

## Assignment 2 (DNS - Implementation of Records Types)

**Due Date: Sunday 11<sup>th</sup> April 2021 (Demos Monday 12<sup>th</sup> April 2021)**

### Guidelines:

- This is a group based programming assignment and the submission will be based on 2-5 mins demo followed by a short viva.
- The student ID, names and section of all the group members (max 2) must be mentioned clearly during the demo.
- Plagiarism in any form will result in straight "F"

Suppose within your web browser you click on a link to obtain a Web Page. The requested IP Address is not cached in your local host, so a DNS lookup is necessary to obtain the IP Address, refer to Fig.1.

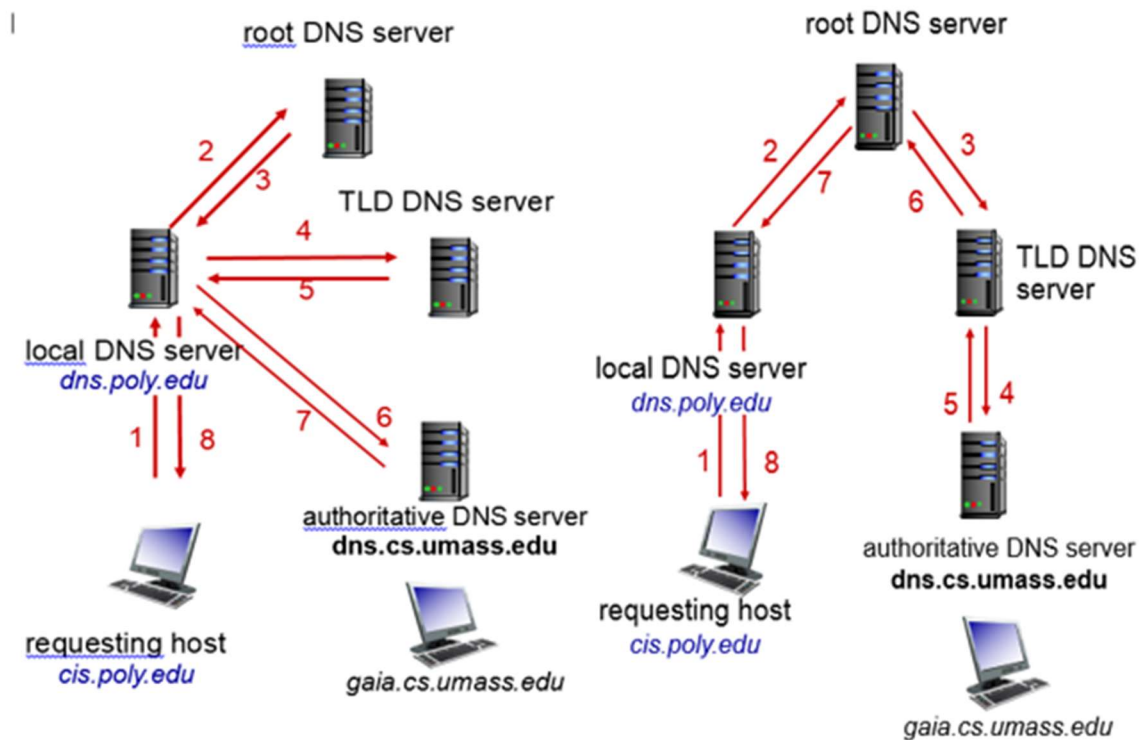


Fig-1: DNS name resolution (The right side of figure is showing Iterative name resolution and left side of figure is showing sequential name resolution)

## Your task:

Design an application for DNS-Server which implements the Root-Level, Top-Level and Authoritative-Level servers, show how these servers actually work. When the client send query for DNS lookup, it query and reply messages, both with same message format. It take 16# bit for identification and 16# bit for reply to query, refer to Fig-2.

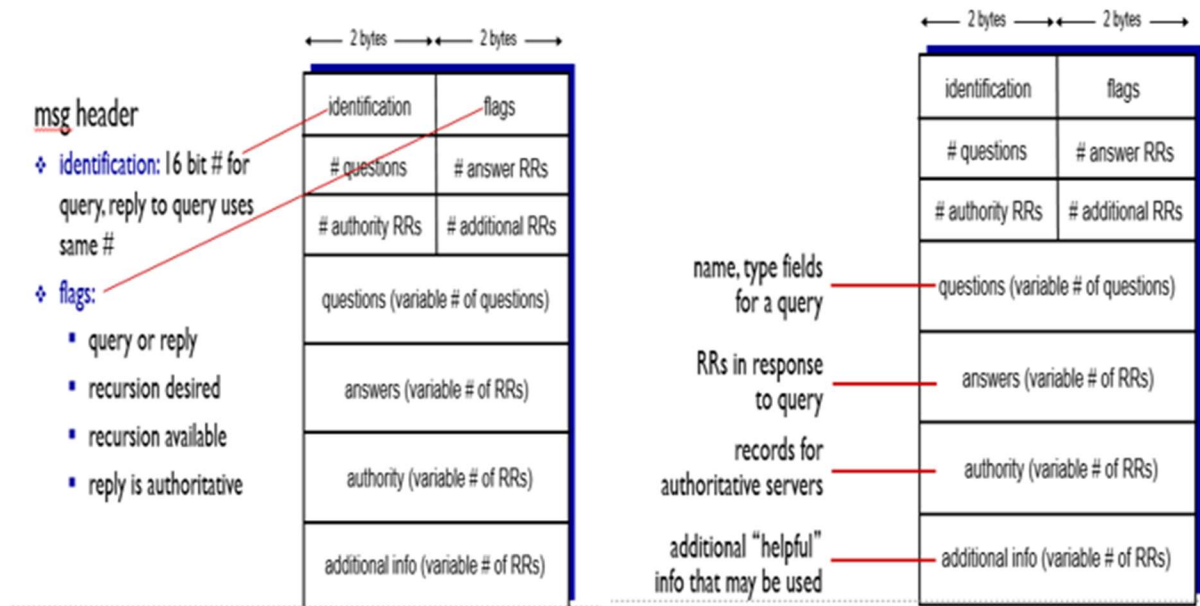


Fig-2: DNS, protocol messages

**Your application should maintain DNS record list (as per actual records - no assumption), which prints requested IP Address records.**

Sample run for google.com:

```
google.com/64.233.167.99
-- DNS INFORMATION --
A: 64.233.187.99, 72.14.207.99, 64.233.167.99
NS: ns4.google.com., ns1.google.com., ns2.google.com., ns3.google.com.
MX: 10 smtp4.google.com., 10 smtp1.google.com., 10 smtp2.google.com., 10
smtp3.google.com.
```

**Show how caching a DNS request will help for recursive request.**

**Enable auto flushing of records if cache gets full on local host level.**

Help:

Reading: Text-Book Chapter#02 (Section 2.4)

<http://www.eyeamer.com/Shayne/DNSLOOKUP/DNSLookup.html>