**Exercise 2:**

z5099492@bongo00:~$ dig <www.cecs.anu.edu.au>

; <<>> DiG 9.7.3 <<>> <www.cecs.anu.edu.au>

;; global options: +cmd

;; Got answer:

;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 2650

;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 4, ADDITIONAL: 4

;; QUESTION SECTION:

;<www.cecs.anu.edu.au>. IN A

;; ANSWER SECTION:

<www.cecs.anu.edu.au>. 3056 IN CNAME rproxy.cecs.anu.edu.au.

rproxy.cecs.anu.edu.au. 1773 IN A 150.203.161.98

;; AUTHORITY SECTION:

cecs.anu.edu.au. 1069 IN NS ns1.cecs.anu.edu.au.

cecs.anu.edu.au. 1069 IN NS ns2.cecs.anu.edu.au.

cecs.anu.edu.au. 1069 IN NS ns3.cecs.anu.edu.au.

cecs.anu.edu.au. 1069 IN NS ns4.cecs.anu.edu.au.

;; ADDITIONAL SECTION:

ns1.cecs.anu.edu.au. 2563 IN A 150.203.161.4

ns2.cecs.anu.edu.au. 2563 IN A 150.203.161.36

ns3.cecs.anu.edu.au. 715 IN A 150.203.161.50

ns4.cecs.anu.edu.au. 2563 IN A 150.203.161.38

;; Query time: 1 msec

;; SERVER: 129.94.208.3#53(129.94.208.3)

;; WHEN: Fri Mar 24 13:42:33 2017

;; MSG SIZE rcvd: 210

**Question 1:**

P address of www. cecs.anu.edu.au is 150.203.161.98 , the DNS query is A.

**Question 2:**

rproxy.cecs.anu.edu.au. Is the canonical name. 150.203.161.98; easy for clients accessing the web.

**Question 3:**

Authority Section means the used authoritative name servers related to the DNS zone.

Additional section is IP addresses of the authoritative name servers.

**Question 4:**

the IP address pf the local nameserver is 129.94.208.3. In the “SERVER”.

**Question 5:**

z5099492@bongo00:~$ dig cecs.anu.edu.au

; <<>> DiG 9.7.3 <<>> cecs.anu.edu.au

;; global options: +cmd

;; Got answer:

;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 48647

;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 3, ADDITIONAL: 3

;; QUESTION SECTION:

;cecs.anu.edu.au. IN A

;; ANSWER SECTION:

cecs.anu.edu.au. 644 IN A 150.203.161.98

;; AUTHORITY SECTION:

anu.edu.au. 3005 IN NS ns1.anu.edu.au.

anu.edu.au. 3005 IN NS ns.adelaide.edu.au.

anu.edu.au. 3005 IN NS una.anu.edu.au.

;; ADDITIONAL SECTION:

ns.adelaide.edu.au. 69136 IN A 129.127.40.3

ns1.anu.edu.au. 24216 IN A 150.203.1.10

una.anu.edu.au. 10291 IN A 150.203.22.28

;; Query time: 0 msec

;; SERVER: 129.94.208.3#53(129.94.208.3)

;; WHEN: Fri Mar 24 14:54:01 2017

;; MSG SIZE rcvd: 159

They are

ns.adelaide.edu.au. 129.127.40.3

ns1.anu.edu.au. 50.203.1.10

una.anu.edu.au. 150.203.22.28

The type of DNS query is NS.

**Question 6:**

z5099492@bongo00:~$ dig anu.edu.au

; <<>> DiG 9.7.3 <<>> anu.edu.au

;; global options: +cmd

;; Got answer:

;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 7931

;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 3, ADDITIONAL: 3

;; QUESTION SECTION:

;anu.edu.au. IN A

;; ANSWER SECTION:

anu.edu.au. 150 IN A 130.56.60.81

;; AUTHORITY SECTION:

anu.edu.au. 2584 IN NS ns.adelaide.edu.au.

anu.edu.au. 2584 IN NS una.anu.edu.au.

anu.edu.au. 2584 IN NS ns1.anu.edu.au.

;; ADDITIONAL SECTION:

ns.adelaide.edu.au. 68715 IN A 129.127.40.3

ns1.anu.edu.au. 23795 IN A 150.203.1.10

una.anu.edu.au. 9870 IN A 150.203.22.28

;; Query time: 13 msec

;; SERVER: 129.94.208.3#53(129.94.208.3)

;; WHEN: Fri Mar 24 15:01:02 2017

;; MSG SIZE rcvd: 154

They are

ns.adelaide.edu.au. 129.127.40.3

ns1.anu.edu.au. 150.203.1.10

una.anu.edu.au 150.203.22.28

The type of DNS query is NS.

