Assignment A5

- Title : Study of DNS lookup.
- Problem statement : Write a program for DNS lookup. Given an IP address input, it should return URL & vice-versa
- Objectives :
  1. To learn & understand DNS lookup
  2. To learn & understand concept of IP protocol
- Theory :

The Domain Name System (DNS) is phonebook of the Internet Humans access information online through domain names, like nytimes.com. DNS translates domain names to IP addresses so browsers can load Internet resource.

DNS servers eliminate the need for human to memorize IP addresses such as 192.168.1.1 (IPV4) or more complex IP addresses such as 2400.1000.2048.1::c629:d7a2 (in IPV6).

The window server 2003 DNS server & client services use DNS protocol that is included in TCP/IP protocol suite. DNS is a part of application layer of TCP/IP reference model

TCP/IP Model

Application layer
Transport layer
Internet layer
Network Interface layer

TCP/IP protocol suite

Telnet	FTP	SMTP	DNS	FLP	SNMP
TCP			UDP		
IP sec				ICMP	IGMP
IP					
Ethernet	Token Ring	Frame relay	ATM		

Technologies that use DNS.

- DNS & Active Directory

Window server 2003 Active directory service uses DNS as its domain controlled location mechanism. When any of the principal Active Directory operations is performed, such as authentication, updating or searching, window server 2003 computers use DNS to locate active directory domain controllers and these controllers use DNS to locate each other

- DNS & WINS

The earlier method of name resolution for a window network was window Internet Name Service (WINS).

- DNS & DHCP:

For window server 2003 DNS, DHCP service provides dynamic name resolution service support to register & update information for legacy DHCP clients in DNS.zones, legacy clients typically include other Microsoft TCP/IP client computers that were released prior to window 2000.

DNS is default name resolution service used in a Microsoft window server 2000 network. DNS is a part of window server 2003 network.

- DNS Architecture:

It is a hierarchical distributed database & an associated set of protocols that define:

- A mechanism for querying or updating the database
- A mechanism for replicating the info in the database among servers.
- A schema of database

- DNS Domain Names,

It is implemented in a hierarchial & distributed database containing various types of data, including that host names & domain names. The names in a DNS database form a hierarchial tree structure called domain namespace.

A fully qualified Domain Name (FQDN) uniquely identifies the host position within the DNS hierarchial tree by specifying a list of names separated by dots in the path from the referenced host to root.

- Understanding DNS domain Namespace:

The DNS Domain namespace is based on concept of a tree of concept of named domains. Each level of tree can represent either a branch or leaf of tree. A leaf represents a single name used once at that level to indicate a specific resource

- DNS. Domain name Hierarchy.

Figure below shows how Microsoft is assigned authority by Internet Root servers for its own part of DNS domain namespace tree on internet. DNS clients & servers use queries as fundamental method of resolving names in tree to specific types of resource information

Types of DNS domain Name:

i.) Root Domain: This is top of tree, representing minimized level, indicating a null value by " "

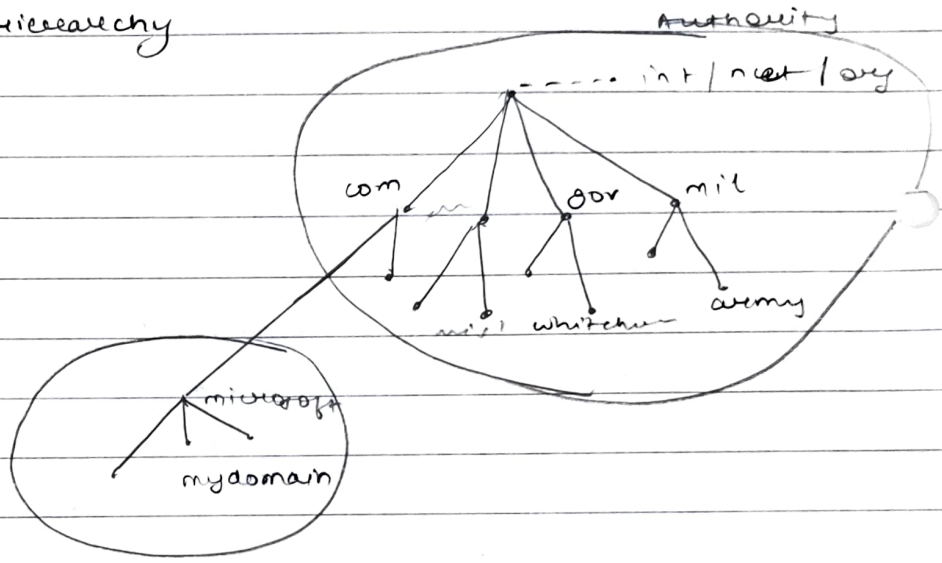
ii.) Top level Domain: A name used to indicate a country/region or type of organization using a name.

iii.) Second level domain: variable length names registered to

an individual or organization fall use.

iv) subdomain: Additional names that an organization can create that are derived from registered second-level domain name

DNS: Domain Name Hierarchy



- Conclusion: We successfully learned about DNS and executed program