

## Part 1

- 1) 18.26.0.122
- 2) It stands for canonical name record type. It means that it points to another domain name.
- 3) 1371
- 4) First line no IP  
Second line results in 209.59.119.34 (using @8.8.8.8, my default one gives nothing)
- 5) It's used to set the search list to contain the domain, mit.edu. The difference in result is due to the trailing dot in 'ai.' With the trailing dot, it's an absolute path, and is searched as such. However, without the trailing dot, 'ai' is searched within the domain, mit.edu.
- 6) dig @a.root-servers.net. +norecurse lirone.csail.mit.edu
- 7) Commands:
  1. dig @a.root-servers.net +norecurse lirone.csail.mit.edu
  2. dig @b.edu-servers.net. +norecurse lirone.csail.mit.edu
  3. dig @usw2.akam.net. +norecurse lirone.csail.mit.edu
  4. dig @auth-ns3.csail.mit.edu. +norecurse lirone.csail.mit.edu
 IP address found: 128.52.129.186
- 8) dig +norecurse www.dmoz.org  
No. Status was servfail.  
8msec.
- 9) 262 msec.
- 10) 5 msec. Yes, it has served its purpose. No status error this time and IP address was returned successfully without taking very long because IP was cached into the local DNS.

## Part 2

- 1) Both are UDP.
- 2) Destination Port for query: 53  
Source Port for response: 53
- 3) IP address to which the DNS query was sent: 192.162.2.11. Different.
- 4) Do query recursively for type A to updatekeepalive.mcafee.com  
No answers in the query message.
- 5) 2 answers in the DNS response message.
  - ▼ Answers
    - ▼ updatekeepalive.mcafee.com: type CNAME, class IN, cname updatekeepalive.glb.mcafee.com
      - Name: updatekeepalive.mcafee.com
      - Type: CNAME (Canonical NAME for an alias) (5)
      - Class: IN (0x0001)
      - Time to live: 209 (3 minutes, 29 seconds)
      - Data length: 22
      - CNAME: updatekeepalive.glb.mcafee.com
    - ▼ updatekeepalive.glb.mcafee.com: type A, class IN, addr 161.69.12.13
      - Name: updatekeepalive.glb.mcafee.com
      - Type: A (Host Address) (1)
      - Class: IN (0x0001)
      - Time to live: 3 (3 seconds)
      - Data length: 4
      - Address: 161.69.12.13
- 6) Yes, it corresponds to the 2<sup>nd</sup> answer with the IP address 161.69.12.13