**Question 7:**

z5099492@bongo00:~$ dig 149.171.158.109

; <<>> DiG 9.7.3 <<>> 149.171.158.109

;; global options: +cmd

;; Got answer:

;; ->>HEADER<<- opcode: QUERY, status: NXDOMAIN, id: 20101

;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 0

;; QUESTION SECTION:

;149.171.158.109. IN A

;; AUTHORITY SECTION:

. 5533 IN SOA a.root-servers.net. nstld.verisign-grs.com. 2017032302 1800 900 604800 86400

;; Query time: 5 msec

;; SERVER: 129.94.208.3#53(129.94.208.3)

;; WHEN: Fri Mar 24 15:03:55 2017

;; MSG SIZE rcvd: 108

The DNS name is a.root-servers.net. nstld.verisign-grs.com.

The type of DNS query is SOA.

**Question 8:**

z5099492@bongo00:~$ dig @129.94.242.33 yahoo.com

; <<>> DiG 9.7.3 <<>> @129.94.242.33 yahoo.com

; (1 server found)

;; global options: +cmd

;; Got answer:

;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 12699

;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 5, ADDITIONAL: 8

;; QUESTION SECTION:

;yahoo.com. IN A

;; ANSWER SECTION:

yahoo.com. 1800 IN A 98.138.253.109

yahoo.com. 1800 IN A 98.139.183.24

yahoo.com. 1800 IN A 206.190.36.45

;; AUTHORITY SECTION:

yahoo.com. 63642 IN NS ns1.yahoo.com.

yahoo.com. 63642 IN NS ns5.yahoo.com.

yahoo.com. 63642 IN NS ns2.yahoo.com.

yahoo.com. 63642 IN NS ns4.yahoo.com.

yahoo.com. 63642 IN NS ns3.yahoo.com.

;; ADDITIONAL SECTION:

ns1.yahoo.com. 1058 IN A 68.180.131.16

ns1.yahoo.com. 1061 IN AAAA 2001:4998:130::1001

ns2.yahoo.com. 278173 IN A 68.142.255.16

ns2.yahoo.com. 7070 IN AAAA 2001:4998:140::1002

ns3.yahoo.com. 341088 IN A 203.84.221.53

ns3.yahoo.com. 7071 IN AAAA 2406:8600:b8:fe03::1003

ns4.yahoo.com. 253282 IN A 98.138.11.157

ns5.yahoo.com. 154088 IN A 119.160.247.124

;; Query time: 161 msec

;; SERVER: 129.94.242.33#53(129.94.242.33)

;; WHEN: Fri Mar 24 15:21:50 2017

;; MSG SIZE rcvd: 329

No,since the flags does not contain “aa”.

**Question 9 :**

z5099492@bongo00:~$ dig @150.203.22.28 yahoo.com

; <<>> DiG 9.7.3 <<>> @150.203.22.28 yahoo.com

; (1 server found)

;; global options: +cmd

;; Got answer:

;; ->>HEADER<<- opcode: QUERY, status: REFUSED, id: 31069

;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 0

;; WARNING: recursion requested but not available

;; QUESTION SECTION:

;yahoo.com. IN A

;; Query time: 5 msec

;; SERVER: 150.203.22.28#53(150.203.22.28)

;; WHEN: Fri Mar 24 16:10:55 2017

;; MSG SIZE rcvd: 27

**Question 10:**

z5099492@bongo00:~$ dig yahoo.com

; <<>> DiG 9.7.3 <<>> yahoo.com

;; global options: +cmd

;; Got answer:

;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 35523

;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 5, ADDITIONAL: 8

;; QUESTION SECTION:

;yahoo.com. IN A

;; ANSWER SECTION:

yahoo.com. 93 IN A 98.138.253.109

yahoo.com. 93 IN A 98.139.183.24

yahoo.com. 93 IN A 206.190.36.45

;; AUTHORITY SECTION:

yahoo.com. 57166 IN NS ns5.yahoo.com.

yahoo.com. 57166 IN NS ns1.yahoo.com.

yahoo.com. 57166 IN NS ns4.yahoo.com.

yahoo.com. 57166 IN NS ns2.yahoo.com.

yahoo.com. 57166 IN NS ns3.yahoo.com.

