 51, 10, 22, 21, 21, 21, 21, 21, 21, 21, 21, 21, 21, 21, 21, 21	a.privatelink.msidentity.com, prda.aadg.msidentity.com, www.tm.a.prd.aadg.trafficmanager.net, maa.current.a.prd.aadg.trafficmanager.net, 40.126.17.166, 40.126.17.128, 40.126.17.163, 40.126.17.167, 40.126.17.130, 40.126.17.164, 40.126.17.165, 40.126.17.161
192.168.0.1	www.pmindia.gov.in, pmindia.gov.in.akamaized.net, a1731.dscc.akamai.net, a1731.dscc.akamai.net	CNAME, CNAME, A (Host Address), A (Host Address)	17622, 21387, 19, 19	pmindia.gov.in.akamaized.net, a1731.dscc.akamai.net, 45.115.98.74, 45.115.98.72
192.168.0.1	s.w.org	A (Host Address)	287	192.0.77.48
192.168.0.1	cbpssubscriber.mygov.in, cbpssubscriber.mygov.in.edgekey.net, e1640.d.akamaiedge.net	CNAME, CNAME, A (Host Address)	3465, 14115, 1	cbpssubscriber.mygov.in.edgekey.net, e1640.d.akamaiedge.net, 23.13.85.35
192.168.0.1	www.google-analytics.com, www.google-analytics.l.google.com	CNAME, A (Host Address)	11071, 1	www-google-analytics.l.google.com, 142.250.67.46
192.168.0.1	www.linkedin.com, www-linkedin-com.l-0005.l-msedge.net, l-0005.l-msedge.net	CNAME, CNAME, A (Host Address)	121, 205, 219	www-linkedin-com.l-0005.l-msedge.net, l-0005.l-msedge.net, 13.107.42.14
192.168.0.1	star-mini.c10r.facebook.com	A (Host Address)	1	157.240.23.35
192.168.0.1	www.tumblr.com	A (Host Address)	0	152.199.43.87
192.168.0.1	reddit.map.fastly.net	A (Host Address)	1	151.101.9.140

Question 02 How many HTTP requests (Type and respective count of requests), responses (status code and phrase of each of the responses) did the browser send and receive?

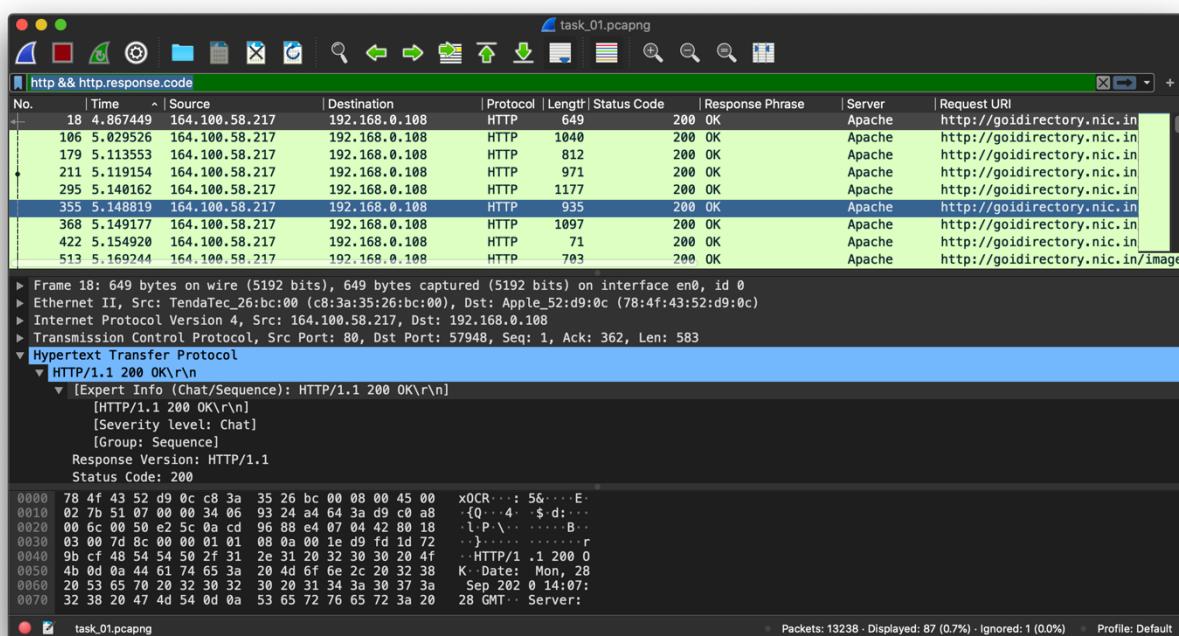
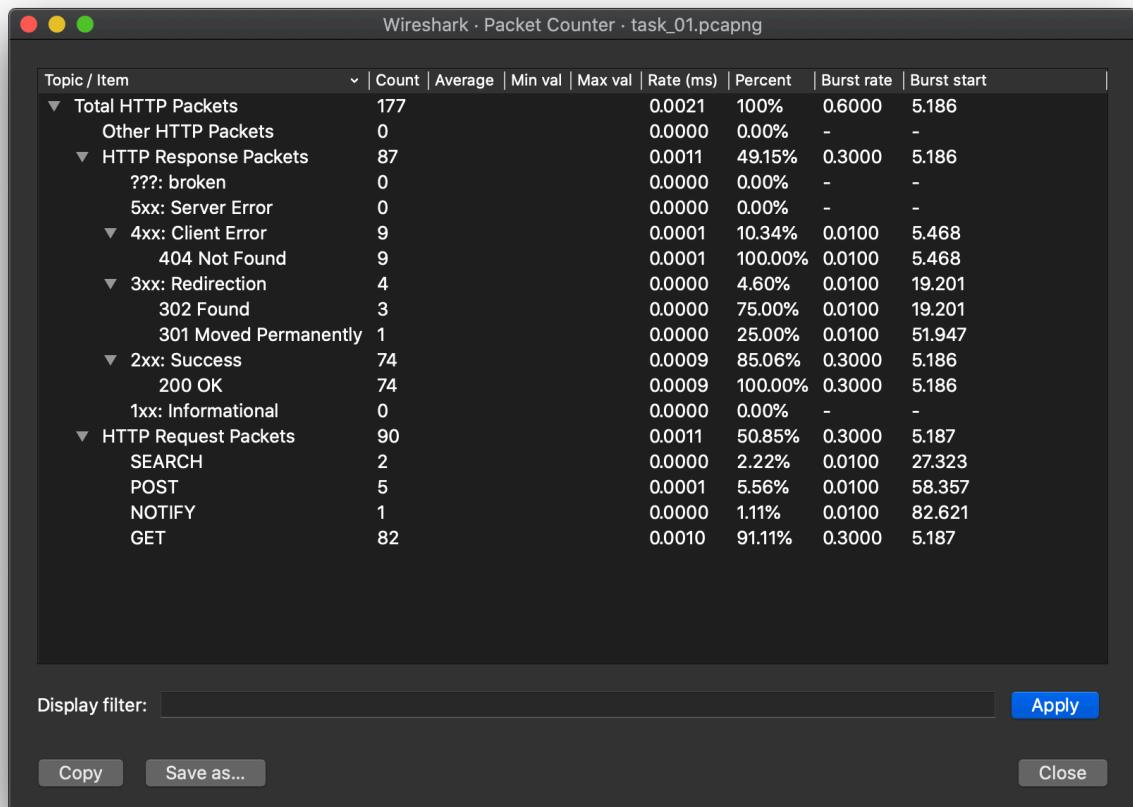
Answer 02 Total HTTP Requests: 87 + 3



HTTP Requests			
Server	Host	URI	Method
164.100.58.217	goidirectory.nic.in	/	GET
164.100.58.217	goidirectory.nic.in	/index.php	GET
164.100.58.217	goidirectory.nic.in	/css/style1.css	GET
164.100.58.217	goidirectory.nic.in	/javascript/validation.js	GET
164.100.58.217	goidirectory.nic.in	/css/unionnew_style.css	GET
164.100.58.217	goidirectory.nic.in	/javascript/functions.js	GET
164.100.58.217	goidirectory.nic.in	/css/level2.css	GET
164.100.58.217	goidirectory.nic.in	/css/ajax-tooltip.css	GET
164.100.58.217	goidirectory.nic.in	/css/static_style.css	GET
164.100.58.217	goidirectory.nic.in	/javascript/validation_frontend.js	GET
164.100.58.217	goidirectory.nic.in	/javascript/ajax-tooltip.js	GET
164.100.58.217	goidirectory.nic.in	/javascript/ajax-dynamic-content.js	GET
164.100.58.217	goidirectory.nic.in	/javascript/ajax.js	GET

