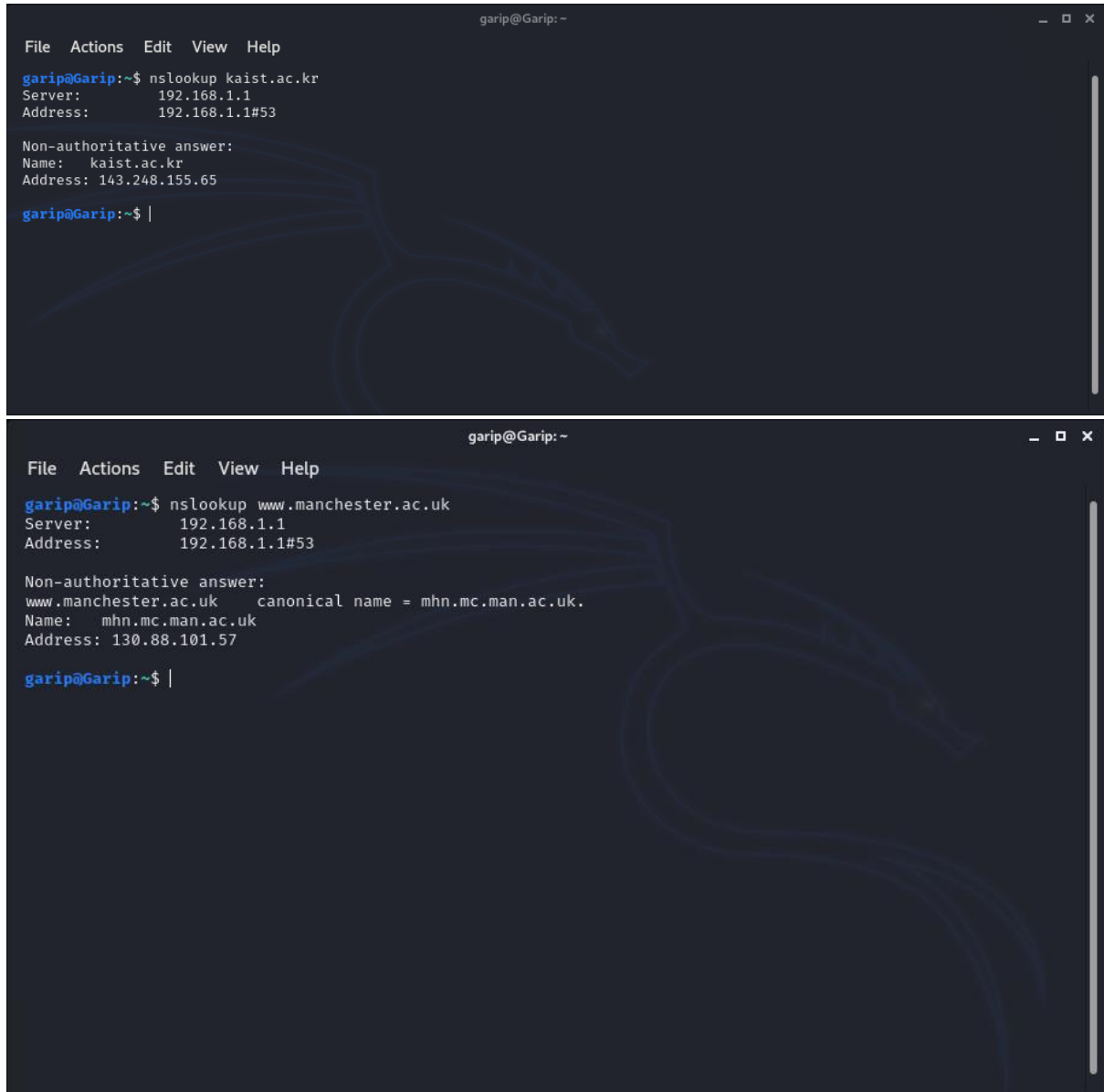


COMPUTER NETWORKS HW-2

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PART-1



The image consists of two screenshots of a terminal window. The terminal has a dark background with a faint blue dragon logo. The window title is 'garip@Garip: ~'. The menu bar shows 'File', 'Actions', 'Edit', 'View', and 'Help'. In the first screenshot, the user runs 'nslookup kaist.ac.kr'. The output shows the server as 192.168.1.1, the address as 192.168.1.1#53, and a non-authoritative answer with name 'kaist.ac.kr' and address '143.248.155.65'. In the second screenshot, the user runs 'nslookup www.manchester.ac.uk'. The output shows the server as 192.168.1.1, the address as 192.168.1.1#53, and a non-authoritative answer with canonical name 'mhn.mc.man.ac.uk', name 'mhn.mc.man.ac.uk', and address '130.88.101.57'.

```
garip@Garip: ~  
File Actions Edit View Help  
garip@Garip:~$ nslookup kaist.ac.kr  
Server:      192.168.1.1  
Address:     192.168.1.1#53  
  
Non-authoritative answer:  
Name:   kaist.ac.kr  
Address: 143.248.155.65  
  
garip@Garip:~$ |  
  
garip@Garip: ~  
File Actions Edit View Help  
garip@Garip:~$ nslookup www.manchester.ac.uk  
Server:      192.168.1.1  
Address:     192.168.1.1#53  
  
Non-authoritative answer:  
www.manchester.ac.uk canonical name = mhn.mc.man.ac.uk.  
Name:   mhn.mc.man.ac.uk  
Address: 130.88.101.57  
  
garip@Garip:~$ |
```

```
garip@Garip: ~  
File Actions Edit View Help  
garip@Garip:~$ nslookup www.manchester.ac.uk mail.yahoo.com  
;; connection timed out; no servers could be reached  
  
garip@Garip:~$ |
```

```
garip@Garip: ~  
File Actions Edit View Help  
garip@Garip:~$ nslookup mail.yahoo.com dns.google  
Server:      dns.google  
Address:     8.8.8.8#53  
  
Non-authoritative answer:  
mail.yahoo.com canonical name = edge.gycpi.b.yahoodns.net.  
Name:   edge.gycpi.b.yahoodns.net  
Address: 87.248.118.23  
