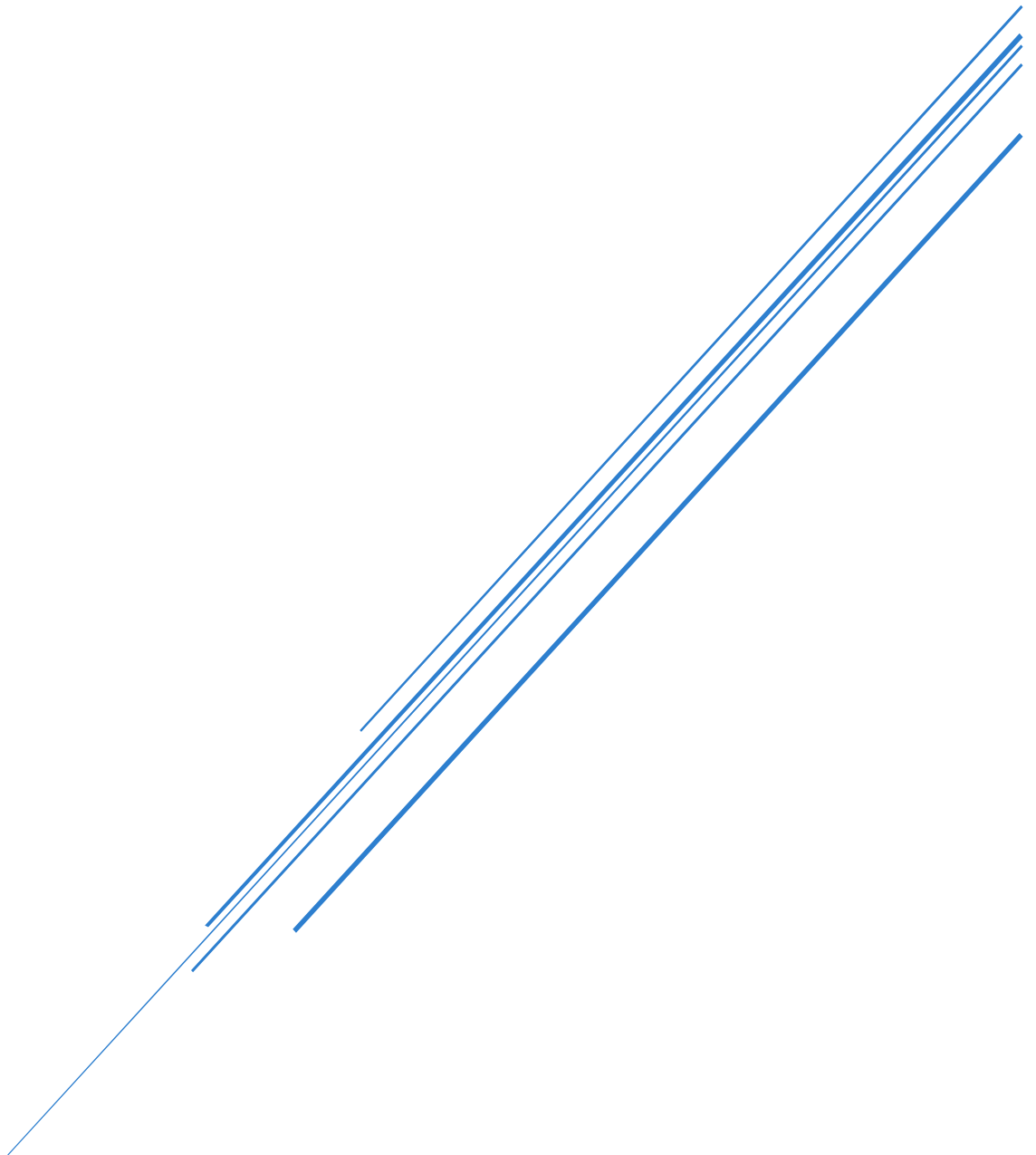


# ASSIGNMENT#2

Computer Networks



Ahmad Abdullah  
I22-1609

## Question#1

1 & 3 .

The IP address of nu.edu.pk is 192.168.0.1 and the IP address of the DNS server is 203.124.44.78

```
Microsoft Windows [Version 10.0.19045.4170]
(c) Microsoft Corporation. All rights reserved.

C:\Users\green>nslookup nu.edu.pk
Server:      Unknown
Address:     192.168.0.1

Non-authoritative answer:
Name:       nu.edu.pk
Address:    203.124.44.78

C:\Users\green>
```

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2.

