

COMP3331 Lab2

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1 Exercise 1

Not included.

2 Exercise 2

Not included.

3 Exercise 3

3.1 Question 1

Type A, 150.203.161.98

```
> dig www.cecs.anu.edu.au

; <<>> DiG 9.11.3-1ubuntu1.5-Ubuntu <<>> www.cecs.anu.edu
    .au
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 32963
;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0,
    ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:;, udp: 65494
;; 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. 3599    IN      A
    150.203.161.98
```

```
;; Query time: 45 msec
;; SERVER: 127.0.0.53#53(127.0.0.53)
;; WHEN: Mon Mar 11 23:28:15 AEDT 2019
;; MSG SIZE rcvd: 85
```

3.2 Question 2

rproxy.cecs.anu.edu.au
 Customize a web address for it's web server.
 By using the query from question 1.

3.3 Question 3

It's not the authority answer, there's an additional answer, which is

```
rproxy.cecs.anu.edu.au. 3599 IN A
150.203.161.98
```

By using the query from question 1.

3.4 Question 4

127.0.0.53
 By using the query from question 1.

3.5 Question 5

They are

```
ns4.cecs.anu.edu.au.
ns2.cecs.anu.edu.au.
ns3.cecs.anu.edu.au.
```

By using "NS" type of request.

```
> dig cecs.anu.edu.au -t NS
```

```
; <<>> DiG 9.11.3-1ubuntu1.5-Ubuntu <<>> cecs.anu.edu.au
-t NS
;; global options: +cmd
;; Got answer:
;; -->>HEADER<<-- opcode: QUERY, status: NOERROR, id: 59210
;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 0,
ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
```

```
;; QUESTION SECTION:
; cecs.anu.edu.au.          IN      NS

;; ANSWER SECTION:
cecs.anu.edu.au.          3600    IN      NS      ns4.cecs.
    anu.edu.au.
cecs.anu.edu.au.          3600    IN      NS      ns2.cecs.
    anu.edu.au.
cecs.anu.edu.au.          3600    IN      NS      ns3.cecs.
    anu.edu.au.

;; Query time: 45 msec
;; SERVER: 127.0.0.53#53(127.0.0.53)
;; WHEN: Wed Mar 13 01:01:37 AEDT 2019
;; MSG SIZE rcvd: 98
```

3.6 Question 6

maestro.orchestra.cse.unsw.EDU.AU.
The dns query type is PTR

```
> dig -x 129.94.242.33

; <<>> DiG 9.11.3-1ubuntu1.5-Ubuntu <<>> -x 129.94.242.33
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 5634
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0,
    ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:;; udp: 65494
;; QUESTION SECTION:
;33.242.94.129.in-addr.arpa.    IN      PTR

;; ANSWER SECTION:
33.242.94.129.in-addr.arpa. 86314 IN      PTR      maestro.
    orchestra.cse.unsw.EDU.AU.

;; Query time: 3 msec
;; SERVER: 127.0.0.53#53(127.0.0.53)
;; WHEN: Wed Mar 13 01:12:05 AEDT 2019
;; MSG SIZE rcvd: 102
```

