EXERCISE3

1:

IP:150.203.161.98.    type: A

```
z5177443@vx3:/tmp_amd/reed/export/reed/4/z5177443/Desktop/9331/lab3$ dig www.ce
s.anu.edu.au

; <<>> DiG 9.9.5-9+deb8u18-Debian <<>> www.cecs.anu.edu.au
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 51627
;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 3, ADDITIONAL: 7

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;www.cecs.anu.edu.au.            IN      A

;; ANSWER SECTION:
www.cecs.anu.edu.au.    3600    IN      CNAME   rproxy.cecs.anu.edu.au.
rproxy.cecs.anu.edu.au. 3600    IN      A       150.203.161.98

;; AUTHORITY SECTION:
cecs.anu.edu.au.        300     IN      NS      ns2.cecs.anu.edu.au.
cecs.anu.edu.au.        300     IN      NS      ns3.cecs.anu.edu.au.
cecs.anu.edu.au.        300     IN      NS      ns4.cecs.anu.edu.au.

;; ADDITIONAL SECTION:
ns2.cecs.anu.edu.au.    300     IN      A       150.203.161.36
ns2.cecs.anu.edu.au.    3600    IN      AAAA    2001:388:1034:2905::24
ns3.cecs.anu.edu.au.    300     IN      A       150.203.161.50
ns3.cecs.anu.edu.au.    3600    IN      AAAA    2001:388:1034:2905::32
ns4.cecs.anu.edu.au.    300     IN      A       150.203.161.38
ns4.cecs.anu.edu.au.    3600    IN      AAAA    2001:388:1034:2905::26

;; Query time: 67 msec
;; SERVER: 129.94.242.45#53(129.94.242.45)
;; WHEN: Sat Oct 05 20:45:50 AEST 2019
;; MSG SIZE  rcvd: 271
```

2.

rproxy.cecs.anu.edu.au.

Because the canonical name is hard to understand and remember. The alias name is more readable and easy to remember for human.it is also easy for user when run multiple services from a simple address.

3.

the Authority section: it is the records for authoritative servers, which contains NS resource records for cecs.anu.edu.au domain name. And it has 10 authoritative server name which is r.au, d.au, v.au and so on.

The additional section: It contains the IP address of the authoritative server and AAAA type is to resolve domain name to a specified IPv6 address.

4.

IP of local name server: 129.94.242.2

5.

```
z5177443@vx3:/tmp_amd/reed/export/reed/4/z5177443/Desktop/9331/lab3$ dig cecs.an
u.edu.au NS

; <<>> DiG 9.9.5-9+deb8u18-Debian <<>> cecs.anu.edu.au NS
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 19050
;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 0, ADDITIONAL: 7

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

;; ANSWER SECTION:
cecs.anu.edu.au.        300     IN      NS      ns2.cecs.anu.edu.au.
cecs.anu.edu.au.        300     IN      NS      ns3.cecs.anu.edu.au.
cecs.anu.edu.au.        300     IN      NS      ns4.cecs.anu.edu.au.

;; ADDITIONAL SECTION:
ns2.cecs.anu.edu.au.    300     IN      A       150.203.161.36
ns2.cecs.anu.edu.au.    2870    IN      AAAA    2001:388:1034:2905::24
ns3.cecs.anu.edu.au.    300     IN      A       150.203.161.50
ns3.cecs.anu.edu.au.    2870    IN      AAAA    2001:388:1034:2905::32
ns4.cecs.anu.edu.au.    300     IN      A       150.203.161.38
ns4.cecs.anu.edu.au.    2870    IN      AAAA    2001:388:1034:2905::26

;; Query time: 30 msec
;; SERVER: 129.94.242.45#53(129.94.242.45)
;; WHEN: Sat Oct 05 21:54:06 AEST 2019
;; MSG SIZE  rcvd: 230
```

DNS nameserver:          ip

ns2.cecs.anu.edu.au,     150.203.161.36

ns3.cecs.anu.edu.au,     150.203.161.50

ns4.cecs.anu.edu.au,     150.203.11.38

Type: NS

dig cecs.anu.edu.au NS

6.