Name:   edge.gycpi.b.yahoodns.net  
Address: 87.248.118.22  
Name:   edge.gycpi.b.yahoodns.net  
Address: 2a00:1288:80:800::7001  
Name:   edge.gycpi.b.yahoodns.net  
Address: 2a00:1288:80:800::7000  
  
garip@Garip:~$ |
```

Q.1) 143.248.155.65

Q.2) 130.88.101.57

Q.3) 87.248.118.23

PART-2

```
garip@Garip: ~  
File Actions Edit View Help  
garip@Garip:~$ ifconfig  
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
inet 192.168.1.34 netmask 255.255.255.0 broadcast 192.168.1.255  
inet6 fe80::48d:4ccd:43d4:f920 prefixlen 64 scopeid 0x20<link>  
ether 00:21:cc:b8:c8:92 txqueuelen 1000 (Ethernet)  
RX packets 153667 bytes 187920205 (179.2 MiB)  
RX errors 0 dropped 9 overruns 0 frame 0  
TX packets 106262 bytes 11725203 (11.1 MiB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
device interrupt 20 memory 0xf2500000-f2520000  
  
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536  
inet 127.0.0.1 netmask 255.0.0.0  
inet6 ::1 prefixlen 128 scopeid 0x10<host>  
loop txqueuelen 1000 (Local Loopback)  
RX packets 688 bytes 48500 (47.3 KiB)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 688 bytes 48500 (47.3 KiB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
wlan0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500  
ether 3e:93:44:87:ec:d1 txqueuelen 1000 (Ethernet)  
RX packets 4905 bytes 4047050 (3.8 MiB)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 3747 bytes 570398 (557.0 KiB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
garip@Garip:~$ |
```

PART-3A

Wireshark packet capture analysis of network traffic on interface eth0. The packet list shows a series of DNS queries and responses to www.ietf.org, followed by a TCP connection to 192.124.249.22. The packet details pane shows the structure of a DNS query packet (Standard query type A, class IN) and a TCP segment (Seq=64240, Win=65535). The packet bytes pane shows the raw hex and ASCII data of the captured packets.