The IP address of flex.nu.edu.pk is also 192.168.0.1

```
C:\Users\green>nslookup flex.nu.edu.pk
Server:      Unknown
Address:     192.168.0.1

Non-authoritative answer:
Name:       flex.nu.edu.pk
Address:    115.186.60.84

C:\Users\green>
```

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4.

The nslookup command in question 1 above comes from a non-authoritative server because generally the first request is done to the non-authoritative server which upon not having the answer sends the request to TLD or a higher server in the hierarchy and the server higher above sends the answer back to the non-authoritative server which sends the response to the client.

5.

The command to find the authoritative server is nslookup "-type=NS" nu.edu.pk and the IP of the authoritative server is 192.168.43.1

```
C:\Users\green>nslookup "-type=NS" nu.edu.pk
Server: UnKnown
Address: 192.168.43.1

Non-authoritative answer:
nu.edu.pk      nameserver = n1.comsats.net.pk
nu.edu.pk      nameserver = n2.comsats.net.pk

C:\Users\green>nslookup n1.comsats.net.pk
Server: UnKnown
Address: 192.168.43.1

Non-authoritative answer:
Name:   n1.comsats.net.pk
Address: 210.56.11.130

C:\Users\green>
```

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6.

```
nu.edu.pk      MX preference = 10, mail exchanger = aspmx2.googlemail.com
nu.edu.pk      MX preference = 10, mail exchanger = aspmx4.googlemail.com
nu.edu.pk      MX preference = 5, mail exchanger = alt2.aspmx.l.google.com
nu.edu.pk      MX preference = 0, mail exchanger = aspmx.l.google.com

C:\Users\green>nslookup "-type=MX" nu.edu.pk
Server: UnKnown
Address: 192.168.43.1

Non-authoritative answer:
nu.edu.pk      MX preference = 10, mail exchanger = aspmx2.googlemail.com
nu.edu.pk      MX preference = 0, mail exchanger = aspmx.l.google.com
nu.edu.pk      MX preference = 10, mail exchanger = aspmx3.googlemail.com
nu.edu.pk      MX preference = 5, mail exchanger = alt1.aspmx.l.google.com
nu.edu.pk      MX preference = 10, mail exchanger = aspmx4.googlemail.com
nu.edu.pk      MX preference = 10, mail exchanger = aspmx5.googlemail.com
nu.edu.pk      MX preference = 5, mail exchanger = alt2.aspmx.l.google.com

C:\Users\green>
```

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7.

```
C:\Users\green>nslookup "-type=NS" giki.edu.pk
Server: UnKnown
Address: 192.168.0.1

Non-authoritative answer:
giki.edu.pk      nameserver = ns.giki.edu.pk
giki.edu.pk      nameserver = ns1.giki.edu.pk
giki.edu.pk      nameserver = ns2.giki.edu.pk
giki.edu.pk      nameserver = localns1.giki.edu.pk
giki.edu.pk      nameserver = localns2.giki.edu.pk

ns.giki.edu.pk   internet address = 121.52.146.227
ns1.giki.edu.pk  internet address = 182.176.222.227
ns2.giki.edu.pk  internet address = 119.159.235.50

C:\Users\green>nslookup ns.giki.edu.pk
'nslookup' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\green>nslookup ns.giki.edu.pk
Server: UnKnown
Address: 192.168.0.1

Non-authoritative answer:
Name: ns.giki.edu.pk
Address: 121.52.146.227
```

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8.

```
C:\Users\green>nslookup google.com 8.8.8.8
Server: dns.google
Address: 8.8.8.8

Non-authoritative answer:
Name: google.com
Addresses: 2a00:1450:4018:807::200e
          142.250.201.142

C:\Users\green>nslookup quad9.com 9.9.9.9
Server: dns9.quad9.net
Address: 9.9.9.9

Non-authoritative answer:
Name: quad9.com
Addresses: 2620:0:871:9000::77
          216.21.3.77
```

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## Question#2

1.

```
(gnome@kali)-[/media/.../Local Disk/Sem4/CN-LAB/Week6]
$ dig nu.edu.pk

; <<>> DiG 9.19.21-1-Debian <<>> nu.edu.pk
;; global options: +cmd
;; Got answer:
;; -->HEADER<-- opcode: QUERY, status: NOERROR, id: 3371
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1220
; COOKIE: b7ff42b2693a5945dc52729e65fdddf538faf3880d877bfff (good)
;; QUESTION SECTION:
;nu.edu.pk.                                IN      A

;; ANSWER SECTION:
nu.edu.pk.                911      IN      A      203.124.44.78

;; Query time: 51 msec
;; SERVER: 192.168.1.1#53(192.168.1.1) (UDP)
;; WHEN: Sat Mar 23 00:37:25 PKT 2024
;; MSG SIZE rcvd: 82
```