;; ADDITIONAL SECTION:

ns1.yahoo.com. 271404 IN A 68.180.131.16

ns1.yahoo.com. 594 IN AAAA 2001:4998:130::1001

ns2.yahoo.com. 334612 IN A 68.142.255.16

ns2.yahoo.com. 594 IN AAAA 2001:4998:140::1002

ns3.yahoo.com. 63925 IN A 203.84.221.53

ns3.yahoo.com. 595 IN AAAA 2406:8600:b8:fe03::1003

ns4.yahoo.com. 246806 IN A 98.138.11.157

ns5.yahoo.com. 334612 IN A 119.160.247.124

;; Query time: 0 msec

;; SERVER: 129.94.208.3#53(129.94.208.3)

;; WHEN: Fri Mar 24 17:09:46 2017

;; MSG SIZE rcvd: 329

z5099492@bongo00:~$ dig @68.180.131.16 yahoo.com

; <<>> DiG 9.7.3 <<>> @68.180.131.16 yahoo.com

; (1 server found)

;; global options: +cmd

;; Got answer:

;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 63757

;; flags: qr aa rd; QUERY: 1, ANSWER: 3, AUTHORITY: 5, ADDITIONAL: 8

;; WARNING: recursion requested but not available

;; QUESTION SECTION:

;yahoo.com. IN A

;; ANSWER SECTION:

yahoo.com. 1800 IN A 206.190.36.45

yahoo.com. 1800 IN A 98.138.253.109

yahoo.com. 1800 IN A 98.139.183.24

;; AUTHORITY SECTION:

yahoo.com. 172800 IN NS ns2.yahoo.com.

yahoo.com. 172800 IN NS ns1.yahoo.com.

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

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

yahoo.com. 172800 IN NS ns4.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 119.160.247.124

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: 145 msec

;; SERVER: 68.180.131.16#53(68.180.131.16)

;; WHEN: Fri Mar 24 17:00:54 2017

;; MSG SIZE rcvd: 329

The type is NS.

**Question 11:**

z5099492@bongo00:~$ dig . ns

; <<>> DiG 9.7.3 <<>> . ns

;; global options: +cmd

;; Got answer:

;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 58073

;; flags: qr rd ra; QUERY: 1, ANSWER: 13, AUTHORITY: 0, ADDITIONAL: 13

;; QUESTION SECTION:

;. IN NS

;; ANSWER SECTION:

. 232423 IN NS g.root-servers.net.

. 232423 IN NS j.root-servers.net.

. 232423 IN NS m.root-servers.net.

. 232423 IN NS c.root-servers.net.

. 232423 IN NS b.root-servers.net.

. 232423 IN NS k.root-servers.net.

. 232423 IN NS f.root-servers.net.

. 232423 IN NS e.root-servers.net.

. 232423 IN NS d.root-servers.net.

. 232423 IN NS a.root-servers.net.

. 232423 IN NS i.root-servers.net.

. 232423 IN NS h.root-servers.net.

. 232423 IN NS l.root-servers.net.

;; ADDITIONAL SECTION:

a.root-servers.net. 526694 IN A 198.41.0.4

a.root-servers.net. 179347 IN AAAA 2001:503:ba3e::2:30

b.root-servers.net. 235831 IN A 192.228.79.201

b.root-servers.net. 91367 IN AAAA 2001:500:84::b

c.root-servers.net. 91367 IN A 192.33.4.12

c.root-servers.net. 62295 IN AAAA 2001:500:2::c

d.root-servers.net. 331750 IN A 199.7.91.13

d.root-servers.net. 496749 IN AAAA 2001:500:2d::d

e.root-servers.net. 162130 IN A 192.203.230.10

e.root-servers.net. 337947 IN AAAA 2001:500:a8::e

f.root-servers.net. 178051 IN A 192.5.5.241

f.root-servers.net. 152655 IN AAAA 2001:500:2f::f

g.root-servers.net. 346056 IN A 192.112.36.4

;; Query time: 0 msec

;; SERVER: 129.94.208.3#53(129.94.208.3)

;; WHEN: Fri Mar 24 16:28:46 2017

;; MSG SIZE rcvd: 508

z5099492@bongo00:~$ dig @198.41.0.4 au. ns

; <<>> DiG 9.7.3 <<>> @198.41.0.4 au. ns

; (1 server found)

;; global options: +cmd

;; Got answer:

;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 14269

;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 8, ADDITIONAL: 15

;; 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 u.au.

au. 172800 IN NS v.au.

au. 172800 IN NS w.au.

au. 172800 IN NS x.au.

au. 172800 IN NS y.au.

au. 172800 IN NS z.au.