eth0

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ip.addr == 192.168.1.34

No.	Time	Source	Destination	Protocol	Length	Info
5	4.769095251	192.168.1.34	192.168.1.1	DNS	-	Standard query 0xde98 A www.ietf.org
6	4.620243512	192.168.1.1	192.168.1.34	DNS	-	Standard query response 0xde98 A www.ietf.org CNAME www.ietf.org.cdn.cloudflare.net A 104.16.44.99 A 104.16.45.99
7	4.620375100	192.168.1.34	192.168.1.1	DNS	-	Standard query 0xd43d AAAA www.ietf.org
8	4.700513398	192.168.1.1	192.168.1.34	DNS	-	Standard query response 0xd43d AAAA www.ietf.org CNAME www.ietf.org.cdn.cloudflare.net AAAA 2606:4700:6810:2d63 AAAA 2606:4700:6810:2d63
9	4.769953441	192.168.1.34	104.16.44.99	TCP	43508	-> [SYN] Seq=0 Win=64240 Len=0 MSS=1460 SACK_PERM=1 TSval=245231248 TSecr=0 WS=128
10	4.769152629	192.168.1.34	104.16.44.99	TCP	43510	-> [SYN] Seq=0 Win=64240 Len=0 MSS=1460 SACK_PERM=1 TSval=245231248 TSecr=0 WS=128
11	4.769617542	104.16.44.99	192.168.1.34	TCP	80	-> 43508 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1490 SACK_PERM=1 WS=1024
12	4.7695745049	192.168.1.34	104.16.44.99	TCP	43508	-> [ACK] Seq=1 Ack=1 Win=64256 Len=0
13	4.769593530	192.168.1.34	104.16.44.99	HTTP	-	GET / HTTP/1.1
14	4.769799796	104.16.44.99	192.168.1.34	TCP	80	-> 43510 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1490 SACK_PERM=1 WS=1024
15	4.769858763	192.168.1.34	104.16.44.99	TCP	43510	-> [ACK] Seq=1 Ack=1 Win=64256 Len=0
16	4.7696319476	104.16.44.99	192.168.1.34	TCP	80	-> 43508 [ACK] Seq=1 Ack=324 Win=67504 Len=0
17	4.7698027022	192.168.1.34	104.16.44.99	HTTP	-	HTTP/1.1 301 Moved Permanently
18	4.7698093408	192.168.1.34	104.16.44.99	TCP	43508	-> [ACK] Seq=324 Ack=353 Win=64128 Len=0
19	4.7698327771	192.168.1.34	104.16.44.99	TCP	53046	-> 443 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 SACK_PERM=1 TSval=245231248 TSecr=0 WS=128
20	4.7692169979	104.16.44.99	192.168.1.34	TCP	443	-> 53046 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1490 SACK_PERM=1 WS=1024
21	4.7692218655	192.168.1.34	104.16.44.99	TCP	53046	-> 443 [ACK] Seq=1 Ack=1 Win=64256 Len=0
22	4.769489538	192.168.1.34	104.16.44.99	TLVsl.3	-	Client Hello
23	4.912368709	104.16.44.99	192.168.1.34	TCP	443	-> 53046 [ACK] Seq=1 Ack=518 Win=67584 Len=0
24	4.912539845	104.16.44.99	192.168.1.34	TLVsl.3	-	Server Hello, Change Cipher Spec

Frame 9: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface eth0, id 0

Ethernet II, Src: Flextron_B8:c8:b2 (00:21:cc:b8:c8:b2), Dst: ZyxelCom_10:02:10 (bc:99:11:02:10:10)

Internet Protocol Version 4, Src: 192.168.1.34, Dst: 104.16.44.99

Transmission Control Protocol, Src Port: 43508, Dst Port: 80, Seq: 0, Len: 0

Source Port: 43508

Destination Port: 80

[Stream index: 0]

TCP Segment Len: 0

Sequence number: 0 (relative sequence number)

Sequence number (raw): 1628099135

Next sequence number: 1 (relative sequence number)

Acknowledgment number: 0

Acknowledgment number (raw): 0

Window size: 0

Window size (raw): 0

Flags: 0x002 (SYN)

Window size value: 64240

[Calculated window size: 64240]

Checksum: 0x566c [unverified]

[Checksum Status: Unverified]

Urgent pointer: 0

Options: (20 bytes), Maximum segment size, SACK permitted, Timestamps, No-Operation (NOP), Window scale

[Timestamps]

00000 bc 99 11 02 10 82 10 00 21 cc b8 c8 92 08 00 45 90E...

wreshark.eth0.202010102227259.wz9rIn.pcapng

Packets: 977 · Displayed: 967 (99.0%) · Dropped: 0 (0.0%)

