Assignment 09

Title: DNS Lookup.

Problem Statement write a program for DNS lookup. given an IP address Input, it should return URL & vice versa.

Prerequisites:
    Application layer: Roles & Protocols
        Socket Programming

Learning Objectives:
    Students will be able to understand working of DNS protocol.

Theory:
    DNS:
    — Domain Name System is the default name resolution service used in Microsoff windows server 2003 network.
    — DNS is the part of the windows server 2003 TCP/IP protocol suite & all TCP/IP network connections are, by default configured with the IP address of at least one DNS server in order to perform name resolution on the network.

    DNS Architecture:
    — A hierarchical distributed database & an associated set of protocols that defines:

→ a mechanism for querying & updating the database

→ a mechanism for replicating the information in the database among servers.

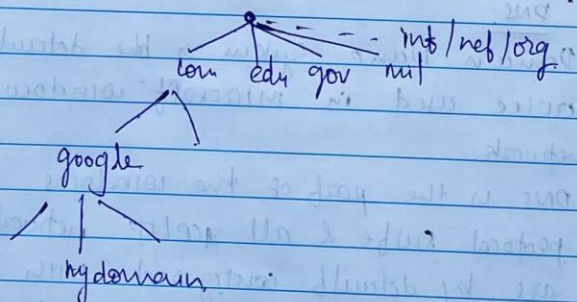→ A schema of the database.

DNS Domain Names:

DNS is implemented as a hierarchical & distributed db containing various types of data, including host & domain names.

The names in the DNS db form a hierarchical tree structure called the domain namespace. Domain names consists of individual labels separated by dots, for eg. mydomain.google.com
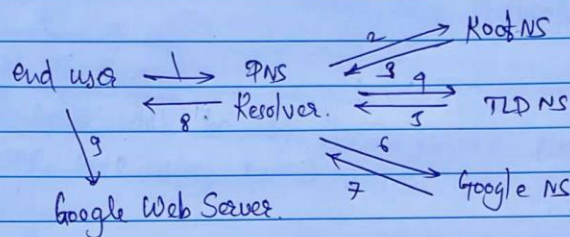

managed by registration authority

int/net/org

com edu gov mil

google

mydomain

managed by google.

Types of DNS domain names:

Root, top level, second level, subdomain, host & resource name

Working of DNS lookup:

DNS translates your familiar domain name (www.google.com) into an IP address your browser can use. (173.194.33.174).

end user → DNS Resolver ⇄ Root NS
DNS Resolver ⇄ TLD NS
⇄ Google NS
Google Web Server.

Step1: OS recursive query to DNS Resolver.
Step2: DNS Resolver Iterative Query to Root Server.
Step3: Root Server Responce.
Step4: DNS Resolver Iterative Query to TLD Server
Step5: TLD Server Response.
Step6: DNS Resolver Iterative Query to google.com NS
Step7: google.com NS response
Step8: DNS resolver response to OS.
Step9: Browser starts TCP handshake

Conclusion: Successfully implemented a program for DNS lookup that resolves URL for given IP & vice-versa.

```
Choose:
        1.to enter host name
        2.to enter IP address
: 1
Enter host name: www.google.com
IP Address: 142.250.195.100
Host Name: www.google.com
Host name and IP address: www.google.com/142.250.195.100
```

```
Choose:
        1.to enter host name
        2.to enter IP address
: 2
Enter IP Address: 142.250.192.100
Host Name: bom12s17-in-f4.1e100.net
IP Address: 142.250.192.100
Host name and IP address: bom12s17-in-f4.1e100.net/142.250.192.100
```