Assignment A8   31330

Title: DNS Lookup

Problem Statement: Write a program for DNS Lookup. Given an IP address input, it should return URL and vice versa.

Objectives:

- To understanding the working of DNS
- To simulate it's working using python.

Requirements:

- Fedora 2.0, Eclipse/Python interpreter
- Keyboard, mouse, monitor
- Internet connectivity.

Concept related theory:

⇒ DNS:

The Domain Name System (DNS) is a hierarchical and decentralized naming system for computers, services, or other resources connected to the internet or a private network. It associates various information with domain names assigned to each of the participating entities.

DNS translates domain names to IP addresses so browsers can load internet resources. Each device connected to the internet has a unique IP address which other machines use to find the device. DNS servers eliminate the need for humans to memorize IP addresses.

⇒ How DNS works

The process of DNS resolution involves converting a hostname into a computer-friendly IP address. When a user wants to load a webpage, a translation must occur between what a user types into their web browser and machine-friendly address necessary to locate the webpage.

⇒ Steps in a DNS lookup:

1. A user types 'example.com' into a web browser, and the query travels into the internet and is received by a DNS recursive resolver

2. The resolver then queries a DNS root nameserver.

3. The root server then responds to the resolver with the address of a Top Level Domain (TLD) DNS server which stores the information for its domains.

4. The resolver then makes a request to the TLD.

5. The TLD server then responds with the IP address of the domain's name server.

6. Lastly, the recursive resolver sends a query to the domain's nameserver.

7. The IP address for 'example.com' is then returned to the resolver from the nameserver.

8. The DNS resolver then responds to the web browser with the IP address of the domain requested initially.
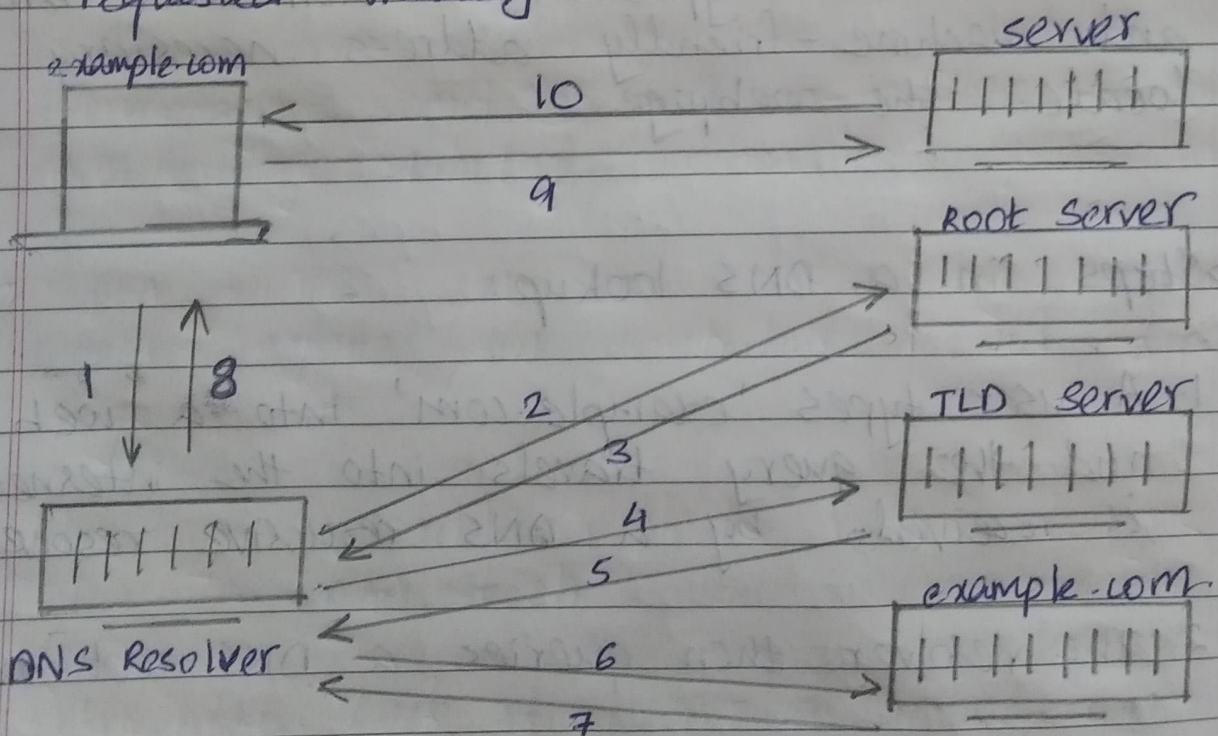
Conclusion:

Thus we learnt about DNS, it's importance and applications and wrote a python program to perform DNS lookup operations.