Profile: Default

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help					
*eth0					
ip.addr == 192.168.1.34					
No.	Time	Source	Destination	Protocol	Info
5	4.478695251	192.168.1.34	192.168.1.1	DNS	Standard query 0xde38 A www.ietf.org
6	4.520293539	192.168.1.1	192.168.1.34	DNS	Standard query response 0xde38 A www.ietf.org CNAME www.ietf.org.cdn.cloudflare.net A 104.16.44.99 A 104.16.45.99
7	4.629375160	192.168.1.34	192.168.1.1	DNS	Standard query 0xd43d AAAA www.ietf.org
8	4.768523398	192.168.1.1	192.168.1.34	DNS	Standard query response 0xd43d AAAA www.ietf.org CNAME www.ietf.org.cdn.cloudflare.net AAAA 2606:4700::6818:2063 AAAA 2606:4700::6818:2c63
457	5.529324485	192.168.1.34	192.168.1.1	DNS	Standard query 0xa406 A analytics.ietf.org
894	5.960925873	192.168.1.1	192.168.1.34	DNS	Standard query response 0xa406 A analytics.ietf.org CNAME ietf.org A 4.31.198.44
895	5.960512190	192.168.1.34	192.168.1.1	DNS	Standard query 0xa6d1 AAAA analytics.ietf.org
901	6.557262322	192.168.1.1	192.168.1.34	DNS	Standard query response 0xa6d1 AAAA analytics.ietf.org CNAME ietf.org AAAA 2801:1900:3001:111::2c
915	7.254377253	192.168.1.34	192.168.1.1	DNS	Standard query 0x150e A oosp.starfieldtech.com
916	7.320803271	192.168.1.1	192.168.1.34	DNS	Standard query response 0x150e A oosp.starfieldtech.com CNAME oosp.godaddy.com.akadns.net A 192.124.249.22 A 192.124.249.41 A 192.124.249.36 A 192.124.249.2
917	7.332148810	192.168.1.34	192.168.1.1	DNS	Standard query 0xc390 AAAA oosp.starfieldtech.com
918	7.341887367	192.168.1.1	192.168.1.34	DNS	Standard query response 0xc390 AAAA oosp.starfieldtech.com CNAME oosp.godaddy.com.akadns.net SOA internal.akadns.net
13	4.785985330	192.168.1.34	104.16.44.99	HTTP	GET / HTTP/1.1
17	4.859022822	104.16.44.99	192.168.1.34	HTTP	HTTP/1.1 301 Moved Permanently
922	7.431452921	192.168.1.34	192.124.249.22	OCSP	Request
926	7.848957515	192.124.249.22	192.168.1.34	OCSP	Response
9	4.769061441	192.168.1.34	104.16.44.99	TCP	43508 -- 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 SACK_PERM=1 TSval=2452371248 TSecr=0 WS=128
10	4.769151620	192.168.1.34	104.16.44.99	TCP	43510 -- 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 SACK_PERM=1 TSval=2452371248 TSecr=0 WS=128
11	4.785671542	104.16.44.99	192.168.1.34	TCP	80 -- 43508 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1490 SACK_PERM=1 WS=1024
12	4.785745040	192.168.1.34	104.16.44.99	TCP	43508 -- 80 [ACK] Seq=1 Ack=1 Win=64256 Len=0
Frame 6: 149 bytes on wire (1192 bits), 149 bytes captured (1192 bits) on interface eth0, 10 B Ethernet II, Src: ZyxelCom 18:92:10 (bc:99:11:10:92:10), Dst: Flextron 08:c8:92 (00:21:cc:b8:c8:92) Internet Protocol Version 4, Src: 192.168.1.1, Dst: 192.168.1.34 User Datagram Protocol, Src Port: 53, Dst Port: 47621 Domain Name System (response) Transaction ID: 0xde38 Flags: 0x0180 Standard query response, No error Questions: 1 Answer RRs: 3 Authority RRs: 0 Additional RRs: 0 Queries Answers www.ietf.org: type CNAME, class IN, cname www.ietf.org.cdn.cloudflare.net Name: www.ietf.org Type: CNAME (Canonical NAME for an alias) (5) Class: IN (0x0001) Time to live: 1800 (30 minutes) Data length: 33 CNAME: www.ietf.org.cdn.cloudflare.net www.ietf.org.cdn.cloudflare.net: type A, class IN, addr 104.16.44.99 Name: www.ietf.org.cdn.cloudflare.net Type: A (Host Address) (1) Class: IN (0x0001) Time to live: 300 (5 minutes) Data length: 4 Address: 104.16.44.99 www.ietf.org.cdn.cloudflare.net: type A, class IN, addr 104.16.45.99 Name: www.ietf.org.cdn.cloudflare.net Type: A (Host Address) (1) Class: IN (0x0001) Time to live: 300 (5 minutes) Data length: 4 Address: 104.16.45.99 [Request In: 5] [Time: 0.149548261 seconds]					
0000 0011cc0011cc00 bc 99 11 10 02 10 08 00 45 00 0000 E Wireshark_eth0_20201203222359_wZBCIN.pcapng					
Packets: 977 · Displayed: 967 (99.0%) · Dropped: 0 (0.0%) Profile: Default					

Q.4) They are sent over UDP.

Q.5) Destination port for the DNS query is 53 and source port for response is 53.

Q.6) 192.168.1.34 is my IP address.

Q.7) It's a type A query. There are no answers.

Q.8) There are 3 answers. Answers are about the type of address, name of the host, the data length.

Q.9) The first SYN was sent to 104.16.44.99. It is the IP address of the second answer.

Q.10) There is any new DNS query for the images.

PART-3B

```
garip@Garip: ~  
File Actions Edit View Help  
garip@Garip:~$ nslookup -type=NS mit.edu  
Server:      192.168.1.1  
Address:     192.168.1.1#53  
  
Non-authoritative answer:  
mit.edu nameserver = eur5.akam.net.  
mit.edu nameserver = use2.akam.net.  
mit.edu nameserver = asia2.akam.net.  
mit.edu nameserver = asia1.akam.net.  
mit.edu nameserver = ns1-37.akam.net.  
mit.edu nameserver = usw2.akam.net.  
mit.edu nameserver = use5.akam.net.  
mit.edu nameserver = ns1-173.akam.net.  
  
Authoritative answers can be found from:  
garip@Garip:~$ |
```

eth0

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ip.addr == 192.168.1.34

No.	Time	Source	Destination	Protocol	Len/Info
10	3.264531402	192.168.1.34	192.168.1.1	DNS	Standard query 0x713a A www.mit.edu
11	3.432920479	192.168.1.1	192.168.1.34	DNS	Standard query response 0x713a A www.mit.edu CNAME e9566.dscb.akamaiedge.net A 23.7.287.228
12	3.432928023	192.168.1.34	192.168.1.1	DNS	Standard query 0x719e AAAA e9566.dscb.akamaiedge.net
13	3.462386598	192.168.1.1	192.168.1.34	DNS	Standard query response 0x719e AAAA e9566.dscb.akamaiedge.net AAAA 2a02:26f0:fa00:1d1::255e AAAA 2a02:26f0:fa00:1a9::255e

