

## Exercise 3

Q1:

23.185.0.1, type A query

```
z5325156@vx08:~/COMP3331$ dig www.eecs.berkeley.edu +short
live-eecs.pantheonsite.io.
fe1.edge.pantheon.io.
23.185.0.1
```

Q2:

www.eecs.berkeley.edu is an alias for live-eecs.pantheonsite.io.

live-eecs.pantheonsite.io is an alias for fe1.edge.pantheon.io.

```
z5325156@vx08:~/COMP3331$ dig www.eecs.berkeley.edu CNAME +short
live-eecs.pantheonsite.io.
```

Using CNAME records makes it easy to change IP addresses. If a server has 100 websites and they all make aliases, when that server changes its IP, it only needs to change the A record of the alias.

Q3:

AUTHORITY SECTION returns the authoritative DNS name servers for the ANSWER SECTION.

ADDITIONAL SECTION lists the IP addresses of these authorized DNS servers. Type AAAA stands for IPv6 addresses.

```
;; AUTHORITY SECTION:
edge.pantheon.io.      300      IN       NS       ns-1213.awsdns-23.org.
edge.pantheon.io.      300      IN       NS       ns-2013.awsdns-59.co.uk.
edge.pantheon.io.      300      IN       NS       ns-644.awsdns-16.net.
edge.pantheon.io.      300      IN       NS       ns-233.awsdns-29.com.

;; ADDITIONAL SECTION:
ns-233.awsdns-29.com.  98558    IN       A        205.251.192.233
ns-644.awsdns-16.net.  117554   IN       A        205.251.194.132
ns-1213.awsdns-23.org. 69235    IN       A        205.251.196.189
ns-1213.awsdns-23.org. 63643    IN       AAAA     2600:9000:5304:bd00::1
ns-2013.awsdns-59.co.uk. 159778   IN       A        205.251.199.221
```

Q4:

On the cse server, the local nameserver's IP is this.

```
z5325156@vx08:~/COMP3331$ grep "nameserver" /etc/resolv.conf
nameserver 129.94.242.2
nameserver 129.94.242.45
nameserver 129.94.242.33
z5325156@vx08:~/COMP3331$
```

My local machine, which I won't screenshot because it's in Chinese, is 192.168.0.1

Q5:

```
ns.CS.berkeley.edu.    -- 169.229.60.61
ns.eecs.berkeley.edu.  -- 169.229.60.153
```

```
adns1.berkeley.edu.  -- 128.32.136.3
adns2.berkeley.edu.  -- 128.32.136.14
adns3.berkeley.edu.  -- 192.107.102.142
```

```
z5325156@vx08:~/COMP3331$ dig ns eecs.berkeley.edu

; <<>> DiG 9.16.33-Debian <<>> ns eecs.berkeley.edu
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 51804
;; flags: qr rd ra; QUERY: 1, ANSWER: 5, AUTHORITY: 0, ADDITIONAL: 9

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

;; ANSWER SECTION:
eecs.berkeley.edu.          14511   IN      NS      ns.CS.berkeley.edu.
eecs.berkeley.edu.          14511   IN      NS      adns1.berkeley.edu.
eecs.berkeley.edu.          14511   IN      NS      adns2.berkeley.edu.
eecs.berkeley.edu.          14511   IN      NS      adns3.berkeley.edu.
eecs.berkeley.edu.          14511   IN      NS      ns.eecs.berkeley.edu.

;; ADDITIONAL SECTION:
ns.CS.berkeley.edu.         14638   IN      A        169.229.60.61
ns.CS.berkeley.edu.         5342    IN      AAAA     2607:f140:8:1260::30
ns.eecs.berkeley.edu.       14638   IN      A        169.229.60.153
ns.eecs.berkeley.edu.       5396    IN      AAAA     2607:f140:8:2160::30
adns1.berkeley.edu.         5894    IN      A        128.32.136.3
adns2.berkeley.edu.         302     IN      A        128.32.136.14
adns2.berkeley.edu.         302     IN      AAAA     2607:f140:ffff:fffe::e
adns3.berkeley.edu.         5874    IN      AAAA     2607:f140:a000:d::abc

;; Query time: 0 msec
;; SERVER: 129.94.242.2#53(129.94.242.2)
;; WHEN: Wed Oct 05 18:54:48 AEDT 2022
;; MSG SIZE rcvd: 319

z5325156@vx08:~/COMP3331$
```

