# **Exercises for Hands-on 1: DNS**

You should submit answers *only* to the questions asked. In particular, please do not include pages of output from dig unless specifically requested.

### **Question 1**

Use dig to find the IP address of thyme.lcs.mit.edu. The dig result will include a record of type CNAME. In the terminology of chapter 4, what does CNAME mean?

Write or type your answer to question 1 below. Your answer should not extend onto a second page.

Solution here Solution here

You do not need to type your solution in a red font.

#### Question 2

Run the following commands:

```
dig +domain=mit.edu data
dig +domain=mit.edu data.
```

Why are the results different? Based on the output of the two commands, what is the difference between the DNS searches being performed for data and data.? It will be helpful to look at the man page for dig (type man dig at a command prompt) to see what the +domain= parameter does.

Write or type your answer to question 2 below. Your answer should not extend onto a second page.

Solution here Solution here

### **Question 3 - Hierarchy**

Assuming it knows nothing else about a name, a DNS resolver will ask a well-known root server. The root servers on the Internet are in the domain root-servers.net. One way to get a list of them is with the command:

dig . ns

Use dig to ask *one* of the root servers the address of lirone.csail.mit.edu, *without* recursion.

It is unlikely that these servers actually know the answer so they will *refer* you to a server (or list of servers) that might know more. Go through the hierarchy from the root without recursion, following the referrals manually, until you have found the address of lirone.csail.mit.edu.

How many queries did it take for you to find the IP address for lirone? Include the sequence of commands you used.

Write or type your answer to guestion 3 below. Your answer should not extend onto a second page.

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## **Question 4 - Caching**

For each query that you run, keep track of how long it took to get a response.

That data will be helpful for you.

Ask your default server for information, without recursion, about the host www.dmoz.org.

A. Did your default server have the answer in its cache? How do you know?

(If this information was cached, please find some other host name that is not cached and do the following part with that other host.)

Now, ask your default server this same query but *with* recursion. It should return an answer for you. Finally, ask your default server again without recursion.

B. Has the cache served its purpose? How do you know?

Write or type your answer to question 4 below. Your answer should not extend onto a second page.

- A. Solution here solution here
- B. Solution here solution here