Frame 10: 71 bytes on wire (568 bits), 71 bytes captured (568 bits) on interface eth0, id 0
Ethernet II, Src: Flextron_b8:c8:92 (08:21:cc:b8:c8:92), Dst: ZyxelCom_10:02:10 (bc:99:11:10:02:10)
Internet Protocol Version 4, Src: 192.168.1.34, Dst: 192.168.1.1
User Datagram Protocol, Src Port: 33994, Dst Port: 53
Source Port: 33994
Destination Port: 53
Length: 37
Checksum: 0x82aa [unverified]
[Checksum Status: Unverified]
[Stream index: 1]
[Timestamps]
Domain Name System (query)
Transaction ID: 0x713a
Flags: 0x0100 Standard query
Questions: 1
Answer RRs: 0
Authority RRs: 0
Additional RRs: 0
Queries
www.mit.edu: type A, class IN
Name: www.mit.edu
[Name Length: 11]
[Label Count: 3]
Type: A (Host Address) (1)
Class: IN (0x0001)
(Response in: 11)

0000 01 01 84 ca 00 35 00 25 83 aa 71 3a 01 00 00 015 % .q:....
The response to this DNS query is in this frame (dns.response_in)

Packets: 17 - Displayed: 4 (23.5%) - Dropped: 0 (0.0%) Profile: Default

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help						
*eth0						
Filter: ip.addr == 192.168.1.34						
No.	Time	Source	Destination	Protocol	Len	Info
10	3.264531402	192.168.1.34	192.168.1.1	DNS	...	Standard query 0x713a A www.mit.edu
11	3.432928023	192.168.1.34	192.168.1.1	DNS	...	Standard query response 0x713a A www.mit.edu CNAME www.mit.edu.edgekey.net CNAME e9566.dscb.akamaiedge.net A 23.7.207.228
12	3.432928023	192.168.1.34	192.168.1.1	DNS	...	Standard query 0x719e AAAA e9566.dscb.akamaiedge.net
13	3.462388598	192.168.1.1	192.168.1.34	DNS	...	Standard query response 0x719e AAAA e9566.dscb.akamaiedge.net AAAA 2a02:26f0:fa00:101::255e AAAA 2a02:26f0:fa00:1a0::255e
▶ Frame 11: 160 bytes on wire (1280 bits), 160 bytes captured (1280 bits) on interface eth0, id 0 ▶ Ethernet II, Src: ZyxelCom_10:02:10 (bc:99:11:10:02:10), Dst: Flextron_B8:c8:92 (00:21:cc:b8:c8:92) ▶ Internet Protocol Version 4, Src: 192.168.1.1, Dst: 192.168.1.34 ▶ User Datagram Protocol, Src Port: 53, Dst Port: 33994 Source Port: 53 Destination Port: 33994 Length: 126 Checksum: 0xd89a [unverified] [Checksum Status: Unverified] [Stream index: 1] [Timestamps] ▶ Domain Name System (response) Transaction ID: 0x713a Flags: 0x0100 Standard query response, No error Questions: 1 Answer RRs: 3 Authority RRs: 0 Additional RRs: 0 ▶ Queries ▶ www.mit.edu: type A, class IN Name: www.mit.edu [Name Length: 11] [Label Count: 3] Type: A (Host Address) (1) Class: IN (0x0001) ▶ Answers ▶ www.mit.edu: type CNAME, class IN, cname www.mit.edu.edgekey.net Name: www.mit.edu Type: CNAME (Canonical NAME for an alias) (5) Class: IN (0x0001) Time to live: 1800 (30 minutes) Data length: 25 CNAME: www.mit.edu.edgekey.net ▶ www.mit.edu.edgekey.net: type CNAME, class IN, cname e9566.dscb.akamaiedge.net Name: www.mit.edu.edgekey.net Type: CNAME (Canonical NAME for an alias) (5) Class: IN (0x0001) Time to live: 60 (1 minute) Data length: 24 CNAME: e9566.dscb.akamaiedge.net ▶ e9566.dscb.akamaiedge.net: type A, class IN, addr 23.7.207.228 Name: e9566.dscb.akamaiedge.net Type: A (Host Address) (1) Class: IN (0x0001) Time to live: 20 (20 seconds) Data length: 4 Address: 23.7.207.228 [Request In: 10] [Time: 0.160751077 seconds]						
0000 00 21 cc b8 c8 92 bc 99 11 10 02 10 00 00 45 00E wireshark_eth0_20201203230552_rhbwVK.pcapng						
				Packets: 17 · Displayed: 4 (23.5%) · Dropped: 0 (0.0%)		Profile: Default

Q.11) Destination port for the DNS query is 53 and source port for response is 53.