3.7 Question 7

No, because the flags doesn't contain "aa", which means "Authoritative Answer"

```
> dig @129.94.242.33 yahoo.com -t MX
```

```
; <<>> DiG 9.7.3 <<>> @129.94.242.33 yahoo.com -t MX
; (1 server found)
;; global options: +cmd
;; Got answer:
;; -->HEADER<<-- opcode: QUERY, status: NOERROR, id: 54091
;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 5,
    ADDITIONAL: 8
```

```
;; QUESTION SECTION:
```

```
yahoo.com.                IN      MX
```

```
;; ANSWER SECTION:
```

```
yahoo.com.                1800    IN      MX      1 mta6.
    am0.yahoodns.net.
yahoo.com.                1800    IN      MX      1 mta7.
    am0.yahoodns.net.
yahoo.com.                1800    IN      MX      1 mta5.
    am0.yahoodns.net.
```

```
;; AUTHORITY SECTION:
```

```
yahoo.com.                32069   IN      NS      ns5.yahoo
    .com.
yahoo.com.                32069   IN      NS      ns1.yahoo
    .com.
yahoo.com.                32069   IN      NS      ns3.yahoo
    .com.
yahoo.com.                32069   IN      NS      ns2.yahoo
    .com.
yahoo.com.                32069   IN      NS      ns4.yahoo
    .com.
```

```
;; ADDITIONAL SECTION:
```

```
ns1.yahoo.com.            584033  IN      A
    68.180.131.16
ns1.yahoo.com.            65633   IN      AAAA
    2001:4998:130::1001
ns2.yahoo.com.            593922  IN      A
    68.142.255.16
ns2.yahoo.com.            32164   IN      AAAA
    2001:4998:140::1002
```

```

ns3.yahoo.com.      204178  IN      A
    203.84.221.53
ns3.yahoo.com.      53443   IN      AAAA
    2406:8600:b8:fe03::1003
ns4.yahoo.com.      422534  IN      A
    98.138.11.157
ns5.yahoo.com.      486849  IN      A
    119.160.253.83

```

```

;; Query time: 153 msec
;; SERVER: 129.94.242.33#53(129.94.242.33)
;; WHEN: Wed Mar 13 01:19:25 2019
;; MSG SIZE rcvd: 360

```

3.8 Question 8

```

> dig @ns5.yahoo.com yahoo.com -t MX

; <<>> DiG 9.7.3 <<>> @ns5.yahoo.com yahoo.com -t MX
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<- opcode: QUERY, status: NOERROR, id: 34911
;; flags: qr aa rd; QUERY: 1, ANSWER: 3, AUTHORITY: 5,
    ADDITIONAL: 8
;; WARNING: recursion requested but not available

;; QUESTION SECTION:
;yahoo.com.                IN      MX

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

;; AUTHORITY SECTION:
yahoo.com.      172800  IN      NS      ns1.yahoo
    .com.
yahoo.com.      172800  IN      NS      ns4.yahoo
    .com.
yahoo.com.      172800  IN      NS      ns2.yahoo
    .com.

```

```

yahoo.com.          172800  IN      NS      ns5.yahoo
.com.
yahoo.com.          172800  IN      NS      ns3.yahoo
.com.

;; ADDITIONAL SECTION:
ns1.yahoo.com.      1209600 IN      A
68.180.131.16
ns2.yahoo.com.      1209600 IN      A
68.142.255.16
ns3.yahoo.com.      1209600 IN      A
203.84.221.53
ns4.yahoo.com.      1209600 IN      A
98.138.11.157
ns5.yahoo.com.      1209600 IN      A
119.160.253.83
ns1.yahoo.com.      86400   IN      AAAA
2001:4998:130::1001
ns2.yahoo.com.      86400   IN      AAAA
2001:4998:140::1002
ns3.yahoo.com.      86400   IN      AAAA
2406:8600:b8:fe03::1003

;; Query time: 161 msec
;; SERVER: 119.160.253.83#53(119.160.253.83)
;; WHEN: Wed Mar 13 01:21:57 2019
;; MSG SIZE rcvd: 360

```

3.9 Question 9

The query type is "MX"

```

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

```

3.10 Question 10

129.94.242.53

We must query 6 servers.

```
> dig . -t NS
```

```

; <◇> DiG 9.7.3 <◇> . -t NS
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 51589
;; flags: qr rd ra; QUERY: 1, ANSWER: 13, AUTHORITY: 0,
    ADDITIONAL: 13

;; QUESTION SECTION:
;                                     IN      NS

;; ANSWER SECTION:
.      194447  IN      NS      a.root-
    servers.net.
.      194447  IN      NS      l.root-
    servers.net.
.      194447  IN      NS      e.root-
    servers.net.
.      194447  IN      NS      c.root-
    servers.net.
.      194447  IN      NS      b.root-
    servers.net.
.      194447  IN      NS      m.root-
    servers.net.
.      194447  IN      NS      d.root-
    servers.net.
.      194447  IN      NS      g.root-
    servers.net.
.      194447  IN      NS      j.root-
    servers.net.
.      194447  IN      NS      i.root-
    servers.net.
.      194447  IN      NS      h.root-
    servers.net.
.      194447  IN      NS      f.root-
    servers.net.
.      194447  IN      NS      k.root-
    servers.net.

;; ADDITIONAL SECTION:
a.root-servers.net. 462985  IN      A
    198.41.0.4
a.root-servers.net. 26371   IN      AAAA   2001:503:
    ba3e::2:30
b.root-servers.net. 490128  IN      A
    199.9.14.201