;; ADDITIONAL SECTION:

a.au. 172800 IN A 58.65.254.73

b.au. 172800 IN A 58.65.253.73

u.au. 172800 IN A 211.29.133.32

v.au. 172800 IN A 202.12.31.141

w.au. 172800 IN A 37.209.192.5

x.au. 172800 IN A 37.209.194.5

y.au. 172800 IN A 37.209.196.5

z.au. 172800 IN A 37.209.198.5

a.au. 172800 IN AAAA 2407:6e00:254:306::73

b.au. 172800 IN AAAA 2407:6e00:253:306::73

v.au. 172800 IN AAAA 2001:dc0:4001:1:0:1836:0:141

w.au. 172800 IN AAAA 2001:dcd:1::5

x.au. 172800 IN AAAA 2001:dcd:2::5

y.au. 172800 IN AAAA 2001:dcd:3::5

z.au. 172800 IN AAAA 2001:dcd:4::5

;; Query time: 171 msec

;; SERVER: 198.41.0.4#53(198.41.0.4)

;; WHEN: Fri Mar 24 16:28:58 2017

;; MSG SIZE rcvd: 472

z5099492@bongo00:~$ dig @58.65.254.73 edu.au. ns

; <<>> DiG 9.7.3 <<>> @58.65.254.73 edu.au. ns

; (1 server found)

;; global options: +cmd

;; Got answer:

;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 59141

;; 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 z.au.

edu.au. 86400 IN NS x.au.

edu.au. 86400 IN NS y.au.

edu.au. 86400 IN NS w.au.

;; ADDITIONAL SECTION:

w.au. 86400 IN A 37.209.192.5

w.au. 86400 IN AAAA 2001:dcd:1::5

x.au. 86400 IN A 37.209.194.5

x.au. 86400 IN AAAA 2001:dcd:2::5

y.au. 86400 IN A 37.209.196.5

y.au. 86400 IN AAAA 2001:dcd:3::5

z.au. 86400 IN A 37.209.198.5

z.au. 86400 IN AAAA 2001:dcd:4::5

;; Query time: 15 msec

;; SERVER: 58.65.254.73#53(58.65.254.73)

;; WHEN: Fri Mar 24 16:29:19 2017

;; MSG SIZE rcvd: 264

z5099492@bongo00:~$ dig @37.209.192.5 unsw.edu.au ns

; <<>> DiG 9.7.3 <<>> @37.209.192.5 unsw.edu.au ns

; (1 server found)

;; global options: +cmd

;; Got answer:

;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 41572

;; 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. 14400 IN NS ns1.unsw.edu.au.

unsw.edu.au. 14400 IN NS ns2.unsw.edu.au.

unsw.edu.au. 14400 IN NS ns3.unsw.edu.au.

;; ADDITIONAL SECTION:

ns1.unsw.edu.au. 14400 IN A 129.94.0.192

ns2.unsw.edu.au. 14400 IN A 129.94.0.193

ns3.unsw.edu.au. 14400 IN A 192.155.82.178

ns1.unsw.edu.au. 14400 IN AAAA 2001:388:c:35::1

ns2.unsw.edu.au. 14400 IN AAAA 2001:388:c:35::2

;; Query time: 2 msec

;; SERVER: 37.209.192.5#53(37.209.192.5)

;; WHEN: Fri Mar 24 16:29:29 2017

;; MSG SIZE rcvd: 187

z5099492@bongo00:~$ dig @129.94.0.192 cse.unsw.edu.au a

; <<>> DiG 9.7.3 <<>> @129.94.0.192 cse.unsw.edu.au a

; (1 server found)

;; global options: +cmd

;; Got answer:

;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 10632

;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 2, ADDITIONAL: 4

;; WARNING: recursion requested but not available

;; QUESTION SECTION:

;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:

maestro.orchestra.cse.unsw.edu.au. 10800 IN A 129.94.242.33

beethoven.orchestra.cse.unsw.edu.au. 10800 IN A 129.94.242.2

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

;; Query time: 3 msec

;; SERVER: 129.94.0.192#53(129.94.0.192)

;; WHEN: Fri Mar 24 16:41:14 2017

;; MSG SIZE rcvd: 153

So there are 2 DNS servers to get the authoritative answer.

**Question 12:**

Yes!

**Question 13:**

Not case-sensitive.

**Question 14:**

|  |  |  |
| --- | --- | --- |
| [.aaa](http://www.iana.org/domains/root/db/aaa.html) | generic | American Automobile Association, Inc. |
| [.aarp](http://www.iana.org/domains/root/db/aarp.html) | generic | AARP |
| [.abarth](http://www.iana.org/domains/root/db/abarth.html) | generic | Fiat Chrysler Automobiles N.V. |
| [.abb](http://www.iana.org/domains/root/db/abb.html) | generic | ABB Ltd |
| [.abbott](http://www.iana.org/domains/root/db/abbott.html) | generic | Abbott Laboratories, Inc. |
| [.abbvie](http://www.iana.org/domains/root/db/abbvie.html) | generic | AbbVie Inc. |
| [.abc](http://www.iana.org/domains/root/db/abc.html) | generic | Disney Enterprises, Inc. |
| [.able](http://www.iana.org/domains/root/db/able.html) | generic | Able Inc. |