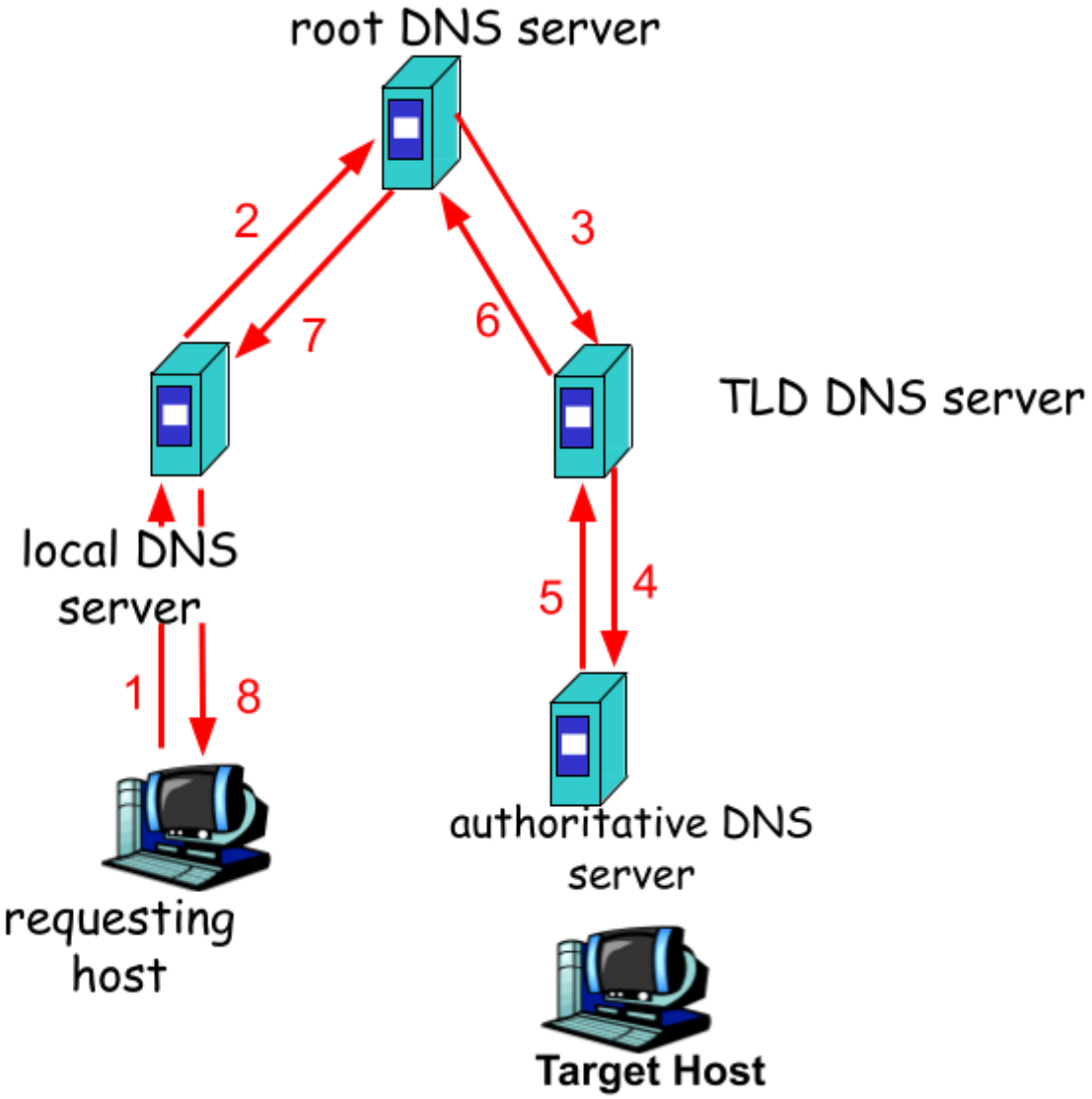
Assignment 3

The Domain Name System (DNS) is a hierarchical distributed naming system for computers, services, or any resource connected to the Internet or a private network. It associates various information with domain names assigned to each of the participating entities. Most prominently, it translates more readily memorized domain names to the numerical IP addresses needed for the purpose of locating and identifying computer services and device with the underlying network protocols. By providing a worldwide, distributed directory service, the Domain Name System is an essential component of the functionality of the Internet.

In this assignment, you will be implementing a recursive DNS system, which contains a local server, Root DNS servers, TLD servers and authoritative servers. The address resolution mechanism can be through an iterative query or a through recursive query.

Recursive Query



Refer text book for more details about the recursive address resolution.

Your solution will have a client program and multiple server programs corresponding to each of

the higher lever servers (They may be having less difference among them depending on the type of records they hold). In the simplest form, each of these servers maintain a database having the following fields.

Host name	**IP address**
www.pqr.com	**192.168.5.60**
www.xyz.com	**192.8.1.100**

Once the client and the server parts are set up, the client executes a command of the following form to resolve IP address of a hostname:

nslookup abc.com

Use sendto and recvfrom commands for the implemenation using DGRAM sockets. You should use necessary concurrency mechanisms as necessary.

Naming conventions will be same as previous assignments. it is mandatory that you name the files according to your roll number, assignment number and program (each server in this case should be named appropriately.)