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2.

```
(gnome@kali)-[/media/.../Local Disk/Sem4/CN-LAB/Week6]
$ dig ns

; <<>> DiG 9.19.21-1-Debian <<>> ns
;; global options: +cmd
;; Got answer:
;; -->HEADER<-- opcode: QUERY, status: NOERROR, id: 63803
;; flags: qr rd ra; QUERY: 1, ANSWER: 13, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1220
; COOKIE: 6b1fe76fbadb7cc6d69fb0c665fdde8769c08ab4c0fe82b2 (good)
;; QUESTION SECTION:
;.                                IN      NS

;; ANSWER SECTION:
.                510521  IN      NS      i.root-servers.net.
.                510521  IN      NS      j.root-servers.net.
.                510521  IN      NS      l.root-servers.net.
.                510521  IN      NS      g.root-servers.net.
.                510521  IN      NS      k.root-servers.net.
.                510521  IN      NS      c.root-servers.net.
.                510521  IN      NS      f.root-servers.net.
.                510521  IN      NS      h.root-servers.net.
.                510521  IN      NS      e.root-servers.net.
.                510521  IN      NS      m.root-servers.net.
.                510521  IN      NS      d.root-servers.net.
.                510521  IN      NS      b.root-servers.net.
.                510521  IN      NS      a.root-servers.net.

;; Query time: 39 msec
;; SERVER: 192.168.1.1#53(192.168.1.1) (UDP)
;; WHEN: Sat Mar 23 00:39:52 PKT 2024
;; MSG SIZE rcvd: 267
```

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3.

```
(gnome@kali)-[/media/.../Local Disk/Sem4/CN-LAB/Week6]
$ nslookup "-type=NS" nu.edu.pk
Server:      192.168.1.1
Address:     192.168.1.1#53

Non-authoritative answer:
nu.edu.pk    nameserver = n2.comsats.net.pk.
nu.edu.pk    nameserver = n1.comsats.net.pk.
Authoritative answers can be found from:

(gnome@kali)-[/media/.../Local Disk/Sem4/CN-LAB/Week6]
$ dig ns.comsats.net.pk

; <<>> DiG 9.19.21-1-Debian <<>> ns.comsats.net.pk
;; global options: +cmd
;; Got answer:
;; -->HEADER<-- opcode: QUERY, status: NOERROR, id: 40129
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1220
; COOKIE: 884f96f8c731a5e4c0d7ff2165fddfb103277f4a0bbf4c17 (good)
;; QUESTION SECTION:
;ns.comsats.net.pk.                IN      A
;; ANSWER SECTION:
ns.comsats.net.pk.                14400   IN      A      203.124.45.92

;; Query time: 59 msec
;; SERVER: 192.168.1.1#53(192.168.1.1) (UDP)
;; WHEN: Sat Mar 23 00:44:49 PKT 2024
;; MSG SIZE rcvd: 90
```