164.100.58.217	goidirectory.nic.in	/images/textsizeMinus.gif	GET
164.100.58.217	goidirectory.nic.in	/images/textsizeNormal.gif	GET
164.100.58.217	goidirectory.nic.in	/images/textsizePlus.gif	GET
164.100.58.217	goidirectory.nic.in	/images/line.gif	GET
164.100.58.217	goidirectory.nic.in	/images/texthighContrast.gif	GET
164.100.58.217	goidirectory.nic.in	/images/textNormal.gif	GET
164.100.58.217	goidirectory.nic.in	/images/logo.png	GET
164.100.58.217	goidirectory.nic.in	/images/bharatindiasmall.png	GET
164.100.58.217	goidirectory.nic.in	/images/subscribe_mail.jpg	GET
164.100.58.217	goidirectory.nic.in	/images/rss.png	GET
164.100.58.217	goidirectory.nic.in	/images/Share16.jpg	GET
164.100.58.217	goidirectory.nic.in	/images/facebook_icon.png	GET
164.100.58.217	goidirectory.nic.in	/images/twitter_icon.png	GET
164.100.58.217	goidirectory.nic.in	/images/google_plus_icon.png	GET
164.100.58.217	goidirectory.nic.in	/images/linkedin_icon.png	GET
164.100.58.217	goidirectory.nic.in	/images/tumblr_icon.gif	GET
164.100.58.217	goidirectory.nic.in	/images/StumbleUpon_icon.png	GET
164.100.58.217	goidirectory.nic.in	/images/pinterest_icon.png	GET
164.100.58.217	goidirectory.nic.in	/images/digg_icon.png	GET
164.100.58.217	goidirectory.nic.in	/images/delicious_icon.jpg	GET
164.100.58.217	goidirectory.nic.in	/images/reddit_icon.png	GET
164.100.58.217	goidirectory.nic.in	/images/blogger_icon.jpg	GET
164.100.58.217	goidirectory.nic.in	/images/xml_icon.png	GET
164.100.58.217	goidirectory.nic.in	/images/print_icon6.jpg	GET
164.100.58.217	goidirectory.nic.in	/images/suggest.jpg	GET
164.100.58.217	goidirectory.nic.in	/images/banner.jpg	GET
164.100.58.217	goidirectory.nic.in	/sow_images/thumb/14967_small_namayush.png	GET
164.100.58.217	goidirectory.nic.in	/rss/rss_icon.gif	GET
164.100.58.217	goidirectory.nic.in	/images/pmrelieffund2012.jpg	GET
164.100.58.217	goidirectory.nic.in	/images/rescue_uk.jpg	GET
164.100.58.217	goidirectory.nic.in	/images/mygov_banner.JPG	GET
164.100.58.217	goidirectory.nic.in	/images/data_gov.jpg	GET
164.100.58.217	goidirectory.nic.in	/images/webratna14.jpg	GET
164.100.58.217	goidirectory.nic.in	/images/bg_header.png	GET
164.100.58.217	goidirectory.nic.in	/images/orangenew.gif	GET
164.100.58.217	goidirectory.nic.in	/images/corner_orange.png	GET
164.100.58.217	goidirectory.nic.in	/images/dot.gif	GET
164.100.58.217	goidirectory.nic.in	/images/bg_stripes_new.gif	GET
164.100.58.217	goidirectory.nic.in	/images/map.jpg	GET
164.100.58.217	goidirectory.nic.in	/images/star.png	GET
164.100.58.217	goidirectory.nic.in	/images/expand-bulett.gif	GET
164.100.58.217	goidirectory.nic.in	/images/heading_star.png	GET
164.100.58.217	goidirectory.nic.in	/images/star_small.jpg	GET
164.100.58.217	goidirectory.nic.in	/images/greenbar4.png	GET
164.100.58.217	goidirectory.nic.in	/images/greennew.gif	GET
164.100.58.217	goidirectory.nic.in	/images/greenbarcurve4.png	GET
164.100.58.217	goidirectory.nic.in	/images/nic_logo.png	GET
164.100.58.217	goidirectory.nic.in	/favicon.ico	GET
164.100.58.217	goidirectory.nic.in	/sitecounter.php?id=333	GET
164.100.58.217	goidirectory.nic.in	/favicon.ico	GET
164.100.68.54	presidentofindia.gov.in	/	GET
164.100.58.217	goidirectory.nic.in	/sitecounter.php?id=3652	GET
164.100.58.217	goidirectory.nic.in	/favicon.ico	GET
164.100.58.171	vicepresidentofindia.nic.in	/	GET
164.100.58.217	goidirectory.nic.in	/sitecounter.php?id=252	GET
164.100.58.217	goidirectory.nic.in	/favicon.ico	GET
164.100.83.136	pmindia.gov.in	/	GET
45.115.98.74	www.pmindia.gov.in	/en/?query	GET
164.100.58.217	goidirectory.nic.in	/union_categories.php?ct=E002	POST
164.100.58.217	goidirectory.nic.in	/images/expand-bulett-001.gif	GET
164.100.58.217	goidirectory.nic.in	/favicon.ico	GET
164.100.58.217	goidirectory.nic.in	/union_organisation.php?ct=E003	POST
164.100.58.217	goidirectory.nic.in	/images/+gif	GET
164.100.58.217	goidirectory.nic.in	/images/-gif	GET
164.100.58.217	goidirectory.nic.in	/favicon.ico	GET
164.100.58.217	goidirectory.nic.in	/union_organisation.php?ct=E007	POST

164.100.58.217	goidirectory.nic.in	/favicon.ico	GET
164.100.58.217	goidirectory.nic.in	/legislature_subcategory.php?ct=L001	POST
164.100.58.217	goidirectory.nic.in	/favicon.ico	GET
164.100.58.217	goidirectory.nic.in	/images/++.gif	GET
164.100.58.217	goidirectory.nic.in	/images/-_.gif	GET
164.100.58.217	goidirectory.nic.in	/images/link.gif	GET
164.100.58.217	goidirectory.nic.in	/legislature_subcategory.php?ct=L003	POST
164.100.58.217	goidirectory.nic.in	/favicon.ico	GET

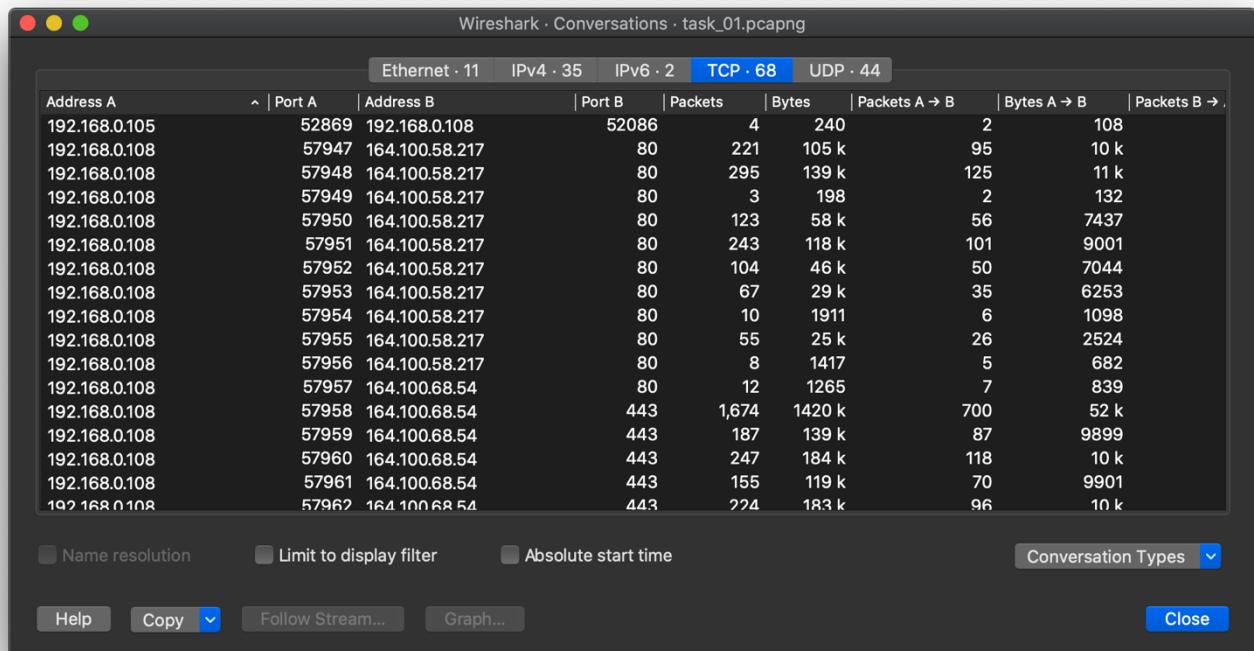




164.100.58.217	http://goidirectory.nic.in/sitecounter.php?id=3652	Apache	200	OK
164.100.58.217	http://goidirectory.nic.in/favicon.ico	Apache	404	Not Found
164.100.58.171	http://vicepresidentofindia.nic.in/		302	Redirect
164.100.58.217	http://goidirectory.nic.in/sitecounter.php?id=252	Apache	200	OK
164.100.58.217	http://goidirectory.nic.in/favicon.ico	Apache	404	Not Found
164.100.83.136	http://pmindia.gov.in/		302	Redirect
45.115.98.74	http://www.pmindia.gov.in/en/?query	AkamaiGHost	301	Moved Permanently
164.100.58.217	http://goidirectory.nic.in/images/expand-bulett-001.gif	Apache	200	OK
164.100.58.217	http://goidirectory.nic.in/images/expand-bulett-001.gif	Apache	200	OK
164.100.58.217	http://goidirectory.nic.in/favicon.ico	Apache	404	Not Found
164.100.58.217	http://goidirectory.nic.in/union_organisation.php?ct=E003	Apache	200	OK
164.100.58.217	http://goidirectory.nic.in/images/+.gif	Apache	200	OK
164.100.58.217	http://goidirectory.nic.in/images/- .gif	Apache	200	OK
164.100.58.217	http://goidirectory.nic.in/favicon.ico	Apache	404	Not Found
164.100.58.217	http://goidirectory.nic.in/union_organisation.php?ct=E007	Apache	200	OK
164.100.58.217	http://goidirectory.nic.in/favicon.ico	Apache	404	Not Found
164.100.58.217	http://goidirectory.nic.in/legislature_subcategory.php?ct=L003	Apache	200	OK
164.100.58.217	http://goidirectory.nic.in/favicon.ico	Apache	404	Not Found
164.100.58.217	http://goidirectory.nic.in/legislature_subcategory.php?ct=L003	Apache	200	OK
164.100.58.217	http://goidirectory.nic.in/legislature_subcategory.php?ct=L003	Apache	200	OK
164.100.58.217	http://goidirectory.nic.in/images/link.gif	Apache	200	OK
164.100.58.217	http://goidirectory.nic.in/legislature_subcategory.php?ct=L003	Apache	200	OK
164.100.58.217	http://goidirectory.nic.in/favicon.ico	Apache	404	Not Found