Q6:

```
dig -x 111.68.101.54 +short
Type PTR query
```

```
z5325156@vx08:~/COMP3331$ dig -x 111.68.101.54 +short
webserver.seecs.nust.edu.pk.
z5325156@vx08:~/COMP3331$
```

Q7:

No authoritative answer was obtained because the flags did not contain the aa tag. This means that the CSE server may not have access to the yahoo domain.

```

z5325156@vx08:~/COMP3331$ dig MX @129.94.242.33 yahoo.com

; <<> DiG 9.16.33-Debian <<> MX @129.94.242.33 yahoo.com
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->HEADER<- opcode: QUERY, status: NOERROR, id: 6657
;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 5, ADDITIONAL: 10

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

;; ANSWER SECTION:
yahoo.com.                87      IN      MX      1 mta7.am0.yahoodns.net.
yahoo.com.                87      IN      MX      1 mta6.am0.yahoodns.net.
yahoo.com.                87      IN      MX      1 mta5.am0.yahoodns.net.

;; AUTHORITY SECTION:
yahoo.com.                51707   IN      NS      ns2.yahoo.com.
yahoo.com.                51707   IN      NS      ns5.yahoo.com.
yahoo.com.                51707   IN      NS      ns4.yahoo.com.
yahoo.com.                51707   IN      NS      ns3.yahoo.com.
yahoo.com.                51707   IN      NS      ns1.yahoo.com.

;; ADDITIONAL SECTION:
ns1.yahoo.com.            50470   IN      A       68.180.131.16
ns1.yahoo.com.            25396   IN      AAAA    2001:4998:1b0::7961:686f:6f21
ns2.yahoo.com.            197802  IN      A       68.142.255.16
ns2.yahoo.com.            20568   IN      AAAA    2001:4998:1c0::7961:686f:6f21
ns3.yahoo.com.            1759    IN      A       27.123.42.42
ns3.yahoo.com.            57391   IN      AAAA    2406:8600:f03f:1f8::1003
ns4.yahoo.com.            491184  IN      A       98.138.11.157
ns5.yahoo.com.            34619   IN      A       202.165.97.53
ns5.yahoo.com.            3628    IN      AAAA    2406:2000:1d0::7961:686f:6f21

;; Query time: 4 msec
;; SERVER: 129.94.242.33#53(129.94.242.33)
;; WHEN: Wed Oct 05 20:47:26 AEDT 2022
;; MSG SIZE rcvd: 399

z5325156@vx08:~/COMP3331$ █

```

Q8:

I get REFUSED. no other response, probably because the selected nameservers do not answer queries from devices that are not part of their network. It should be some kind of security measure.

```

● z5325156@vx08:~/COMP3331$ dig MX @ns.eecs.berkeley.edu yahoo.com

; <<>> DiG 9.16.33-Debian <<>> MX @ns.eecs.berkeley.edu yahoo.com
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: REFUSED, id: 41983
;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 1
;; WARNING: recursion requested but not available

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
; COOKIE: d1982cee3364770b9cfca03f633d56a3df83af8d4709d75a (good)
;; QUESTION SECTION:
yahoo.com.                IN      MX

;; Query time: 164 msec
;; SERVER: 169.229.60.153#53(169.229.60.153)
;; WHEN: Wed Oct 05 21:04:19 AEDT 2022
;; MSG SIZE rcvd: 66

○ z5325156@vx08:~/COMP3331$

```

Q9:

Type MX

```

● z5325156@vx08:~/COMP3331$ dig @ns1.yahoo.com yahoo.com MX

; <<>> DiG 9.16.33-Debian <<>> @ns1.yahoo.com yahoo.com MX
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 24504
;; flags: qr aa rd; QUERY: 1, ANSWER: 3, AUTHORITY: 0, ADDITIONAL
: 1
;; WARNING: recursion requested but not available

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1272
; COOKIE: a0d81a8ca54b867b4d42d0c2633d66f2da75454ee5d8a0a8 (good)
;; QUESTION SECTION:
yahoo.com.                IN      MX

;; ANSWER SECTION:
yahoo.com.                1800    IN      MX      1 mta6.am0.yahood
ns.net.
yahoo.com.                1800    IN      MX      1 mta5.am0.yahood
ns.net.
yahoo.com.                1800    IN      MX      1 mta7.am0.yahood
ns.net.

;; Query time: 144 msec
;; SERVER: 68.180.131.16#53(68.180.131.16)
;; WHEN: Wed Oct 05 22:13:54 AEDT 2022
;; MSG SIZE rcvd: 145

○ z5325156@vx08:~/COMP3331$

```

Q10:

Need 5 DNS servers to query to get the authoritative answer.

(a.root-servers.net, d.au, q.au, unsw.edu.au,  
beethoven.orchestra.cse.unsw.edu.au)

```
● z5325156@vx08:~/COMP3331$ dig NS +noall +additional
a.root-servers.net.      15170  IN      A        198.41.0.4
a.root-servers.net.      187273 IN      AAAA     2001:503:ba3e::2:30
b.root-servers.net.      413487 IN      A        199.9.14.201
b.root-servers.net.      327100 IN      AAAA     2001:500:200::b
c.root-servers.net.      327099 IN      A        192.33.4.12
c.root-servers.net.      83082  IN      AAAA     2001:500:2::c
d.root-servers.net.      327098 IN      A        199.7.91.13
d.root-servers.net.      83082  IN      AAAA     2001:500:2d::d
e.root-servers.net.      46907  IN      A        192.203.230.10
e.root-servers.net.      83082  IN      AAAA     2001:500:a8::e
f.root-servers.net.      66109  IN      A        192.5.5.241
f.root-servers.net.      83082  IN      AAAA     2001:500:2f::f
g.root-servers.net.      515091 IN      A        192.112.36.4
g.root-servers.net.      83082  IN      AAAA     2001:500:12::d0d
h.root-servers.net.      327099 IN      A        198.97.190.53
h.root-servers.net.      83082  IN      AAAA     2001:500:1::53
i.root-servers.net.      515091 IN      A        192.36.148.17
i.root-servers.net.      83082  IN      AAAA     2001:7fe::53
j.root-servers.net.      328596 IN      A        192.58.128.30
j.root-servers.net.      327100 IN      AAAA     2001:503:c27::2:30
k.root-servers.net.      327098 IN      A        193.0.14.129
k.root-servers.net.      83082  IN      AAAA     2001:7fd::1
l.root-servers.net.      47050  IN      A        199.7.83.42
l.root-servers.net.      327099 IN      AAAA     2001:500:9f::42
m.root-servers.net.      565757 IN      A        202.12.27.33
m.root-servers.net.      83082  IN      AAAA     2001:dc3::35
○ z5325156@vx08:~/COMP3331$
```

```
● z5325156@vx08:~/COMP3331$ dig @198.41.0.4 lyre00.cse.unsw.edu.au +noall +additional
d.au.      172800 IN      A        162.159.25.38
d.au.      172800 IN      AAAA     2400:cb00:2049:1::a29f:1926
m.au.      172800 IN      A        37.209.192.5
m.au.      172800 IN      AAAA     2001:dcd:1::5
q.au.      172800 IN      A        65.22.196.1
q.au.      172800 IN      AAAA     2a01:8840:be::1
t.au.      172800 IN      A        65.22.199.1
t.au.      172800 IN      AAAA     2a01:8840:c1::1
s.au.      172800 IN      A        65.22.198.1
s.au.      172800 IN      AAAA     2a01:8840:c0::1
r.au.      172800 IN      A        65.22.197.1
r.au.      172800 IN      AAAA     2a01:8840:bf::1
n.au.      172800 IN      A        37.209.194.5
n.au.      172800 IN      AAAA     2001:dcd:2::5
c.au.      172800 IN      A        162.159.24.179
c.au.      172800 IN      AAAA     2400:cb00:2049:1::a29f:18b3
○ z5325156@vx08:~/COMP3331$
```

```
● z5325156@vx08:~/COMP3331$ dig @162.159.25.38 lyre00.cse.unsw.edu.au +noall +additional
q.au.      900    IN      A        65.22.196.1
r.au.      900    IN      A        65.22.197.1
s.au.      900    IN      A        65.22.198.1
t.au.      900    IN      A        65.22.199.1
q.au.      900    IN      AAAA     2a01:8840:be::1
r.au.      900    IN      AAAA     2a01:8840:bf::1
s.au.      900    IN      AAAA     2a01:8840:c0::1
t.au.      900    IN      AAAA     2a01:8840:c1::1
○ z5325156@vx08:~/COMP3331$
```

```

z5325156@vx08:~/COMP3331$ dig @65.22.196.1 lyre00.cse.unsw.edu.au +noall +additional
ns1.unsw.edu.au.      900      IN       A        129.94.0.192
ns2.unsw.edu.au.      900      IN       A        129.94.0.193
ns3.unsw.edu.au.      900      IN       A        192.155.82.178
ns1.unsw.edu.au.      900      IN       AAAA     2001:388:c:35::1
ns2.unsw.edu.au.      900      IN       AAAA     2001:388:c:35::2
z5325156@vx08:~/COMP3331$

z5325156@vx08:~/COMP3331$ dig @129.94.0.192 lyre00.cse.unsw.edu.au +noall +additional
beethoven.orchestra.cse.unsw.edu.au. 300 IN A 129.94.242.2
beethoven.orchestra.cse.unsw.edu.au. 300 IN A 129.94.172.11
beethoven.orchestra.cse.unsw.edu.au. 300 IN A 129.94.208.3
maestro.orchestra.cse.unsw.edu.au. 300 IN A 129.94.242.33
z5325156@vx08:~/COMP3331$

z5325156@vx08:~/COMP3331$ dig @129.94.242.2 lyre00.cse.unsw.edu.au +short
129.94.210.20
z5325156@vx08:~/COMP3331$