4. Getting the list of TLD servers for .edu (provi

5. Getting the list of 'com.pk' servers from 'a.ro

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4.

```
; <<>> DiG 9.19.21-1-Debian <<>> @a.root-servers.net edu NS
; (2 servers found)
;; global options: +cmd
;; Got answer:
;; ->HEADER<- opcode: QUERY, status: NOERROR, id: 50560
;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 13, ADDITIONAL: 27
;; WARNING: recursion requested but not available

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;edu. IN NS

;; AUTHORITY SECTION:
edu. 172800 IN NS b.edu-servers.net.
edu. 172800 IN NS f.edu-servers.net.
edu. 172800 IN NS i.edu-servers.net.
edu. 172800 IN NS a.edu-servers.net.
edu. 172800 IN NS g.edu-servers.net.
edu. 172800 IN NS j.edu-servers.net.
edu. 172800 IN NS k.edu-servers.net.
edu. 172800 IN NS m.edu-servers.net.
edu. 172800 IN NS l.edu-servers.net.
edu. 172800 IN NS h.edu-servers.net.
edu. 172800 IN NS c.edu-servers.net.
edu. 172800 IN NS e.edu-servers.net.
edu. 172800 IN NS d.edu-servers.net.

;; ADDITIONAL SECTION:
b.edu-servers.net. 172800 IN A 192.33.14.30
b.edu-servers.net. 172800 IN AAAA 2001:503:231d::2:30
f.edu-servers.net. 172800 IN A 192.35.51.30
f.edu-servers.net. 172800 IN AAAA 2001:503:d414::30
i.edu-servers.net. 172800 IN A 192.43.172.30
i.edu-servers.net. 172800 IN AAAA 2001:503:39c1::30
a.edu-servers.net. 172800 IN A 192.5.6.30
a.edu-servers.net. 172800 IN AAAA 2001:503:a83e::2:30
g.edu-servers.net. 172800 IN A 192.42.93.30
g.edu-servers.net. 172800 IN AAAA 2001:503:eea3::30
j.edu-servers.net. 172800 IN A 192.48.79.30
j.edu-servers.net. 172800 IN AAAA 2001:502:7094::30
k.edu-servers.net. 172800 IN A 192.52.178.30
k.edu-servers.net. 172800 IN AAAA 2001:503:d2d::30
m.edu-servers.net. 172800 IN A 192.55.83.30
m.edu-servers.net. 172800 IN AAAA 2001:501:b1f9::30
l.edu-servers.net. 172800 IN A 192.41.162.30
l.edu-servers.net. 172800 IN AAAA
h.edu-servers.net. 172800 IN A
h.edu-servers.net. 172800 IN AAA Ahmad Abdullah
c.edu-servers.net. 172800 IN A i22-1609
c.edu-servers.net. 172800 IN AAAA
e.edu-servers.net. 172800 IN A 192.12.94.30
e.edu-servers.net. 172800 IN AAAA 2001:502:1ca1::30
d.edu-servers.net. 172800 IN A 192.31.80.30
d.edu-servers.net. 172800 IN AAAA 2001:500:856e::30

;; Query time: 207 msec
;; SERVER: 198.41.0.4#53(a.root-servers.net) (UDP)
```