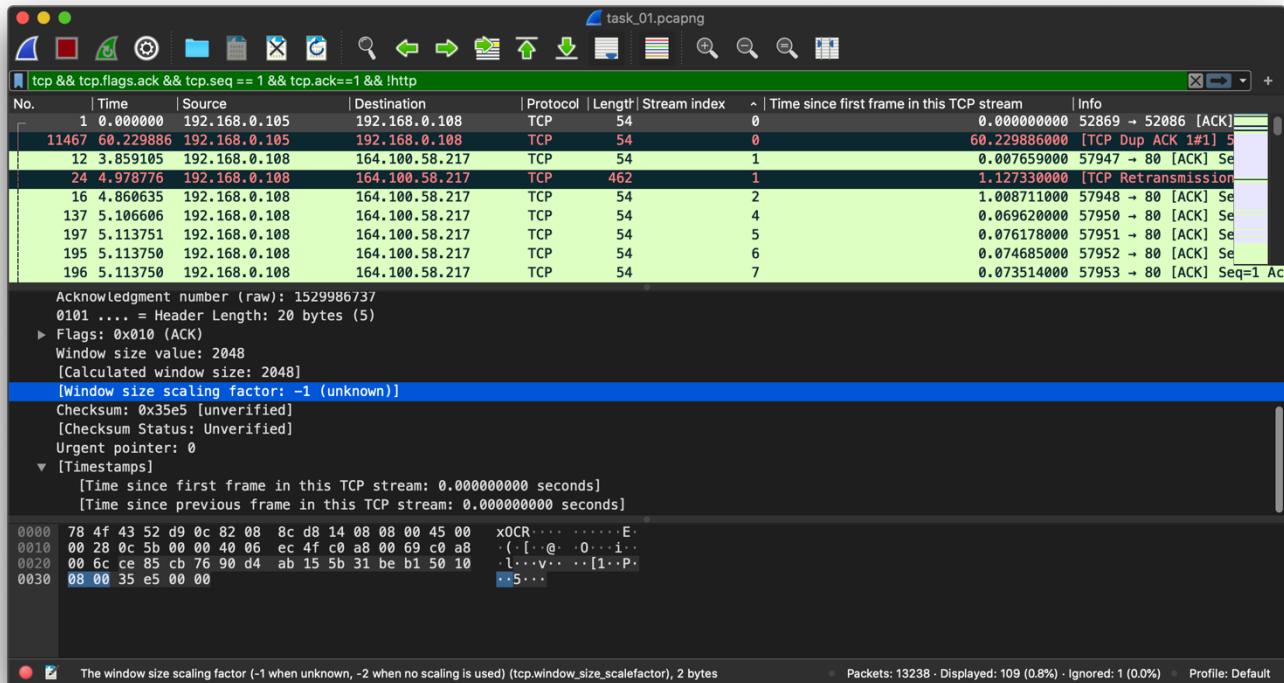
Question 03 How many TCP Connections has the browser established overall?

Answer 03 Total TCP Connections: 68  
Stream Index 0 to 67



Question 04 What is the time taken to establish TCP connection(s)? List this time taken value for each of the TCP connection(s).

Answer 04 TCP Establishment Time



TCP Streams			
Stream	Server	Establishment Time	Remarks
0	192.168.0.108	60.229886	Old Stream (No SYN)
1	164.100.58.217	1.12733	ACK Retransmission (Original - 0.007659)
2	164.100.58.217	1.008711	
3	164.100.58.217	NA	RST sent instead of ACK
4	164.100.58.217	0.06962	
5	164.100.58.217	0.076178	
6	164.100.58.217	0.074685	
7	164.100.58.217	0.073514	
8	164.100.58.217	0.054642	ACK Retransmission (Original - 0.007713)
9	fe80::10ab:e7e3:de8f:ce5	NA	Old Stream (No SYN/ACK)
10	164.100.58.217	0.053078	ACK Retransmission (Original - 0.006218)
11	164.100.58.217	0.006668	
12	164.100.68.54	0.069779	
13	164.100.68.54	0.040044	
14	164.100.68.54	0.053839	
15	164.100.68.54	0.05267	
16	164.100.68.54	0.048023	
17	164.100.68.54	0.047543	
18	164.100.68.54	0.047218	
19	216.58.200.164	0.00709	
20	172.217.167.42	0.009095	
21	216.58.197.35	0.064833	
22	164.100.68.54	0.052124	
23	151.101.8.157	0.070713	
24	164.100.68.54	0.040439	
25	164.100.68.54	0.052021	
26	104.244.42.136	0.074735	
27	17.248.162.136	NA	Old Stream (No SYN/ACK)
28	17.188.130.137	NA	Old Stream (No SYN/ACK)
29	3.7.12.166	0.099041	
30	164.100.58.217	0.096914	ACK Retransmission (Original - 0.018171)
31	164.100.58.217	0.01348	
32	164.100.58.171	0.007617	
33	164.100.58.171	0.005074	
34	164.100.58.171	0.005688	
35	164.100.58.171	0.005712	
36	164.100.58.171	0.005102	

37	164.100.58.171	0.005651	
38	164.100.58.171	0.00635	
39	164.100.58.171	0.0001	
40	164.100.58.171	0.012077	
41	164.100.58.171	0.005844	
42	40.119.211.203	NA	Old Stream (No SYN/ACK)
43	164.100.58.217	0.051921	
44	52.114.76.35	0.198634	
45	164.100.58.217	0.00532	
46	40.100.29.226	0.074881	
47	40.126.12.103	0.074302	
48	40.126.17.166	0.045853	
49	52.98.88.66	0.02837	
50	40.100.140.18	0.027451	
51	164.100.83.136	0.027009	
52	164.100.83.136	0.007631	
53	45.115.98.74	0.007052	
55	45.115.98.74	0.005695	
55	23.13.85.35	1.63107	
56	142.250.67.46	0.048951	
57	164.100.58.217	0.069588	
58	164.100.58.217	0.005885	
59	164.100.58.217	0.005623	
60	164.100.58.217	0.056996	
61	164.100.58.217	0.056192	
62	164.100.58.217	0.005571	
63	164.100.58.217	0.129411	
64	164.100.58.217	0.009598	
65	164.100.58.217	0.006016	
66	164.100.58.217	0.006055	
67	164.100.58.217	0.019491	

Question 05 Browse the website by moving to various sub links, embedded objects listed in the site.

Answer 05 External Sites Visited: 3

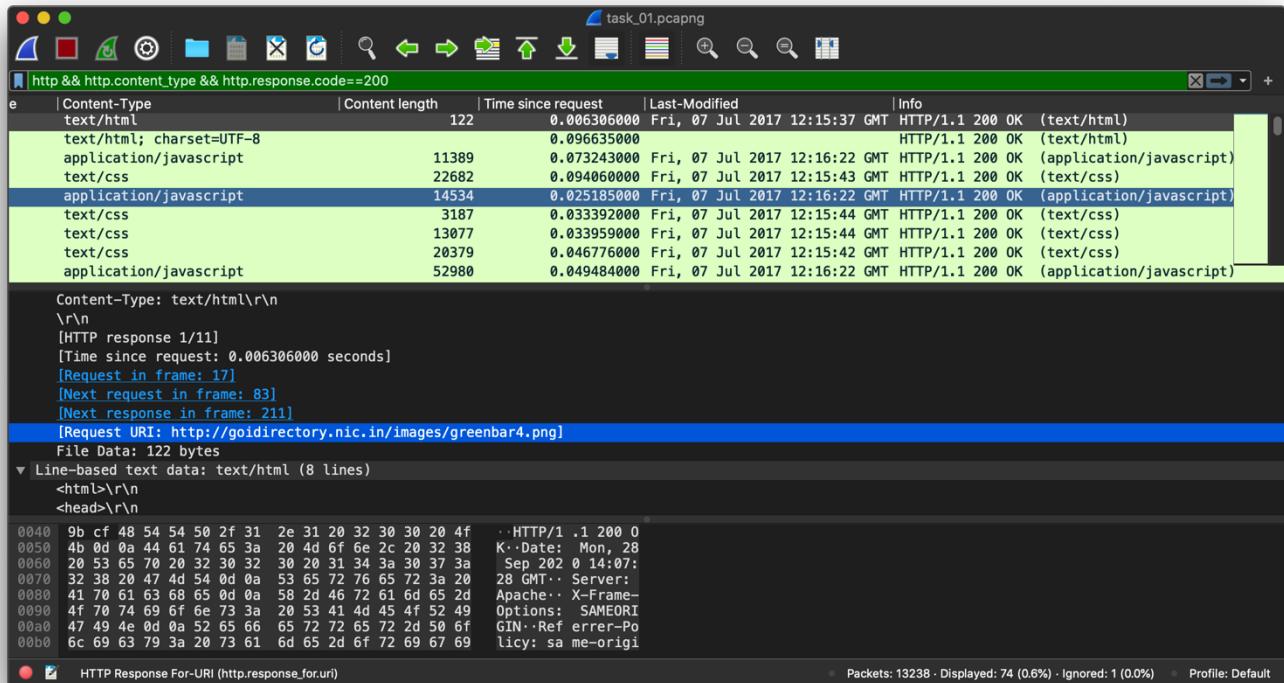
- <https://presidentofindia.gov.in/>
- <https://vicepresidentofindia.nic.in/>
- <https://pmindia.gov.in/>

