**Exercise 3: Digging into DNS**

Question1:

Using the dig command, we can get the IP address of [www.eecs.berkeley.edu](http://www.eecs.berkeley.edu), which is 23.185.0.1. The query type of this address is type A.

A picture containing text

Description automatically generated

Question2:

From the picture given in question 1. We can find the canonical addresses are live-eecs.pantheonsite.io and fe1.edge.pantheon.io, which is the answer to this question. The reason for using the canonical address is easy for users to remember this address.

Question3:

The AUTHORITY SECTION returns the name lists of servers. All these servers are stored in the DNS record. Furthermore, from the type NS and based on the lecture notes, we can find that these are authoritative DNS servers.

Table

Description automatically generated

Then, the ADDITIONAL SECTION returns the actual IP address, which you can find as the picture showing below.

Table

Description automatically generated

Question4:

The IP address of the local name server is 129.94.242.2.

Text

Description automatically generated

Question5:

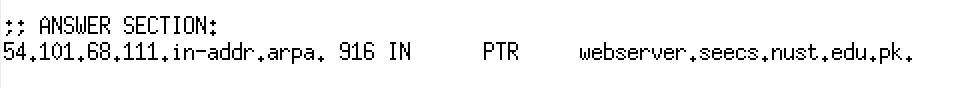
From the picture, we can get the names of DNS servers are adns3.berkeley.edu, ns.CS.berkeley.edu, ns.eecs.berkeley.edu, adns1.berkeley.edu, and adns2.berkeley.edu. The IP address are 192.107.102.142, 169.229.60.61, 169.229.60.153, 128.32.136.3 and 128.32.136.14. Also, from the picture we can get the type query is NS.

A close up of text on a white background

Description automatically generated

Question6:

Using the dig command we can get the DNS name of this IP address, 111.68.101.54, which is webserver.seecs.nust.edu.pk. We can also get the DNS query type is PTR from the picture given below.



Question7:

From the picture, we can get that the response doesn’t get an authoritative answer. This is because we cannot find the keyword AA in the flag part.

Text

Description automatically generated

Table

Description automatically generated

Question8:

Based on the result in question 7, I choose ns3.yahoo.com which IP address is 27.123.42.42. We can easily find an AA flag in ns3.tahoo.com, which means this response is an authoritative answer.

Text, letter

Description automatically generated

Question9:

Based on the result of question7 and question 8, we can find the query type is MX, which is the answer to this question.

Text

Description automatically generated

Text

Description automatically generated

Question10:

Using the dig command to check whether the flag is AA. Based on the lecture notes of DNS, we should check each layer to find out the result.

Table

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Description automatically generated

A close up of text on a white background

Description automatically generated

Text

Description automatically generated

Text

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

Finally, we can find the AA flag in the flag part, which means this response is an authoritative answer.

Text, letter

Description automatically generated

Question11:

Yes, of course. Consider we can find multiple physical networks in our machine. We can also find one IP address for each network. For example, if our smartphone turns on a personal hotspot, we will have 2 networks with our phone. Each network will have its own IP address.

**Exercise 4: result WebServer.py**

**Local Test:**

**1. index.html**

Graphical user interface, text, application, chat or text message

Description automatically generated

**2. test.png**

Graphical user interface, text, application, chat or text message

Description automatically generated

**3. bio.html**

Graphical user interface, text, application, chat or text message, email

Description automatically generated

**4. Terminal Output**

Text

Description automatically generated

**Vlab Test:**

**Index.html**

**Graphical user interface, text, application, email

Description automatically generated**

**Test.png**

**Graphical user interface, text, application

Description automatically generated**

**Bio.html**

**Graphical user interface, text, application, email

Description automatically generated**