DNS name: webserver.seecs.nust.edu.pk

Type: PTR

```
z5177443@vx3:/tmp_amd/reed/export/reed/4/z5177443/Desktop/9331/lab3$ dig -x 111.
68.101.54

; <<>> DiG 9.9.5-9+deb8u18-Debian <<>> -x 111.68.101.54
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 54115
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 2, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;54.101.68.111.in-addr.arpa.    IN      PTR

;; ANSWER SECTION:
54.101.68.111.in-addr.arpa. 3600 IN     PTR     webserver.seecs.nust.edu.pk.

;; AUTHORITY SECTION:
101.68.111.in-addr.arpa. 50772  IN      NS      ns2.hec.gov.pk.
101.68.111.in-addr.arpa. 50772  IN      NS      ns1.hec.gov.pk.

;; Query time: 334 msec
;; SERVER: 129.94.242.45#53(129.94.242.45)
;; WHEN: Sat Oct 05 21:57:40 AEST 2019
;; MSG SIZE  rcvd: 140
```

7.

```
z5177443@vx3:/tmp_amd/reed/export/reed/4/z5177443/Desktop/9331/lab3$ dig @129.94
.242.33 yahoo.com MX

; <<>> DiG 9.9.5-9+deb8u18-Debian <<>> @129.94.242.33 yahoo.com MX
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 47794
;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 5, ADDITIONAL: 9

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

;; ANSWER SECTION:
yahoo.com.            1358     IN      MX      1 mta6.am0.yahoodns.net.
yahoo.com.            1358     IN      MX      1 mta7.am0.yahoodns.net.
yahoo.com.            1358     IN      MX      1 mta5.am0.yahoodns.net.

;; AUTHORITY SECTION:
yahoo.com.            39531    IN      NS      ns1.yahoo.com.
yahoo.com.            39531    IN      NS      ns4.yahoo.com.
yahoo.com.            39531    IN      NS      ns2.yahoo.com.
yahoo.com.            39531    IN      NS      ns3.yahoo.com.
yahoo.com.            39531    IN      NS      ns5.yahoo.com.

;; ADDITIONAL SECTION:
ns1.yahoo.com.        166569   IN      A       68.180.131.16
ns1.yahoo.com.        16742    IN      AAAA    2001:4998:130::1001
ns2.yahoo.com.        124542   IN      A       68.142.255.16
ns2.yahoo.com.        48702    IN      AAAA    2001:4998:140::1002
ns3.yahoo.com.        888      IN      A       27.123.42.42
ns3.yahoo.com.        888      IN      AAAA    2406:8600:f03f:1f8::1003
ns4.yahoo.com.        213007   IN      A       98.138.11.157
ns5.yahoo.com.        216207   IN      A       119.160.253.83

;; Query time: 5 msec
;; SERVER: 129.94.242.33#53(129.94.242.33)
;; WHEN: Sat Oct 05 22:06:44 AEST 2019
;; MSG SIZE  rcvd: 371
```

NO. Because the server has no authority for the Yahoo domain.

8.

```
z5177443@vx3:/tmp_amd/reed/export/reed/4/z5177443/Desktop
/9331/lab3$ dig @ns2.cecs.anu.edu.au yahoo.com

; <<>> DiG 9.9.5-9+deb8u18-Debian <<>> @ns2.cecs.anu.edu.
au yahoo.com
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: REFUSED, id: 59275
;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDIT
IONAL: 1
;; WARNING: recursion requested but not available

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

;; Query time: 8 msec
;; SERVER: 150.203.161.36#53(150.203.161.36)
;; WHEN: Sat Oct 05 22:14:29 AEST 2019
;; MSG SIZE  rcvd: 38
```

The request is refused. we can not get a response when trying ANU name server for yahoo mail servers. One reason is that the queries which are not from ANU servers are blocked by the secure protection.

9.