Internal Pages Visited: 6

- /union\_categories.php?ct=E002
- /union\_organisation.php?ct=E003
- /union\_organisation.php?ct=E007
- /legislature\_subcategory.php?ct=L001
- /legislature\_subcategory.php?ct=L002
- /legislature\_subcategory.php?ct=L003

Question 06 How many objects/files are downloaded?

Answer 06 Total 74 Objects downloaded during the session including subpages and other sites.



**Question 07** Make a detailed list including for each object/file downloaded what is the time taken for downloading the objects, the size of the object downloaded, object name, last modified time at the server.

**Answer 07**

Site	Name	Type	Size	Time	Last Modified
goidirectory.nic.in	/	text/html	122	0.006306000	Fri, 07 Jul 2017 12:15:37 GMT
goidirectory.nic.in	/index.php	text/html; charset=UTF-8	36517	0.096635000	
goidirectory.nic.in	/javascript/validation.js	application/javascript	11389	0.073243000	Fri, 07 Jul 2017 12:16:22 GMT
goidirectory.nic.in	/css/style1.css	text/css	22682	0.094060000	Fri, 07 Jul 2017 12:15:43 GMT
goidirectory.nic.in	/javascript/functions.js	application/javascript	14534	0.025185000	Fri, 07 Jul 2017 12:16:22 GMT
goidirectory.nic.in	/css/ajax-tooltip.css	text/css	3187	0.033392000	Fri, 07 Jul 2017 12:15:44 GMT
goidirectory.nic.in	/css/level2.css	text/css	13077	0.033959000	Fri, 07 Jul 2017 12:15:44 GMT
goidirectory.nic.in	/css/unionnew_style.css	text/css	20379	0.046776000	Fri, 07 Jul 2017 12:15:42 GMT
goidirectory.nic.in	/javascript/validation_frontend.js	application/javascript	52980	0.049484000	Fri, 07 Jul 2017 12:16:22 GMT
goidirectory.nic.in	/css/static_style.css	text/css	33824	0.070339000	Fri, 07 Jul 2017 12:15:43 GMT
goidirectory.nic.in	/javascript/ajax-tooltip.js	application/javascript	9655	0.047355000	Fri, 07 Jul 2017 12:16:23 GMT
goidirectory.nic.in	/javascript/ajax-dynamic-content.js	application/javascript	5092	0.038872000	Fri, 07 Jul 2017 12:16:23 GMT
goidirectory.nic.in	/javascript/ajax.js	application/javascript	5492	0.040677000	Fri, 07 Jul 2017 12:16:22 GMT
goidirectory.nic.in	/images/textsizeMinus.gif	image/gif	229	0.035624000	Fri, 07 Jul 2017 12:15:47 GMT
goidirectory.nic.in	/images/textsizeNormal.gif	image/gif	236	0.021116000	Fri, 07 Jul 2017 12:15:47 GMT
goidirectory.nic.in	/images/textsizePlus.gif	image/gif	261	0.009447000	Fri, 07 Jul 2017 12:15:47 GMT
goidirectory.nic.in	/images/line.gif	image/gif	54	0.008909000	Fri, 07 Jul 2017 12:15:57 GMT
goidirectory.nic.in	/images/texthighContrast.gif	image/gif	239	0.009531000	Fri, 07 Jul 2017 12:15:47 GMT
goidirectory.nic.in	/images/logo.png	image/png	2820	0.006743000	Fri, 07 Jul 2017 12:15:56 GMT
goidirectory.nic.in	/images/textNormal.gif	image/gif	244	0.007527000	Fri, 07 Jul 2017 12:15:47 GMT
goidirectory.nic.in	/images/bharatindiasmall.png	image/png	782	0.006581000	Fri, 07 Jul 2017 12:16:06 GMT
goidirectory.nic.in	/images/subscribe_mail.jpg	image/jpeg	407	0.007036000	Fri, 07 Jul 2017 12:15:48 GMT
goidirectory.nic.in	/images/rss.png	image/png	764	0.006803000	Fri, 07 Jul 2017 12:15:51 GMT
goidirectory.nic.in	/images/Share16.jpg	image/jpeg	427	0.006190000	Fri, 07 Jul 2017 12:16:11 GMT
goidirectory.nic.in	/images/facebook_icon.png	image/png	759	0.006558000	Fri, 07 Jul 2017 12:16:02 GMT
goidirectory.nic.in	/images/twitter_icon.png	image/png	1509	0.007868000	Fri, 07 Jul 2017 12:15:46 GMT
goidirectory.nic.in	/images/google_plus_icon.png	image/png	968	0.008579000	Fri, 07 Jul 2017 12:16:00 GMT
goidirectory.nic.in	/images/linkedin_icon.png	image/png	1512	0.006917000	Fri, 07 Jul 2017 12:15:57 GMT
goidirectory.nic.in	/images/tumblr_icon.gif	image/gif	635	0.007510000	Fri, 07 Jul 2017 12:15:47 GMT
goidirectory.nic.in	/images/StumbleUpon_icon	image/png	1992	0.008519000	Fri, 07 Jul 2017 12:16:08 GMT