```

```

b.root-servers.net.      490129  IN      AAAA
    2001:500:200::b
c.root-servers.net.      387946  IN      A
    192.33.4.12
c.root-servers.net.      386544  IN      AAAA
    2001:500:2::c
d.root-servers.net.      354472  IN      A
    199.7.91.13
d.root-servers.net.      28110   IN      AAAA
    2001:500:2d::d
e.root-servers.net.      28110   IN      A
    192.203.230.10
e.root-servers.net.      276452  IN      AAAA      2001:500:
    a8::e
f.root-servers.net.      465357  IN      A
    192.5.5.241
f.root-servers.net.      28110   IN      AAAA
    2001:500:2f::f
g.root-servers.net.      473444  IN      A
    192.112.36.4

```

```

;; Query time: 1 msec
;; SERVER: 129.94.242.2#53(129.94.242.2)
;; WHEN: Wed Mar 13 01:37:32 2019
;; MSG SIZE rcvd: 508

```

```
> dig @198.41.0.4 au. -t NS
```

```

; <<>> DiG 9.7.3 <<>> @198.41.0.4 au. -t NS
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 20920
;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 10,
    ADDITIONAL: 16
;; WARNING: recursion requested but not available

```

```

;; QUESTION SECTION:
;au.                                IN      NS

```

```

;; AUTHORITY SECTION:
au.      172800  IN      NS      a.au.
au.      172800  IN      NS      b.au.
au.      172800  IN      NS      c.au.
au.      172800  IN      NS      d.au.

```


au.	172800	IN	NS	q.au.
au.	172800	IN	NS	r.au.
au.	172800	IN	NS	s.au.
au.	172800	IN	NS	t.au.
au.	172800	IN	NS	u.au.
au.	172800	IN	NS	v.au.
;; ADDITIONAL SECTION:				
a.au.	172800	IN	A	
58.65.254.73				
b.au.	172800	IN	A	
58.65.253.73				
c.au.	172800	IN	A	
162.159.24.179				
d.au.	172800	IN	A	
162.159.25.38				
q.au.	172800	IN	A	
65.22.196.1				
r.au.	172800	IN	A	
65.22.197.1				
s.au.	172800	IN	A	
65.22.198.1				
t.au.	172800	IN	A	
65.22.199.1				
u.au.	172800	IN	A	
211.29.133.32				
v.au.	172800	IN	A	
202.12.31.53				
a.au.	172800	IN	AAAA	2407:6e00
:254:306::73				
b.au.	172800	IN	AAAA	2407:6e00
:253:306::73				
c.au.	172800	IN	AAAA	2400:cb00
:2049:1::a29f:18b3				
d.au.	172800	IN	AAAA	2400:cb00
:2049:1::a29f:1926				
q.au.	172800	IN	AAAA	2a01
:8840:be::1				
r.au.	172800	IN	AAAA	2a01
:8840:bf::1				
;; Query time: 161 msec				
;; SERVER: 198.41.0.4#53(198.41.0.4)				
;; WHEN: Wed Mar 13 01:39:52 2019				
;; MSG SIZE rcvd: 508				

```

> dig @58.65.254.73 edu.au. -t NS

; <<>> DiG 9.7.3 <<>> @58.65.254.73 edu.au. -t NS
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 64719
;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 4,
    ADDITIONAL: 8
;; WARNING: recursion requested but not available

;; QUESTION SECTION:
;edu.au.                                IN      NS

;; AUTHORITY SECTION:
edu.au.                                86400   IN      NS      t.au.
edu.au.                                86400   IN      NS      q.au.
edu.au.                                86400   IN      NS      s.au.
edu.au.                                86400   IN      NS      r.au.

;; ADDITIONAL SECTION:
q.au.                                86400   IN      A
    65.22.196.1
r.au.                                86400   IN      A
    65.22.197.1
s.au.                                86400   IN      A
    65.22.198.1
t.au.                                86400   IN      A
    65.22.199.1
q.au.                                86400   IN      AAAA    2a01
    :8840:be::1
r.au.                                86400   IN      AAAA    2a01
    :8840:bf::1
s.au.                                86400   IN      AAAA    2a01
    :8840:c0::1
t.au.                                86400   IN      AAAA    2a01
    :8840:c1::1

;; Query time: 154 msec
;; SERVER: 58.65.254.73#53(58.65.254.73)
;; WHEN: Wed Mar 13 01:40:59 2019
;; MSG SIZE rcvd: 264

> dig @65.22.196.1 unsw.edu.au. -t NS

; <<>> DiG 9.7.3 <<>> @65.22.196.1 unsw.edu.au. -t NS