Q.12) It's sent to 192.168.1.1

Q.13) The type of the query is A and doesn't contains any answers.

Q.14) The response DNS contains 3 answers.

PART-3C

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help						
*eth0						
Filter: ip.addr == 192.168.1.34						
No.	Time	Source	Destination	Protocol	Len	Info
1	0.000000000	192.168.1.34	70.125.73.87	TCP	57588	→ 443 [ACK] Seq=1 Ack=1 Win=501 Len=0 TSval=4220508933 TSecr=1930743295
3	1.024081002	192.168.1.34	70.125.73.87	TCP	57588	→ 443 [RST, ACK] Seq=1 Ack=1 Win=501 Len=0 TSval=4220508933 TSecr=1930743295
4	2.049564032	192.168.1.34	192.168.1.1	DNS	...	Standard query 0xa0e0 NS mit.edu
5	3.024151500	192.168.1.1	192.168.1.34	DNS	...	Standard query response 0xa0e0 NS mit.edu NS eur5.akam.net NS use2.akam.net NS asia1.akam.net NS ns1-37.akam.net NS use2.akam.net NS use5.akam.n...
8	6.518375494	2.20.149.111	192.168.1.34	TLSv1.2	...	Application Data
9	6.518422731	192.168.1.34	2.20.149.111	TCP	60280	→ 443 [ACK] Seq=1 Ack=25 Win=501 Len=0 TSval=2813507512 TSecr=2833407248
10	6.518469063	2.20.149.111	192.168.1.34	TCP	448	→ 60280 [FIN, ACK] Seq=25 Ack=1 Win=501 Len=0 TSval=2813507248 TSecr=2833407615
11	6.518538291	192.168.1.34	2.20.149.111	TLSv1.2	...	Application Data
12	6.518977787	192.168.1.34	2.20.149.111	TLSv1.2	...	Application Data
13	6.519017592	192.168.1.34	2.20.149.111	TCP	60280	→ 443 [FIN, ACK] Seq=64 Ack=26 Win=501 Len=0 TSval=2813507513 TSecr=2833407248
14	6.543896345	2.20.149.111	192.168.1.34	TCP	443	→ 60280 [RST] Seq=26 Win=0 Len=0
▶ Frame 4: 67 bytes on wire (536 bits), 67 bytes captured (536 bits) on interface eth0, id 0 ▶ Ethernet II, Src: Flextron_B8:c8:92 (00:21:cc:b8:c8:92), Dst: ZyxelCom_10:02:10 (bc:99:11:10:02:10) ▶ Internet Protocol Version 4, Src: 192.168.1.34, Dst: 192.168.1.1 ▶ User Datagram Protocol, Src Port: 36066, Dst Port: 53 Source Port: 36066 Destination Port: 53 Length: 38 Checksum: 0x83a6 [unverified] [Checksum Status: Unverified] [Stream index: 0] [Timestamps] ▶ Domain Name System (query) Transaction ID: 0xa0e0 Flags: 0x0100 Standard query Questions: 1 Answer RRs: 0 Authority RRs: 0 Additional RRs: 0 ▶ Queries ▶ mit.edu: type NS, class IN Name: mit.edu [Name Length: 7] [Label Count: 2] Type: NS (authoritative Name Server) (2) Class: IN (0x0001) [Response In: 5]						
0030 00 00 00 00 00 00 00 03 60 60 74 03 05 64 75 00 0011.edu... Text item (text), 13 bytes						
				Packets: 14 · Displayed: 11 (78.6%) · Dropped: 0 (0.0%)		Profile: Default

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ip.addr == 192.168.1.34

No.	Time	Source	Destination	Protocol	Len/Info
2	3.756973893	192.168.1.34	192.168.1.1	DNS	Standard query 0xecd3 A ns2.guvenlikcozumleri.com
3	3.756989992	192.168.1.34	192.168.1.1	DNS	Standard query 0xf4de AAAA ns2.guvenlikcozumleri.com
4	3.834350165	192.168.1.1	192.168.1.34	DNS	Standard query response 0xecd3 A ns2.guvenlikcozumleri.com A 91.93.102.43
6	7.471478595	192.168.1.1	224.0.0.1	IGMPv2	Membership Query, general
8	8.761701433	192.168.1.34	192.168.1.1	DNS	Standard query 0xecd3 A ns2.guvenlikcozumleri.com
9	8.762881833	192.168.1.1	192.168.1.34	DNS	Standard query response 0xecd3 A ns2.guvenlikcozumleri.com A 91.93.102.43
10	8.762873827	192.168.1.34	192.168.1.1	DNS	Standard query 0xf4de AAAA ns2.guvenlikcozumleri.com
11	8.797913164	192.168.1.34	79.125.73.87	TCP	57666 -> 443 [ACK] Seq=1 Win=561 Len=0 TSval=4228956389 TSecr=1931183734
12	8.837382149	192.168.1.1	192.168.1.34	DNS	Standard query response 0xf4de AAAA ns2.guvenlikcozumleri.com SOA hostingsrvr.guvenlikcozumleri.com
13	8.839229689	192.168.1.34	91.93.102.43	DNS	Standard query 0xbe22 A kaist.ac.kr
14	8.850951552	91.93.102.43	192.168.1.34	DNS	Standard query response 0xbe22 A kaist.ac.kr A 143.248.155.65
15	8.85119910	192.168.1.34	91.93.102.43	DNS	Standard query 0xd9db AAAA kaist.ac.kr
16	8.852003996	91.93.102.43	192.168.1.34	TCP	14328 -> 443 [ACK] Seq=1 Win=442 Len=0 TSval=1831119289 TSecr=4228925631
17	9.210828883	91.93.102.43	192.168.1.34	DNS	Standard query response 0xd9db AAAA kaist.ac.kr SOA dns181.kaist.ac.kr

Frame 14: 87 bytes on wire (696 bits), 87 bytes captured (696 bits) on interface eth0, id 0

Ethernet II, Src: ZyeoCom_18:02:10 (bc:99:11:10:02:10), Dst: Flextron_b8:c8:92 (00:21:cc:b8:c8:92)

Internet Protocol Version 4, Src: 91.93.102.43, Dst: 192.168.1.34

User Datagram Protocol, Src Port: 53, Dst Port: 42422

Source Port: 53
Destination Port: 42422
Length: 53
Checksum: 0x848d [unverified]
[Checksum Status: Unverified]
[Stream Index: 1]
[Timestamps]

Domain Name System (response)

Transaction ID: 0xbe22

Flags: 0x180 Standard query response, No error

Questions: 1
Answer RRs: 1
Authority RRs: 0
Additional RRs: 0

Queries

- kaist.ac.kr: type A, class IN
 - Name: kaist.ac.kr
[Name Length: 11]
[Label Count: 3]
Type: A (Host Address) (1)
Class: IN (0x0001)

Answers

- kaist.ac.kr: type A, class IN, addr 143.248.155.65
 - Name: kaist.ac.kr
Type: A (Host Address) (1)
Class: IN (0x0001)
Time to live: 2456 (40 minutes, 56 seconds)
Data length: 4
Address: 143.248.155.65
[Request in: 13]
[Time: 0.817661894 seconds]

0030 00 01 00 00 00 00 00 01 00 73 74 02 01 03 00 kaist.ac

Text Item (text), 17 bytes

Packets: 20 · Displayed: 14 (70.0%) · Dropped: 0 (0.0%)

Profile: Default

Q.20) 91.93.102.43

Q.21) The type is A. It doesn't contains any answers.

Q.22) There is one answer. It contains name, type, class and data length.

EXTRAS)

1) In that part, I can not obtain any answer in Linux so I use Windows.

```
Microsoft Windows [Version 10.0.18363.1198]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Garip>nslookup www.marmara.edu.tr a.root-servers.net
in-addr.arpa    nameserver = a.in-addr-servers.arpa
in-addr.arpa    nameserver = b.in-addr-servers.arpa
in-addr.arpa    nameserver = c.in-addr-servers.arpa
in-addr.arpa    nameserver = d.in-addr-servers.arpa
in-addr.arpa    nameserver = e.in-addr-servers.arpa
in-addr.arpa    nameserver = f.in-addr-servers.arpa
a.in-addr-servers.arpa internet address = 199.180.182.53
b.in-addr-servers.arpa internet address = 199.253.183.183
c.in-addr-servers.arpa internet address = 196.216.169.18
d.in-addr-servers.arpa internet address = 200.19.60.53
e.in-addr-servers.arpa internet address = 203.119.86.101
f.in-addr-servers.arpa internet address = 193.0.9.1
a.in-addr-servers.arpa AAAA IPv6 address = 2620:37:e000::53
b.in-addr-servers.arpa AAAA IPv6 address = 2001:500:67::87
c.in-addr-servers.arpa AAAA IPv6 address = 2001:43f8:1d9::10
d.in-addr-servers.arpa AAAA IPv6 address = 2001:13c7:7018::53
e.in-addr-servers.arpa AAAA IPv6 address = 2001:dd8:6::101
f.in-addr-servers.arpa AAAA IPv6 address = 2001:67c:e0::1
Server: Unknown
Address: 198.41.0.4

Name: www.marmara.edu.tr
Served by:
- ns21.nic.tr
  213.14.246.2
  tr
- ns22.nic.tr
  213.14.246.6
  tr
- ns31.nic.tr
  31.210.155.2
  tr
- ns41.nic.tr
  185.7.0.2
  2001:a98:10:eeee:41
  tr
- ns42.nic.tr
  185.7.0.3
  2001:a98:10:eeee:42
  tr
- ns61.nic.tr
  206.51.254.1
  2620:171:804:ad2::1
  tr

C:\Users\Garip>

C:\Users\Garip>nslookup www.marmara.edu.tr ns21.nic.tr
Server: Unknown
Address: 213.14.246.2

Name: www.marmara.edu.tr
Served by:
- ns1.marmara.edu.tr
  193.140.143.2
  2001:a98:a070:8c8f::2
  marmara.edu.tr
- ns2.marmara.edu.tr
  193.140.143.3
  2001:a98:a070:8c8f::3
  marmara.edu.tr

C:\Users\Garip>

C:\Users\Garip>nslookup www.marmara.edu.tr ns1.marmara.edu.tr
Server: Unknown
Address: 193.140.143.2

Name: www.marmara.edu.tr
Addresses: 2001:a98:a070:8c8f::2b
           193.140.143.43

C:\Users\Garip>
```

2)

```
garip@Garip: ~  
File Actions Edit View Help  
garip@Garip:~$ nslookup www.mit.edu  
Server:      192.168.1.1  
Address:     192.168.1.1#53  
  
Non-authoritative answer:  
www.mit.edu canonical name = www.mit.edu.edgekey.net.  
www.mit.edu.edgekey.net canonical name = e9566.dscb.akamaiedge.net.  
Name:   e9566.dscb.akamaiedge.net  
Address: 184.24.11.231  
Name:   e9566.dscb.akamaiedge.net  
Address: 2a02:26f0:fa00:1b1::255e  
Name:   e9566.dscb.akamaiedge.net  
Address: 2a02:26f0:fa00:1a9::255e  
  
garip@Garip:~$ |
```

```
garip@Garip: ~  
File Actions Edit View Help  
garip@Garip:~$ nslookup satlab.cmpe.boun.edu.tr  
Server:      192.168.1.1  
Address:     192.168.1.1#53  
  
Non-authoritative answer:  
satlab.cmpe.boun.edu.tr canonical name = kalkan.cmpe.boun.edu.tr.  
Name:   kalkan.cmpe.boun.edu.tr  
Address: 79.123.177.146  
  
garip@Garip:~$ |
```

```
garip@Garip: ~  
File Actions Edit View Help  
garip@Garip:~$ nslookup netlab.cmpe.boun.edu.tr  
Server:      192.168.1.1  
Address:     192.168.1.1#53  
  
Non-authoritative answer:  
netlab.cmpe.boun.edu.tr canonical name = orkinos.cmpe.boun.edu.tr.  
Name:   orkinos.cmpe.boun.edu.tr  
Address: 79.123.177.242  
  
garip@Garip:~$ |
```

```
garip@Garip: ~  
File Actions Edit View Help  
garip@Garip:~$ nslookup -type=NS www.marmara.edu.tr  
Server:      192.168.1.1  
Address:     192.168.1.1#53  
  
Non-authoritative answer:  
*** Can't find www.marmara.edu.tr: No answer  
  
Authoritative answers can be found from:  
marmara.edu.tr  
    origin = ns1.marmara.edu.tr  
    mail addr = sysadmin.marmara.edu.tr  
    serial = 2020120101  
    refresh = 10800  
    retry = 900  
    expire = 2419200  
    minimum = 900  
  
garip@Garip:~$ |
```

```
garip@Garip: ~  
File Actions Edit View Help  
garip@Garip:~$ nslookup -type=NS www.cmpe.boun.edu.tr  
Server:      192.168.1.1  
Address:     192.168.1.1#53  
  
Non-authoritative answer:  
www.cmpe.boun.edu.tr canonical name = vileda.cmpe.boun.edu.tr.  
  
Authoritative answers can be found from:  
cmpe.boun.edu.tr  
    origin = ns1.cmpe.boun.edu.tr  
    mail addr = admin.cmpe.boun.edu.tr  
    serial = 2020102801  
    refresh = 10800  
    retry = 3600  
    expire = 604800  
    minimum = 86400  
  
garip@Garip:~$ |
```

```
garip@Garip: ~  
File Actions Edit View Help  
garip@Garip:~$ nslookup -type=NS www.boun.edu.tr  
Server:      192.168.1.1  
Address:     192.168.1.1#53  
  
Non-authoritative answer:  
www.boun.edu.tr canonical name = lir.cc.boun.edu.tr.  
  
Authoritative answers can be found from:  
cc.boun.edu.tr  
    origin = simurg.cc.boun.edu.tr  
    mail addr = hostmaster.boun.edu.tr  
    serial = 2020110501  
    refresh = 10800  
    retry = 3600  
    expire = 604800  
    minimum = 86400  
  
garip@Garip:~$ |
```