5.

```
(gnome@kali)-[/media/.../Local Disk/Sem4/CN-LAB/Week6]
$ dig @a.root-servers.net com.pk NS

;; communications error to 198.41.0.4#53: timed out

; <<>> DiG 9.19.21-1-Debian <<>> @a.root-servers.net com.pk NS
; (2 servers found)
;; global options: +cmd
;; Got answer:
;; -->HEADER<-- opcode: QUERY, status: NOERROR, id: 18241
;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 4, ADDITIONAL: 7
;; WARNING: recursion requested but not available

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:;, udp: 4096
;; QUESTION SECTION:
;com.pk.                IN      NS

;; AUTHORITY SECTION:
pk.      172800 IN      NS      root-c1.pknic.pk.
pk.      172800 IN      NS      root-s.pknic.pk.
pk.      172800 IN      NS      root-c2.pknic.pk.
pk.      172800 IN      NS      root-e.pknic.pk.

;; ADDITIONAL SECTION:
root-c1.pknic.pk. 172800 IN      A        185.159.197.160
root-c1.pknic.pk. 172800 IN      AAAA     2620:10a:80aa::160
root-s.pknic.pk.  172800 IN      A        119.81.34.90
root-c2.pknic.pk. 172800 IN      A        185.159.198.160
root-c2.pknic.pk. 172800 IN      AAAA     2620:10a:80ab::160
root-e.pknic.pk.  172800 IN      A        107.6.178.178

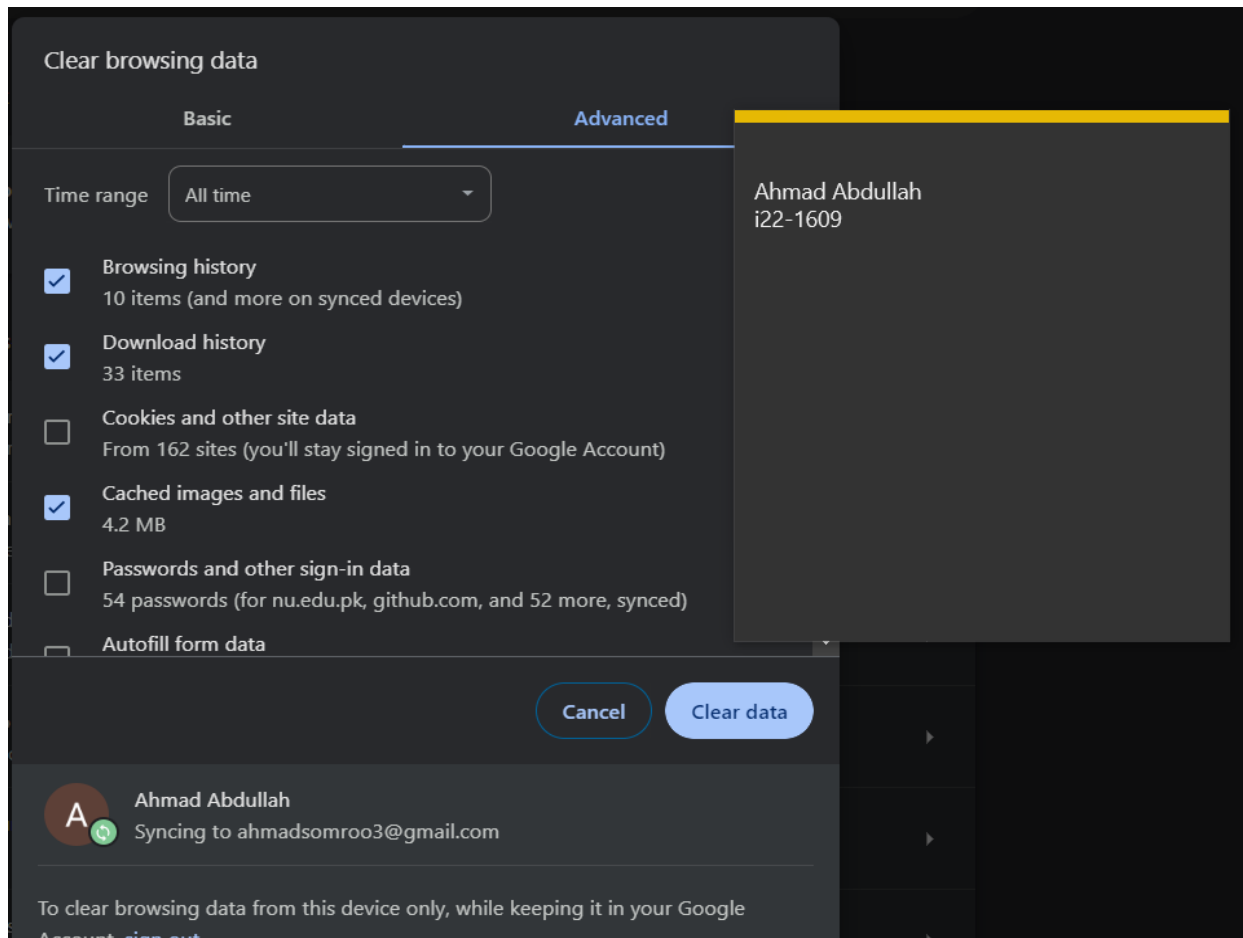
;; Query time: 247 msec
;; SERVER: 198.41.0.4#53(a.root-servers.net)
;; WHEN: Sat Mar 23 00:52:06 PKT 2024
;; MSG SIZE rcvd: 247
```