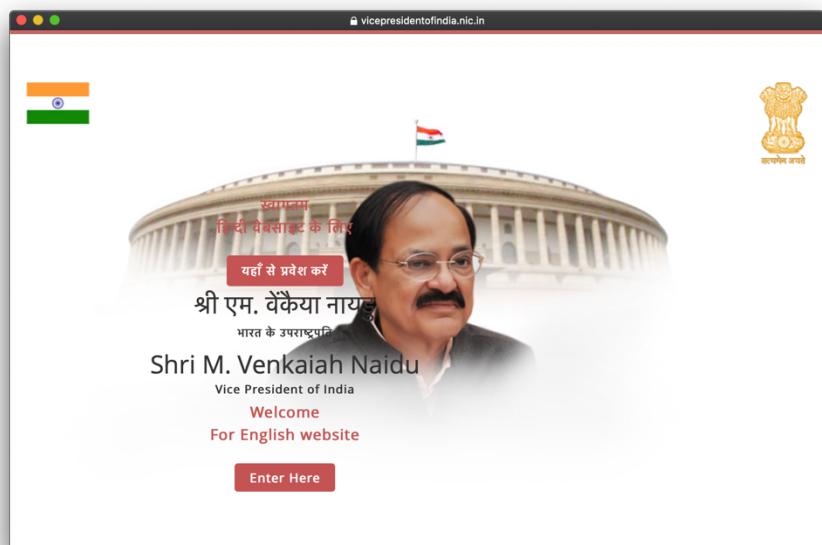
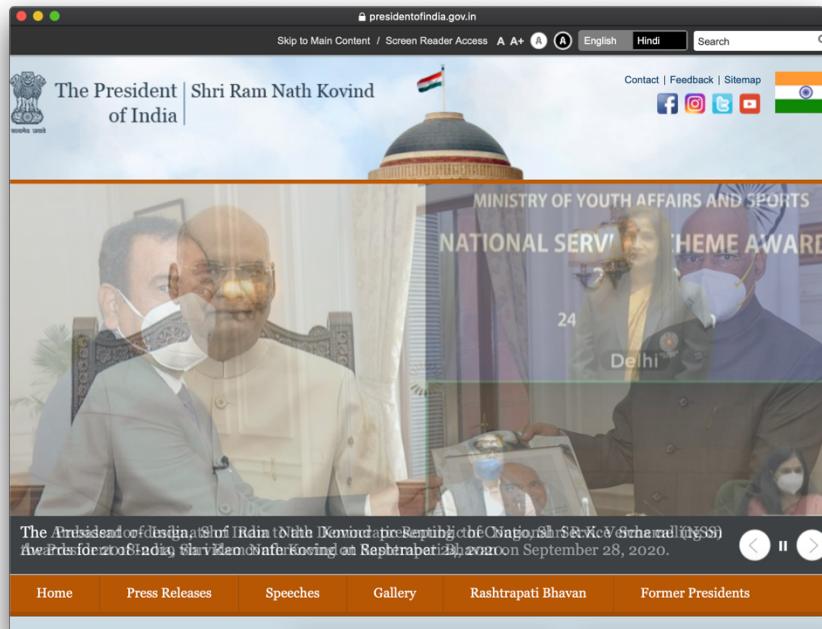
	.png				
goidirectory.nic.in	/images/digg_icon.png	image/png	469	0.008168	Fri, 07 Jul 2017 12:16:05 GMT
goidirectory.nic.in	/images/pinterest_icon.png	image/png	3351	0.008707	Fri, 07 Jul 2017 12:15:53 GMT
goidirectory.nic.in	/images/delicious_icon.jpg	image/jpeg	292	0.013924	Fri, 07 Jul 2017 12:16:05 GMT
goidirectory.nic.in	/images/reddit_icon.png	image/png	589	0.04916	Fri, 07 Jul 2017 12:15:52 GMT
goidirectory.nic.in	/images/blogger_icon.jpg	image/jpeg	498	0.060643	Fri, 07 Jul 2017 12:16:06 GMT
goidirectory.nic.in	/images/xml_icon.png	image/png	764	0.059414	Fri, 07 Jul 2017 12:15:45 GMT
goidirectory.nic.in	/images/print_icon6.jpg	image/jpeg	423	0.059117	Fri, 07 Jul 2017 12:15:53 GMT
goidirectory.nic.in	/images/suggest.jpg	image/jpeg	393	0.058764	Fri, 07 Jul 2017 12:15:47 GMT
goidirectory.nic.in	/images/banner.jpg	image/jpeg	15888	0.056907	Fri, 07 Jul 2017 12:16:07 GMT
goidirectory.nic.in	/sow_images/thumb/14967_small_namayush.png	image/png	18371	0.023184	Sun, 02 Aug 2020 10:56:12 GMT
goidirectory.nic.in	/rss/rss_icon.gif	image/gif	1202	0.010057	Fri, 07 Jul 2017 12:17:07 GMT
goidirectory.nic.in	/images/rescue_uk.jpg	image/jpeg	4357	0.010227	Fri, 07 Jul 2017 12:15:52 GMT
goidirectory.nic.in	/images/mygov_banner.JPG	image/jpeg	3370	0.012266	Fri, 07 Jul 2017 12:15:55 GMT
goidirectory.nic.in	/images/pmrelieffund2012.jpg	image/jpeg	13112	0.01467	Fri, 07 Jul 2017 12:15:53 GMT
goidirectory.nic.in	/images/data_gov.jpg	image/jpeg	11059	0.014341	Fri, 07 Jul 2017 12:16:05 GMT
goidirectory.nic.in	/images/webratna14.jpg	image/jpeg	14282	0.01498	Fri, 07 Jul 2017 12:15:46 GMT
goidirectory.nic.in	/images/bg_header.png	image/png	3317	0.012384	Fri, 07 Jul 2017 12:16:07 GMT
goidirectory.nic.in	/images/orangenew.gif	image/gif	2700	0.011509	Fri, 07 Jul 2017 12:15:53 GMT
goidirectory.nic.in	/images/corner_orange.png	image/png	1038	0.012653	Fri, 07 Jul 2017 12:16:06 GMT
goidirectory.nic.in	/images/dot.gif	image/gif	99	0.01084	Fri, 07 Jul 2017 12:16:04 GMT
goidirectory.nic.in	/images/bg_stripes_new.gif	image/gif	203	0.010415	Fri, 07 Jul 2017 12:16:06 GMT
goidirectory.nic.in	/images/expand-bulett.gif	image/gif	50	0.059981	Fri, 07 Jul 2017 12:16:03 GMT
goidirectory.nic.in	/images/star.png	image/png	358	0.062766	Fri, 07 Jul 2017 12:15:49 GMT
goidirectory.nic.in	/images/heading_star.png	image/png	197	0.064924	Fri, 07 Jul 2017 12:15:58 GMT
goidirectory.nic.in	/images/star_small.jpg	image/jpeg	708	0.064465	Fri, 07 Jul 2017 12:15:48 GMT
goidirectory.nic.in	/images/map.jpg	image/jpeg	27091	0.067989	Fri, 07 Jul 2017 12:15:55 GMT
goidirectory.nic.in	/images/greenbar4.png	image/png	5615	0.07214	Fri, 07 Jul 2017 12:15:59 GMT
goidirectory.nic.in	/images/greennew.gif	image/gif	2671	0.015277	Fri, 07 Jul 2017 12:15:59 GMT
goidirectory.nic.in	/images/greenbarcurve4.png	image/png	1363	0.014484	Fri, 07 Jul 2017 12:15:59 GMT
goidirectory.nic.in	/images/nic_logo.png	image/png	1333	0.010187	Fri, 07 Jul 2017 12:15:54 GMT
goidirectory.nic.in	/sitecounter.php?id=333	text/html; charset=UTF-8	8390	2.125336	
goidirectory.nic.in	/sitecounter.php?id=3652	text/html; charset=UTF-8	8406	1.656829	
goidirectory.nic.in	/sitecounter.php?id=252	text/html; charset=UTF-8	8354	1.692366	
goidirectory.nic.in	/union_categories.php?ct=E002	text/html; charset=UTF-8	44402	0.304114	
goidirectory.nic.in	/images/expand-bulett-001.gif	image/gif	50	0.00848	Fri, 07 Jul 2017 12:16:03 GMT
goidirectory.nic.in	/union_organisation.php?ct=E003	text/html; charset=UTF-8	246703	0.938772	
goidirectory.nic.in	/images/+ .gif	image/gif	71	0.040286	Fri, 07 Jul 2017 12:16:11 GMT
goidirectory.nic.in	/images/- .gif	image/gif	70	0.040056	Fri, 07 Jul 2017 12:16:10 GMT
goidirectory.nic.in	/union_organisation.php?ct=E007	text/html; charset=UTF-8	44922	0.384155	
goidirectory.nic.in	/legislature_subcategory.php?ct=L001	text/html; charset=UTF-8	42237	0.191108	
goidirectory.nic.in	/images/++ .gif	image/gif	71	0.007084	Fri, 07 Jul 2017 12:16:11 GMT
goidirectory.nic.in	/images/-- .gif	image/gif	70	0.00765	Fri, 07 Jul 2017 12:16:10 GMT
goidirectory.nic.in	/images/link.gif	image/gif	70	0.006384	Fri, 07 Jul 2017 12:15:57 GMT
goidirectory.nic.in	/legislature_subcategory.php?ct=L003	text/html; charset=UTF-8	42108	0.175775	

**Question 08** How many other websites are visited from this site, by clicking on to various possible links which take you to the other sites (other than <http://goidirectory.nic.in/>).

**Answer 08** There are links to other websites like [presidentofindia.gov.in](http://presidentofindia.gov.in), [data.gov.in](http://data.gov.in), but these links are not direct. Instead they use the link /sitecounter.php?id=\*\*\*\* to redirect to these external sites.

Other sites visited are: (These sites used HTTPS so data could not be collected)

- <https://presidentofindia.gov.in/>
- <https://vicepresidentofindia.nic.in/>
- <https://pmindia.gov.in/>

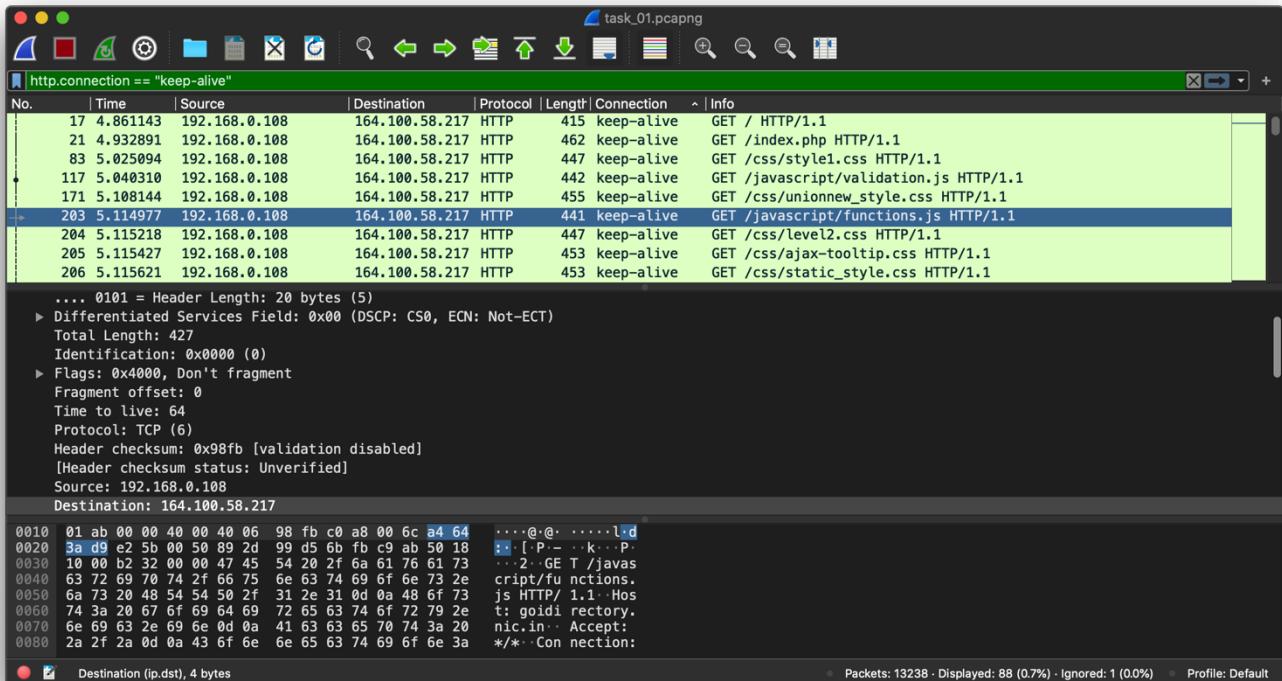


**Question 09** When <http://goidirectory.nic.in/> is entered, is there any embedded object shown/downloaded from different site(s) (other than <http://goidirectory.nic.in/>)?