Firstly we need to know the nameserver of yahoo.com by using ns command

Then we have to use command mx to find email server.

dig yahoo.com ns

dig @129.94.242.33 yahoo.com mx

10.

```
z5177443@vx3:/tmp_amd/reed/export/reed/4/z5177443/Desktop/9331/lab3$ dig . NS

; <<>> DiG 9.9.5-9+deb8u18-Debian <<>> . NS
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 16752
;; flags: qr rd ra; QUERY: 1, ANSWER: 13, AUTHORITY: 0, ADDITIONAL: 27

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

;; ANSWER SECTION:
.                       206241  IN      NS      c.root-servers.net.
.                       206241  IN      NS      d.root-servers.net.
.                       206241  IN      NS      j.root-servers.net.
.                       206241  IN      NS      e.root-servers.net.
.                       206241  IN      NS      f.root-servers.net.
.                       206241  IN      NS      k.root-servers.net.
.                       206241  IN      NS      i.root-servers.net.
.                       206241  IN      NS      l.root-servers.net.
.                       206241  IN      NS      g.root-servers.net.
.                       206241  IN      NS      a.root-servers.net.
.                       206241  IN      NS      b.root-servers.net.
.                       206241  IN      NS      h.root-servers.net.
.                       206241  IN      NS      m.root-servers.net.

;; ADDITIONAL SECTION:
a.root-servers.net.     210149  IN      A       198.41.0.4
a.root-servers.net.     141195  IN      AAAA    2001:503:ba3e::2:30
b.root-servers.net.     128562  IN      A       199.9.14.201
b.root-servers.net.     128562  IN      AAAA    2001:500:200::b
c.root-servers.net.     341008  IN      A       192.33.4.12
c.root-servers.net.     213617  IN      AAAA    2001:500:2::c
d.root-servers.net.     225668  IN      A       199.7.91.13
d.root-servers.net.     215751  IN      AAAA    2001:500:2d::d
e.root-servers.net.     341008  IN      A       192.203.230.10
e.root-servers.net.     364338  IN      AAAA    2001:500:a8::e
f.root-servers.net.     222616  IN      A       192.5.5.241
f.root-servers.net.     215752  IN      AAAA    2001:500:2f::f
g.root-servers.net.     137643  IN      A       192.112.36.4
g.root-servers.net.     364338  IN      AAAA    2001:500:12::d0d
h.root-servers.net.     137642  IN      A       198.97.190.53
h.root-servers.net.     128568  IN      AAAA    2001:500:1::53
i.root-servers.net.     215757  IN      A       192.36.148.17
i.root-servers.net.     213771  IN      AAAA    2001:7fe::53
j.root-servers.net.     230897  IN      A       192.58.128.30
j.root-servers.net.     215757  IN      AAAA    2001:503:c27::2:30
k.root-servers.net.     329120  IN      A       193.0.14.129
k.root-servers.net.     213680  IN      AAAA    2001:7fd::1
l.root-servers.net.     71011   IN      A       199.7.83.42
```

```
z5177443@vx3:/tmp_amd/reed/export/reed/4/z5177443/Desktop/9331/lab3$ dig @198.41.0.4 lyre00.cse.unsw.edu.au

; <<>> DiG 9.9.5-9+deb8u18-Debian <<>> @198.41.0.4 lyre00.cse.unsw.edu.au
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 21021
;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 10, ADDITIONAL: 20
;; WARNING: recursion requested but not available

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;lyre00.cse.unsw.edu.au.            IN      A

;; AUTHORITY SECTION:
au.                     172800  IN      NS      d.au.
au.                     172800  IN      NS      v.au.
au.                     172800  IN      NS      u.au.
au.                     172800  IN      NS      q.au.
au.                     172800  IN      NS      t.au.
au.                     172800  IN      NS      s.au.
au.                     172800  IN      NS      r.au.
au.                     172800  IN      NS      b.au.
au.                     172800  IN      NS      a.au.
au.                     172800  IN      NS      c.au.

;; ADDITIONAL SECTION:
d.au.                   172800  IN      A       162.159.25.38
d.au.                   172800  IN      AAAA    2400:cb00:2049:1::a29f:1926
v.au.                   172800  IN      A       202.12.31.53