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## Question#3

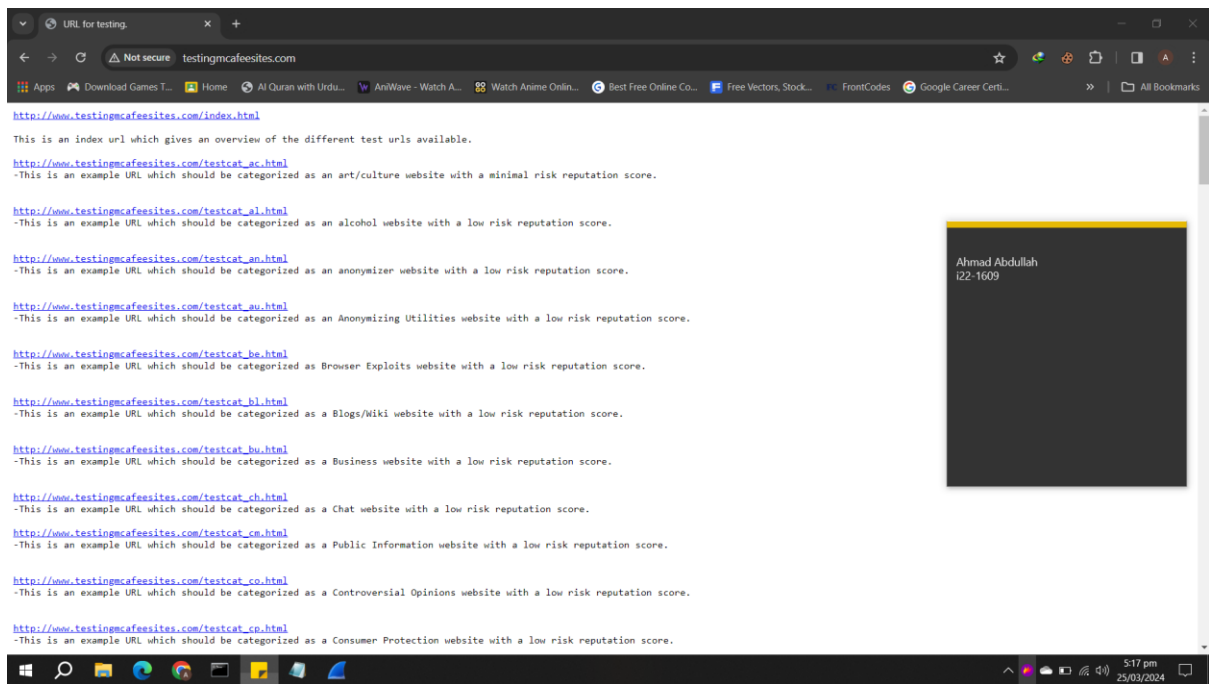
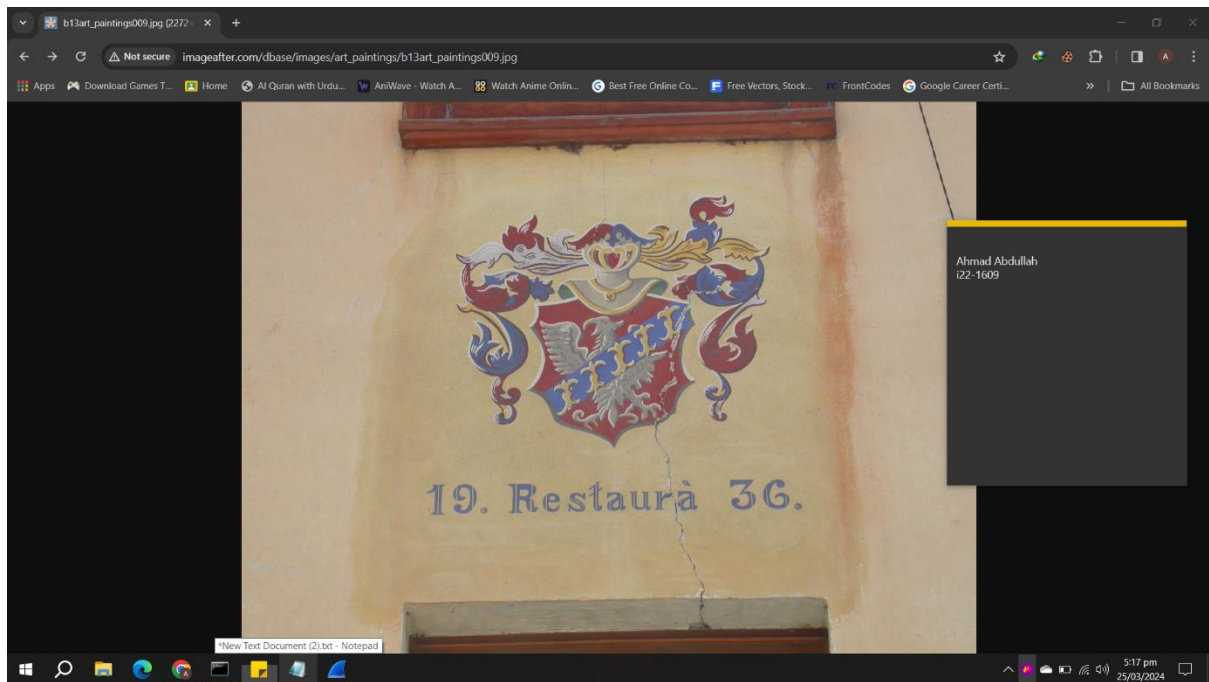
1.



File Edit Format View Help

image-> [http://www.imageafter.com/dbase/images/art\\_paintings/b13art\\_paintings009.jpg](http://www.imageafter.com/dbase/images/art_paintings/b13art_paintings009.jpg)