```

Q11:

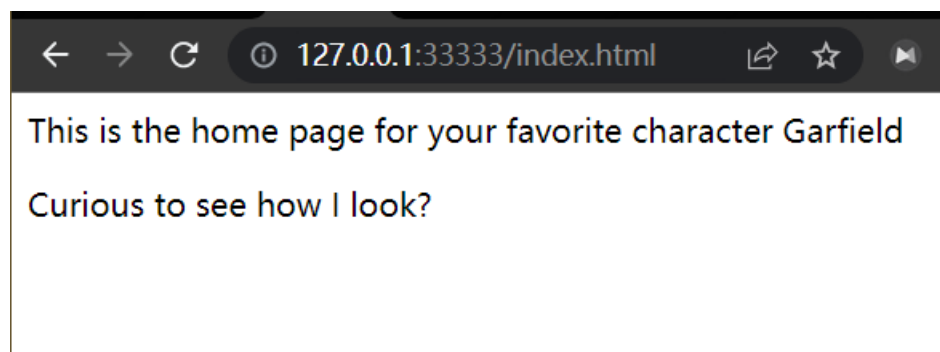
Yes, a machine has many network interfaces, any of which can be associated with multiple ip addresses, and these ip addresses can be associated with even more different hostnames.

## Exercise 4

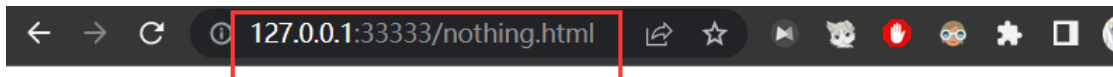
```

Zeal@Zeals-Laptop MINGW64 ~/Desktop/COMP/COMP3331/Lab
s/lab3 (master)
$ py3 WebServer.py 33333
The server is ready to receive
wait for connection...

```



```
Zeal@Zeals-Laptop MINGW64 ~/Desktop/COMP/COMP333
1/Labs/lab3 (master)
$ py3 WebServer.py 33333
The server is ready to receive
wait for connection...
Accept new connection from 127.0.0.1:7716
Accept new connection from 127.0.0.1:7717
Connection Close
█
```



## 找不到 127.0.0.1 的网页

找不到与以下网址对应的网页：

**http://127.0.0.1:33333/nothing.html**

HTTP ERROR 404

重新加载