**Answer 09** The site does not load any embedded content from other websites using HTTP.

**Question 10** How many times does the browser ask the site to keep the connection alive?

**Answer 10** Browser sent the keep-alive in 88 requests.



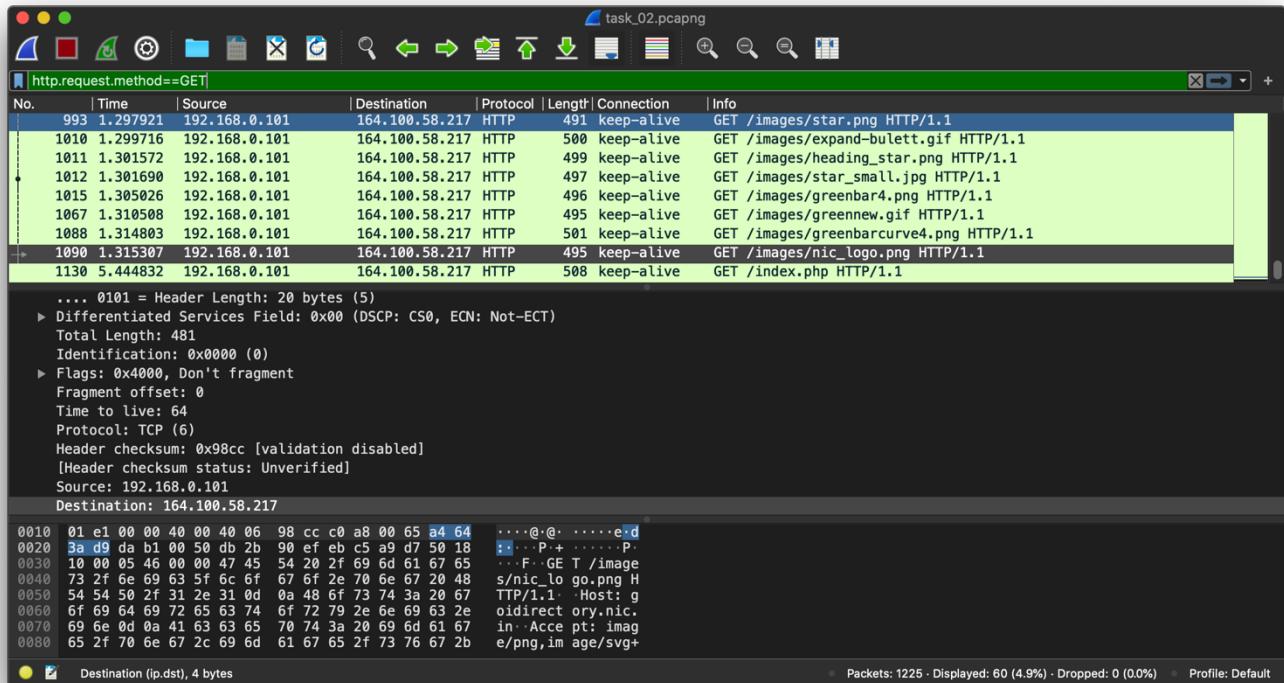
**Question 11** Which version of the HTTP is your browser running?

**Answer 11** The SAFARI browser is using HTTP1.1

## Task 02

**Question 01** How many conditional GETs are sent by browser to the server ?

**Answer 01** Total GET requests sent = 60



Question 02 Make a list for each of the file/object downloaded, how many times the server sends the full contents of the respective file/object ?

Answer 02

URL	Count
/index.php	2
/javascript/validation.js	1
/css/unionnew_style.css	1
/css/style1.css	1
/javascript/functions.js	1
/css/level2.css	1
/css/ajax-tooltip.css	1
/css/static_style.css	1
/javascript/validation_frontend.js	1
/javascript/ajax-tooltip.js	1
/javascript/ajax-dynamic-content.js	1
/javascript/ajax.js	1
/images/textsizeMinus.gif	1
/images/textsizeNormal.gif	1
/images/textsizePlus.gif	1
/images/line.gif	1
/images/texthighContrast.gif	1
/images/textNormal.gif	1
/images/logo.png	1
/images/bharatindiasmall.png	1
/images/subscribe_mail.jpg	1
/images/rss.png	1
/images/Share16.jpg	1
/images/facebook_icon.png	1
/images/twitter_icon.png	1
/images/google_plus_icon.png	1

/images/linkedin_icon.png	1
/images/pinterest_icon.png	1
/images/tumblr_icon.gif	1
/images/StumbleUpon_icon.png	1
/images/digg_icon.png	1
/images/delicious_icon.jpg	1
/images/reddit_icon.png	1
/images/blogger_icon.jpg	1
/images/xml_icon.png	1
/images/print_icon6.jpg	1
/images/suggest.jpg	1
/images/banner.jpg	1
/sow_images/thumb/14967_small_namayush.png	1
/rss/rss_icon.gif	1
/images/pmrelieffund2012.jpg	1
/images/rescue_uk.jpg	1
/images/mygov_banner.JPG	1
/images/data_gov.jpg	1
/images/webratna14.jpg	1
/images/bg_header.png	1
/images/orangenew.gif	1
/images/corner_orange.png	1
/images/dot.gif	1
/images/bg_stripes_new.gif	1
/images/map.jpg	1
/images/star.png	1
/images/expand-bulett.gif	1
/images/heading_star.png	1
/images/star_small.jpg	1
/images/greenbar4.png	1
/images/greennew.gif	1
/images/greenbarcurve4.png	1
/images/nic_logo.png	1

**Question 03** Explain in detail what is the difference in server's behaviour between first and second request/browsing?

**Answer 03** During first request, as the browsers cache was empty, It requested all the resources (images/ javascript/ css/ html) from the server. During second request, the browser loaded most of the content from cache. Only the index.php page was requested from server.

**Question 04** List the headers of HTTP which influence this functionality.

**Answer 04** Cache-Control and Expire HTTP headers influence the caching functionality of browser. If a resource has Cache-Control set to no-cache, it is never cached by the browser and fetched from the server every time. The Expire header is used to validate cached files. A cached file is only valid till the Expire header and must be fetched again from the server after the Expire time.

In the above requests, the index.php resource was marked as no-cache, hence was fetched again from server on reload.

task\_02.pcapng

http.content\_type

No.	Time	Source	Destination	Protocol	Length	Connection	Cache-Control	Info
169	1.156076	164.100.58.217	192.168.0.101	HTTP	982	Keep-Alive	no-store, no-cache, must-revalidate, post-check=0, pre-check=0	
212	1.175433	164.100.58.217	192.168.0.101	HTTP	812	Keep-Alive		
256	1.187619	164.100.58.217	192.168.0.101	HTTP	71	Keep-Alive		
326	1.189580	164.100.58.217	192.168.0.101	HTTP	972	Keep-Alive		
360	1.193390	164.100.58.217	192.168.0.101	HTTP	1177	Keep-Alive		
393	1.196799	164.100.58.217	192.168.0.101	HTTP	1097	Keep-Alive		
465	1.202828	164.100.58.217	192.168.0.101	HTTP	935	Keep-Alive		
481	1.203283	164.100.58.217	192.168.0.101	HTTP	994	Keep-Alive		
614	1.220736	164.100.58.217	192.168.0.101	HTTP	74	Keep-Alive		

[Severity level: Chat]  
[Group: Sequence]  
Response Version: HTTP/1.1  
Status Code: 200  
[Status Code Description: OK]  
Response Phrase: OK  
Date: Tue, 29 Sep 2020 14:27:25 GMT\r\n  
Server: Apache\r\n  
X-Frame-Options: SAMEORIGIN\r\n  
Referrer-Policy: same-origin\r\n  
Feature-Policy: microphone 'none'; payment 'none'; sync-xhr 'self'\r\n  
Last-Modified: Fri, 07 Jul 2017 12:15:48 GMT\r\n

0000 78 4f 43 52 d9 0c c8 3a 35 26 bc 00 08 00 45 00 x0CR ..: 5&...E.  
0010 04 c6 5e 5f 00 00 35 06 82 88 a4 64 3a d9 c0 a8 ..^..5 ..d:..  
0020 00 65 00 50 da b1 eb c5 a5 45 db 2b 90 ef 80 18 .e.P ..: E+....  
0030 03 00 08 88 00 00 01 01 08 0a 05 57 7a 91 21 28 ..... .Wz !(  
0040 e7 f8 48 54 50 2f 31 2e 31 20 32 30 30 20 4f . HTTP/1 .1 200 0  
0050 4b 0d 0a 44 61 74 65 3a 20 54 75 65 2c 20 32 39 K-Date: Tue, 29  
0060 20 53 65 70 20 32 30 32 30 20 31 34 3a 32 37 3a Sep 202 0 14:27:  
0070 32 35 20 47 4d 54 00 0a 53 65 72 76 65 72 3a 20 25 GMT- Server:

Content-Type: Character string

Packets: 1225 · Displayed: 60 (4.9%) · Dropped: 0 (0.0%) · Profile: Default

## Task 03

Question 01 How many HTTP/2 and HTTP/1.1 packets are present?