site -> <http://www.testingmcafeesites.com/>



Capturing from Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

tcp.port==80

No.	Time	Source	Destination	Protocol	Length	Info
2995	60.752195	85.214.50.36	192.168.0.135	TCP	54	80 → 58849 [FIN, ACK] Seq=185 Ack=628 Win=30464 Len=0
2996	60.752253	192.168.0.135	85.214.50.36	TCP	54	58849 → 80 [ACK] Seq=628 Ack=186 Win=131072 Len=0
3308	71.914982	101.50.113.17	192.168.0.135	TCP	54	[TCP Keep-Alive] 80 → 58861 [ACK] Seq=266 Ack=287 Win=64128 Len=0
3309	71.915014	192.168.0.135	101.50.113.17	TCP	54	[TCP Keep-Alive ACK] 58861 → 80 [ACK] Seq=287 Ack=267 Win=131072 Len=0
3406	76.485601	192.168.0.135	85.214.50.36	TCP	54	58849 → 80 [FIN, ACK] Seq=628 Ack=186 Win=131072 Len=0
3415	76.655303	85.214.50.36	192.168.0.135	TCP	54	80 → 58849 [ACK] Seq=186 Ack=629 Win=30464 Len=0
3505	78.342804	192.168.0.135	34.218.221.118	TCP	66	58885 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM
3506	78.344759	192.168.0.135	34.218.221.118	TCP	66	58886 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM
3518	78.456116	192.168.0.135	34.218.221.118	TCP	66	58887 → 80 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM
3522	78.652802	34.218.221.118	192.168.0.135	TCP	66	80 → 58885 [SYN, ACK] Seq=0 Ack=1 Win=26883 Len=0 MSS=1460 SACK_PERM WS=256
3523	78.652922	192.168.0.135	34.218.221.118	TCP	54	58885 → 80 [ACK] Seq=1 Ack=1 Win=131328 Len=0
3524	78.653208	192.168.0.135	34.218.221.118	HTTP	524	GET / HTTP/1.1
3525	78.734972	34.218.221.118	192.168.0.135	TCP	66	80 → 58886 [SYN, ACK] Seq=0 Ack=1 Win=26883 Len=0 MSS=1460 SACK_PERM WS=256
3526	78.735045	192.168.0.135	34.218.221.118	TCP	54	58886 → 80 [ACK] Seq=1 Ack=1 Win=131328 Len=0
3527	78.803547	34.218.221.118	192.168.0.135	TCP	66	80 → 58887 [SYN, ACK] Seq=0 Ack=1 Win=26883 Len=0 MSS=1460 SACK_PERM WS=256
3528	78.803650	192.168.0.135	34.218.221.118	TCP	54	58887 → 80 [ACK] Seq=1 Ack=1 Win=131328 Len=0
3529	79.109340	34.218.221.118	192.168.0.135	TCP	54	80 → 58885 [ACK] Seq=1 Ack=471 Win=28160 Len=0
3530	79.111606	34.218.221.118	192.168.0.135	TCP	1494	80 → 58885 [ACK] Seq=1 Ack=471 Win=28160 Len=1440 [TCP segment of a reassembled PDU]
3531	79.111606	34.218.221.118	192.168.0.135	HTTP	1350	HTTP/1.1 200 OK (text/html)
3532	79.111689	192.168.0.135	34.218.221.118	TCP	54	58885 → 80 [ACK] Seq=471 Ack=2737 Win=131328 Len=0
3707	85.631214	85.214.50.36	192.168.0.135	TCP	54	[TCP Keep-Alive] 80 → 58870 [ACK] Seq=0 Ack=1 Win=7475200 Len=0
3708	85.631247	192.168.0.135	85.214.50.36	TCP	54	[TCP Keep-Alive ACK] 58870 → 80 [ACK] Seq=1 Ack=1 Win=131328 Len=0
3720	86.975501	85.214.50.36	192.168.0.135	TCP	66	[TCP Retransmission] 80 → 58870 [SYN, ACK] Seq=0 Ack=1 Win=29200 Len=0 MSS=1460 SACK_PERM WS=256
3722	86.975541	192.168.0.135	85.214.50.36	TCP	66	[TCP Dup ACK 2443#1] 58870 → 80 [ACK] Seq=1 Ack=1 Win=131328 Len=0 SLE=0 SRE=1
3918	100.719695	192.168.0.135	85.214.50.36	TCP	55	[TCP Keep-Alive] 58870 → 80 [ACK] Seq=0 Ack=1 Win=131328 Len=1
3925	100.992796	85.214.50.36	192.168.0.135	TCP	66	[TCP Window Update] 80 → 58870 [ACK] Seq=1 Ack=1 Win=29440 Len=0 SLE=0 SRE=1
3926	101.000557	192.168.0.135	101.50.113.17	TCP	54	58861 → 80 [FIN, ACK] Seq=287 Ack=267 Win=131072 Len=0
3927	101.005006	101.50.113.17	192.168.0.135	TCP	54	80 → 58861 [FIN, ACK] Seq=267 Ack=288 Win=64128 Len=0
3928	101.005034	192.168.0.135	101.50.113.17	TCP	54	58861 → 80 [ACK] Seq=288 Ack=268 Win=131072 Len=0

Frame 347: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface \Device\NPF... (F56A2E66-...)