v.au.                   172800  IN      AAAA    2001:dd8:12::53
u.au.                   172800  IN      A       211.29.133.32
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
b.au.                   172800  IN      A       58.65.253.73
b.au.                   172800  IN      AAAA    2407:6e00:253:306::73
a.au.                   172800  IN      A       58.65.254.73
a.au.                   172800  IN      AAAA    2407:6e00:254:306::73
c.au.                   172800  IN      A       162.159.24.179
c.au.                   172800  IN      AAAA    2400:cb00:2049:1::a29f:18b3

;; Query time: 178 msec
```

```
z5177443@vx3:/tmp_amd/reed/export/reed/4/z5177443/Desktop/9331/lab3$ dig @162.159.25.38 lyre00.cse.unsw.edu.au

; <<>> DiG 9.9.5-9+deb8u18-Debian <<>> @162.159.25.38 lyre00.cse.unsw.edu.au
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 23607
;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 4, ADDITIONAL: 9
;; WARNING: recursion requested but not available

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 512
;; QUESTION SECTION:
;lyre00.cse.unsw.edu.au.            IN      A

;; AUTHORITY SECTION:
edu.au.                 7200    IN      NS      s.au.
edu.au.                 7200    IN      NS      r.au.
edu.au.                 7200    IN      NS      q.au.
edu.au.                 7200    IN      NS      t.au.

;; ADDITIONAL SECTION:
q.au.                   7200    IN      A       65.22.196.1
r.au.                   7200    IN      A       65.22.197.1
s.au.                   7200    IN      A       65.22.198.1
t.au.                   7200    IN      A       65.22.199.1
q.au.                   7200    IN      AAAA    2a01:8840:be::1
r.au.                   7200    IN      AAAA    2a01:8840:bf::1
s.au.                   7200    IN      AAAA    2a01:8840:c0::1
t.au.                   7200    IN      AAAA    2a01:8840:c1::1

;; Query time: 20 msec
;; SERVER: 162.159.25.38#53(162.159.25.38)
;; WHEN: Sat Oct 05 22:43:57 AEST 2019
;; MSG SIZE  rcvd: 291




z5177443@vx3:/tmp_amd/reed/export/reed/4/z5177443/Desktop/9331/lab3$ dig @65.22.196.1 lyre00.cse.unsw.edu.au

; <<>> DiG 9.9.5-9+deb8u18-Debian <<>> @65.22.196.1 lyre00.cse.unsw.edu.au
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 46726
;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 3, ADDITIONAL: 6
;; WARNING: recursion requested but not available

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;lyre00.cse.unsw.edu.au.            IN      A

;; AUTHORITY SECTION:
unsw.edu.au.            900     IN      NS      ns1.unsw.edu.au.
unsw.edu.au.            900     IN      NS      ns2.unsw.edu.au.
unsw.edu.au.            900     IN      NS      ns3.unsw.edu.au.

;; ADDITIONAL SECTION:
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

;; Query time: 7 msec
;; SERVER: 65.22.196.1#53(65.22.196.1)
;; WHEN: Sat Oct 05 22:46:11 AEST 2019
;; MSG SIZE  rcvd: 209
```

```
z5177443@vx3:/tmp_amd/reed/export/reed/4/z5177443/Desktop/9331/lab3$ dig @129.94.0.192 lyre00.cse.unsw.edu.au

; <<>> DiG 9.9.5-9+deb8u18-Debian <<>> @129.94.0.192 lyre00.cse.unsw.edu.au
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 20673
;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 2, ADDITIONAL: 5
;; WARNING: recursion requested but not available

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;lyre00.cse.unsw.edu.au.            IN      A

;; AUTHORITY SECTION:
cse.unsw.edu.au.        10800   IN      NS      beethoven.orchestra.cse.unsw.edu.au.
cse.unsw.edu.au.        10800   IN      NS      maestro.orchestra.cse.unsw.edu.au.

;; ADDITIONAL SECTION:
beethoven.orchestra.cse.unsw.edu.au. 10800 IN A 129.94.172.11
beethoven.orchestra.cse.unsw.edu.au. 10800 IN A 129.94.208.3
beethoven.orchestra.cse.unsw.edu.au. 10800 IN A 129.94.242.2
maestro.orchestra.cse.unsw.edu.au. 10800 IN A   129.94.242.33

;; Query time: 3 msec
;; SERVER: 129.94.0.192#53(129.94.0.192)
;; WHEN: Sat Oct 05 22:47:01 AEST 2019
;; MSG SIZE  rcvd: 171
```

Total queries:5

11.

Yes, it can have several names and/or IP addresses associated with it. A physical machine can have several internet interfaces and each interface can have some IP addresses all the time.