Answer 01 The client sent 1 HTTP 1.1 Packet, which has a “Upgrade h2c” Header. The server responded with a packet which had both HTTP1.1 (101 Switching Protocol Response) & HTTP2 (Settings Stream) content. This response is shown under HTTP2 protocol in wireshark.  
Additional 8 HTTP2 Packets with multiple streams were exchanged between client & server.  
Total 10 Packets.

http2-h2c.pcap

Apply a display filter ... <%>

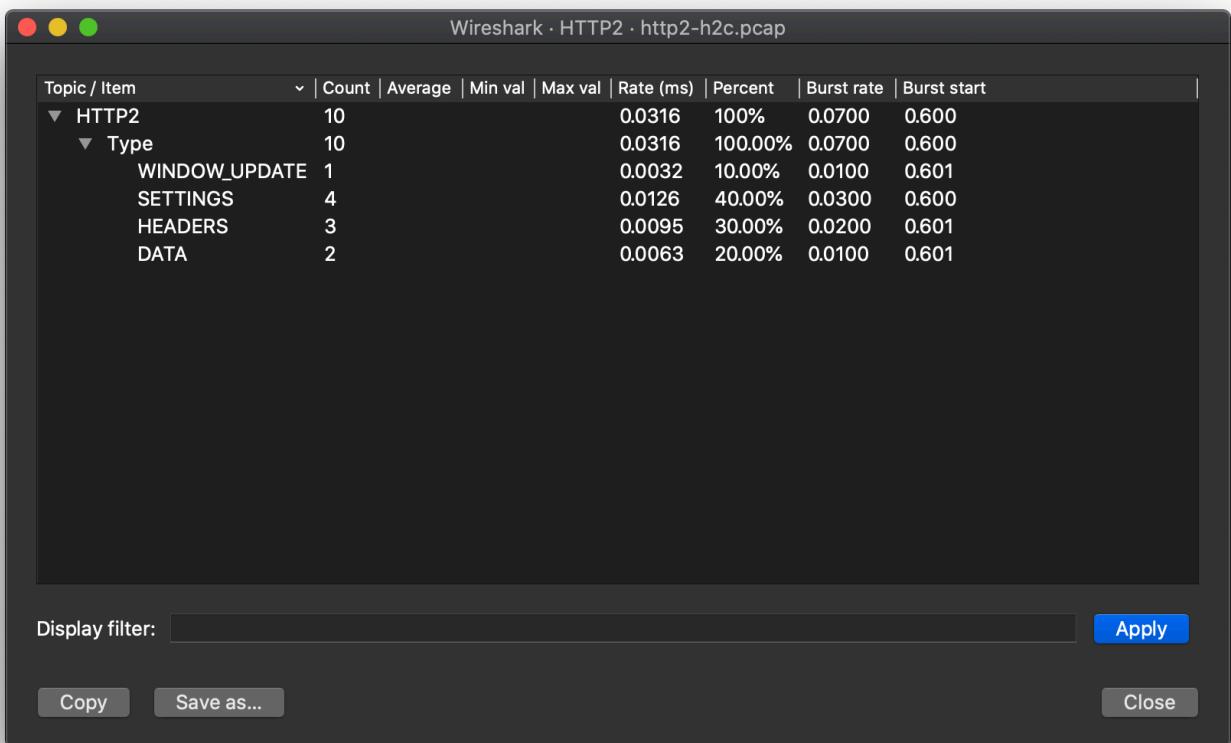
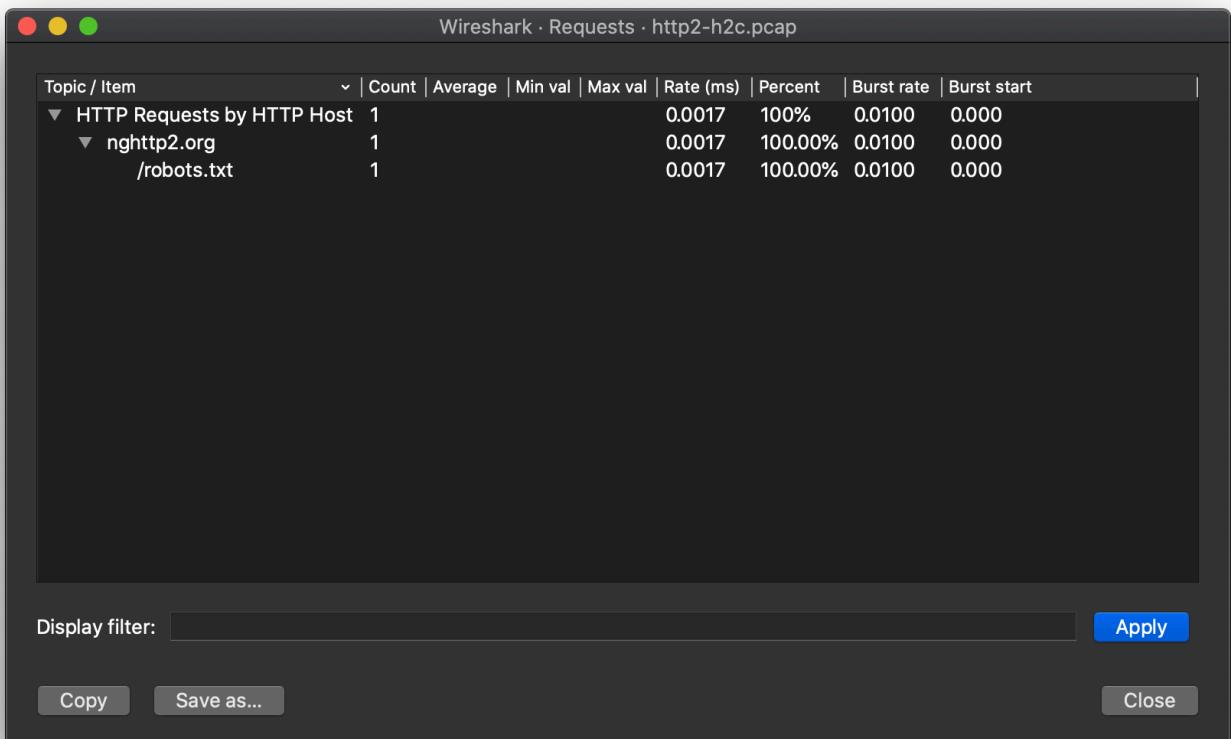
No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	10.9.0.2	139.162.123.134	HTTP	244	GET /robots.txt HTTP/1.1
2	0.600079	139.162.123.134	10.9.0.2	HTTP2	164	HTTP/1.1 101 Switching Protocols , SETTINGS[0]
3	0.600465	10.9.0.2	139.162.123.134	HTTP2	90	Magic
4	0.600541	10.9.0.2	139.162.123.134	HTTP2	93	SETTINGS[0]
5	0.600575	10.9.0.2	139.162.123.134	HTTP2	75	SETTINGS[0]
6	0.600596	139.162.123.134	10.9.0.2	HTTP2	342	HEADERS[1]: 200 OK, DATA[1] (text/plain)
7	0.600603	10.9.0.2	139.162.123.134	HTTP2	79	WINDOW_UPDATE[0]
8	0.601307	10.9.0.2	139.162.123.134	HTTP2	115	HEADERS[3]: GET /humans.txt
9	0.912304	139.162.123.134	10.9.0.2	HTTP2	75	SETTINGS[0]
10	0.916413	139.162.123.134	10.9.0.2	HTTP2	156	HEADERS[3]: 404 Not Found, DATA[3] (text/plain)

Frame 1: 244 bytes on wire (1952 bits), 244 bytes captured (1952 bits)  
Ethernet II, Src: 92:76:39:be:c1:81 (92:76:39:be:c1:81), Dst: 8a:7d:40:9e:52:1b (8a:7d:40:9e:52:1b)  
Internet Protocol Version 4, Src: 10.9.0.2, Dst: 139.162.123.134  
Transmission Control Protocol, Src Port: 50038, Dst Port: 80, Seq: 1, Ack: 1, Len: 178  
Hypertext Transfer Protocol  
GET /robots.txt HTTP/1.1\r\n  
Host: ngnhttp2.org\r\n