```

```

; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 62951
;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 3,
    ADDITIONAL: 5
;; WARNING: recursion requested but not available

;; QUESTION SECTION:
;unsw.edu.au.                IN      NS

;; AUTHORITY SECTION:
unsw.edu.au.                900     IN      NS      ns3.unsw.edu.au.
unsw.edu.au.                900     IN      NS      ns1.unsw.edu.au.
unsw.edu.au.                900     IN      NS      ns2.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: 8 msec
;; SERVER: 65.22.196.1#53(65.22.196.1)
;; WHEN: Wed Mar 13 01:42:03 2019
;; MSG SIZE rcvd: 187

> dig @129.94.0.192 cse.unsw.edu.au. -t NS

; <<>> DiG 9.7.3 <<>> @129.94.0.192 cse.unsw.edu.au. -t
    NS
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 11611
;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 2,
    ADDITIONAL: 4

```

```

;; WARNING: recursion requested but not available

;; QUESTION SECTION:
;cse.unsw.edu.au.          IN      NS

;; AUTHORITY SECTION:
cse.unsw.edu.au.          10800   IN      NS      maestro.
    orchestra.cse.unsw.edu.au.
cse.unsw.edu.au.          10800   IN      NS      beethoven
    .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: 4 msec
;; SERVER: 129.94.0.192#53(129.94.0.192)
;; WHEN: Wed Mar 13 01:42:31 2019
;; MSG SIZE rcvd: 153

> dig @129.94.172.11 weber.cse.unsw.edu.au. -t A

; <<>> DiG 9.7.3 <<>> @129.94.172.11 weber.cse.unsw.edu.
    au. -t A
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 54792
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 2,
    ADDITIONAL: 2

;; QUESTION SECTION:
;weber.cse.unsw.edu.au.          IN      A

;; ANSWER SECTION:
weber.cse.unsw.edu.au.  3600   IN      A
    129.94.242.53

;; AUTHORITY SECTION:

```

```

cse.unsw.edu.au.      3600    IN      NS      beethoven
    .orchestra.cse.unsw.edu.au.
cse.unsw.edu.au.      3600    IN      NS      maestro.
    orchestra.cse.unsw.edu.au.

;; ADDITIONAL SECTION:
maestro.orchestra.cse.unsw.edu.au. 3600 IN A
    129.94.242.33
beethoven.orchestra.cse.unsw.edu.au. 3600 IN A
    129.94.242.2

;; Query time: 0 msec
;; SERVER: 129.94.172.11#53(129.94.172.11)
;; WHEN: Wed Mar 13 01:44:55 2019
;; MSG SIZE rcvd: 143

```

3.11 Question 11

Yes. We can use multiple NIC at a single machine or other more fancier method.