Ethernet II, Src: Intel\_b2:b0:88 (60:f6:77:b2:b0:88), Dst: TplinkTechno\_5a:64:22 (ec:08:0b:5a:64:22)

Internet Protocol Version 4, Src: 192.168.0.135, Dst: 85.214.50.36

Transmission Control Protocol, Src Port: 58849, Dst Port: 80, Seq: 0, Len: 0

ec 08 6b 5a 64 22 60 f6 77 b2 b0 88 00 00 45 00 ..kZd...w...E  
0010 00 34 e0 3a 40 00 80 06 d1 5f c0 a8 00 87 55 d6 .4:@...U  
0020 32 24 e5 e1 00 50 6e ea e8 56 00 00 00 80 02 25...Pn...V  
0030 fa f0 ed 82 00 00 02 04 05 b4 01 03 03 08 01 01 .....  
0040 04 02 ..

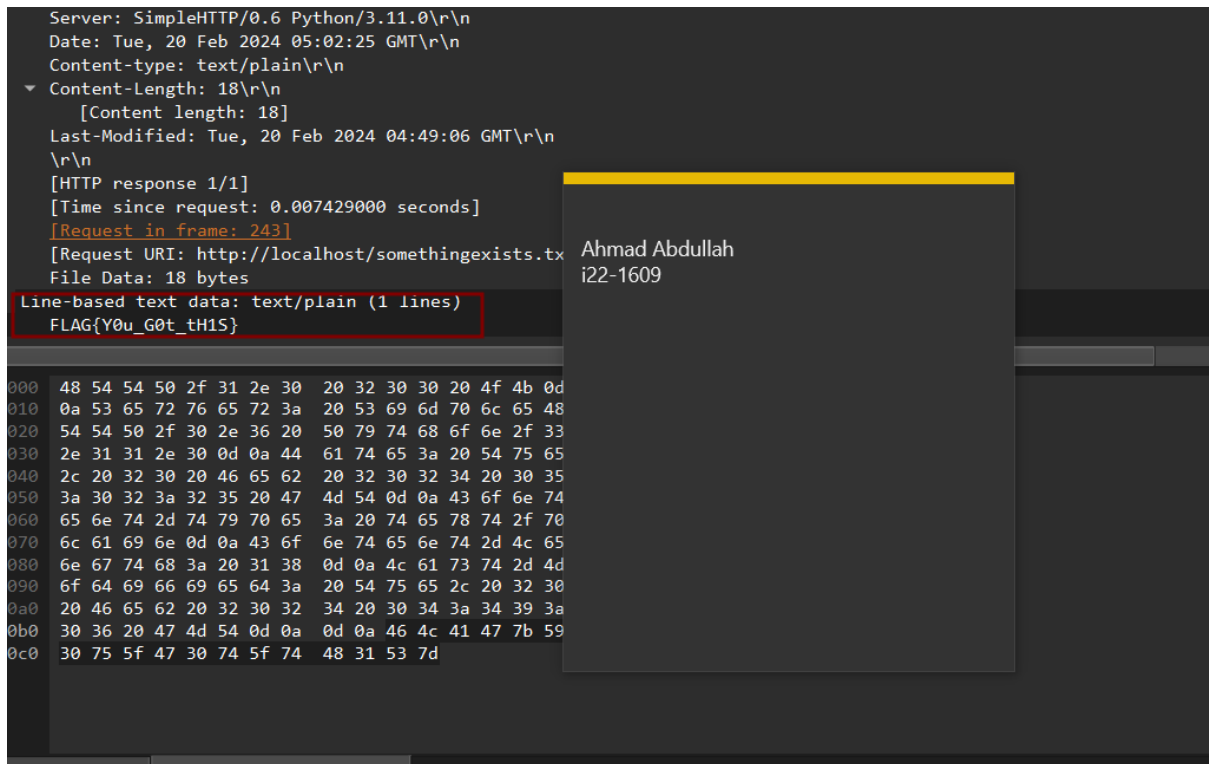
Wi-Fi: <live capture in progress>

Packets: 3984 - Displayed: 1414 (35.5%)

Profile: Default

5:16 pm  
25/03/2024

2.



3.

There were not any status code for 304 in any sites I visited.