0000 8a 7d 40 9e 52 1b 92 76 39 be c1 81 08 00 45 00 ..}@R..v 9.....E.  
0010 00 e6 8c 70 40 00 40 06 9c 6e 0a 09 00 02 8b a2 ..p@. @.n.....  
0020 7b 86 e2 b6 00 50 a3 6a 31 8c a4 31 16 29 80 18 {.....P..j 1..1..  
0030 00 e5 12 0c 00 00 01 01 08 0a 44 e5 5f 6c d4 bc .....D..l..  
0040 f1 1b 47 45 54 20 2f 72 6f 62 67 74 73 2e 74 78 ..GET /r obots.tx  
0050 74 20 48 54 54 50 2f 31 2e 31 0d 0a 48 6f 73 74 t HTTP/1 .1-Host  
0060 3a 20 6e 67 68 74 74 70 32 2e 6f 72 67 0d 0a 55 : ngnhttp2.org..U  
0070 73 65 72 41 67 65 6e 74 3a 20 63 75 72 6c 2f ser-Agen: curl/  
0080 37 2e 36 31 2e 30 0d 0a 41 63 63 65 70 74 3a 20 7.61.0.. Accept:  
0090 2a 2f 2a 0d 0a 43 6f 6e 6e 65 63 74 69 6f 6e 3a \*/\*\*Connection:  
00a0 20 55 70 67 72 61 64 65 2c 20 48 54 54 50 32 2d Upgrade , HTTP2-  
00b0 53 65 74 74 69 6e 67 73 0d 0a 55 78 67 72 61 64 Settings ..Upgrad

Text item (text), 28 bytes

Packets: 10 · Displayed: 10 (100.0%) · Profile: Default



Question 02 How many HTTP/2 packets are exchanged between client and server here before the first object is fetched?

Answer 02 Total 5 packets are exchanged between client & server before the first object arrives (which is the 6<sup>th</sup> packet) and has 4 lines of robots.txt

No.	Time	Source	Destination	Protocol	Length	Connection	Cache-Control	Info
1	0.000000	10.9.0.2	139.162.123.1...	HTTP	244	Upgrade, HT...		GET /r...
2	0.600079	139.162.123.134	10.9.0.2	HTTP2	164	Upgrade		HTTP/1...
3	0.600465	10.9.0.2	139.162.123.1...	HTTP2	90			Magic
4	0.600541	10.9.0.2	139.162.123.1...	HTTP2	93			SETTING
5	0.600575	10.9.0.2	139.162.123.1...	HTTP2	75			SETTING
6	0.600596	139.162.123.134	10.9.0.2	HTTP2	342			HEADER
7	0.600603	10.9.0.2	139.162.123.1...	HTTP2	79			WINDOW
8	0.601307	10.9.0.2	139.162.123.1...	HTTP2	115			HEADER
9	0.912304	139.162.123.134	10.9.0.2	HTTP2	75			SETTING
10	0.916413	139.162.123.134	10.9.0.2	HTTP2	156			HEADER

Stream: HEADERS, Stream ID: 1, Length: 62, 200 us  
 ▶ Stream: DATA, Stream ID: 1, Length: 62  
 ▶ Line-based text data: text/plain (4 lines)  
 User-agent: \*\n Disallow: \n \n Sitemap: //nghhttp2.org/sitemap.xml \n

```
00e0 f2 b7 94 21 6a ec 3a 4a 44 98 f5 7f 8a 0f da 94  ...!j..J D.....  

00f0 9e 42 c1 1d 07 27 5f 40 90 f2 b1 0f 52 4b 52 56  .B...!@ .....RKRV.  

0100 4f aa ca b1 eb 49 8f 52 3f 85 a8 e8 a8 d2 cb 00  0.....I`R ?.....  

0110 00 3e 00 01 00 00 00 01 55 73 65 72 2d 61 67 65  >..... User-age  

0120 6e 74 3a 20 2a 0a 44 69 73 61 6c 6c 6f 77 3a 20  nt: *-Di sallow:  

0130 0a 0a 53 69 74 65 66 61 70 3a 20 2f 2f 6e 67 68  ..Sitema p: //ngh  

0140 74 74 70 32 2e 6f 72 67 2f 73 69 74 65 6d 61 70  ttp2.org /sitemap
```

Frame (342 bytes) | Decompressed Header (398 bytes) | Line-based text data (data-text-lines), 62 bytes | Packets: 10 · Displayed: 10 (100.0%) | Profile: Default

Question 03 What main difference do you observe in headers of HTTP/2 packets displayed here, compared to the headers of HTTP/1.1 packets?

Answer 03 **The HTTP 1.1 Header is not compressed.** The HTTP1.1 Headers here are:

- Request
  - o Method
  - o URI
  - o Version
- Host
- User Agent
- Accept
- Connection
- Upgrade
- HTTP2-Settings

In HTTP2, the packet is divided into different streams (Settings, Magic, Headers, Data) with each having different fields.

Each stream has following fields:

- Length
- Type
- Flags
- Stream Identifier

After the stream identifier, **comes the compressed Header block**, which contains N headers in following format.

- Name Length
- Name
- Value Length
- Value

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	10.9.0.2	139.162.123.134	HTTP	244	GET /robots.txt HTTP/1.1
2	0.600079	139.162.123.134	10.9.0.2	HTTP2	164	HTTP/1.1 101 Switching Protocols , SETTINGS[0]
3	0.600465	10.9.0.2	139.162.123.134	HTTP2	90	Magic
4	0.600541	10.9.0.2	139.162.123.134	HTTP2	93	SETTINGS[0]
5	0.600575	10.9.0.2	139.162.123.134	HTTP2	75	SETTINGS[0]
6	0.600596	139.162.123.134	10.9.0.2	HTTP2	342	HEADERS[1]: 200 OK, DATA[1] (text/plain)
7	0.600603	10.9.0.2	139.162.123.134	HTTP2	79	WINDOW_UPDATE[0]
8	0.601307	10.9.0.2	139.162.123.134	HTTP2	115	HEADERS[3]: GET /humans.txt

[Pad Length: 0]  
Header Block Fragment: 886196dd6d5f4a044a436cca08017940bb71905c682a62d1...  
[Header Length: 398]  
[Header Count: 13]

```

0040 5f 6c 00 00 c4 01 04 00 00 00 01 88 61 96 dd 6d l..... .a..m
0050 5f 4e 04 4a 43 6c ca 08 01 79 40 bb 71 90 5c 68 ..JCl.. y@-q:\h
0060 2a 62 d1 bf 5f 87 49 7c a5 8a e8 19 aa 6c 96 df *b-..I| ..L..
0070 69 7e 94 03 ca 68 1f a5 04 00 bc a0 59 b8 db 37 i~..h.. .Y..7
0080 04 25 31 68 df 0f 13 8b fe 5b 1c a1 c1 72 09 66 %1h.... [....r..f
0090 4b fc ff 52 84 8f d2 4a 8f 0f 0d 02 36 32 40 8f K..R...J ..62@.
00a0 f2 b4 63 27 52 d5 22 d3 94 72 16 c5 ac 4a 7f 86 ..c'R.." r...J..
00b0 02 e0 00 9c 69 bf 76 86 aa 69 d2 9a fc ff 7c 87 ...j.v.. i...|
00c0 12 95 4d 3a 53 5f 9f 40 8b f2 b4 66 0e 92 ac 7a ..M+S_@ .....z
00d0 d2 63 d4 8f 89 dd 0e 8c 1a b6 e4 c5 93 4f 40 8c ..c..... 0@.
00e0 f2 b7 94 21 6a ec 3a 4a 44 98 f5 7f 8a 0f d0 94 ..ij..; D.....
00f0 9e 42 c1 1d 07 27 5f 40 90 f2 b1 0f 52 4b 52 56 ..B..._@ ....RKRV
0100 4f aa ca b1 eb 49 8f 52 3f 85 a8 e8 a8 d2 cb 00 0.....I'R ?.....
0110 00 3e 00 01 00 00 01 55 73 65 72 d1 67 65 >..... User-age
0120 6e 74 3a 20 2a 0a 44 69 73 61 6c 6f 77 3a 20 nt: *Di sallow:
0130 0a 0a 53 69 74 65 6d 61 70 3a 20 2f 6e 67 68 ..Sistema p: //ngh
0140 74 74 78 32 2e 6f 72 67 2f 73 69 74 65 6d 61 70 ttp2.org /sitemap
0150 2e 78 6d 6c 20 0a .xml .

```

Frame (342 bytes) | Decompressed Header (398 bytes) | A header block fragment (http2.headers), 196 bytes | Packets: 10 · Displayed: 10 (100.0%) | Profile: Default

## PLAGIARISM STATEMENT

I certify that this assignment/report is my own work, based on my personal study and/or research and that I have acknowledged all material and sources used in its preparation, whether they be books, articles, reports, lecture notes, and any other kind of document, electronic or personal communication. I also certify that this assignment/report has not previously been submitted for assessment in any other course, except where specific permission has been granted from all course instructors involved, or at any other time in this course, and that I have not copied in part or whole or otherwise plagiarized the work of other students and/or persons. I pledge to uphold the principles of honesty and responsibility at CSE@IITH. In addition, I understand my responsibility to report honor violations by other students if I become aware of it.

Name: Bhavishya Sharma  
Roll No: CS20MTECH12006  
Date: 29<sup>th</sup> September, 2020

Signature: