

CNL

31147

Assignment A8

Problem Statement:

Write a program for DNS lookup. Given an IP address it should return URL and vice-versa.

Objectives:

- 1) Learn about DNS (Domain Name System)
- 2) Learn about IP address and getting it in JAVA/~~PY~~PYTHON

S/W and H/W requirement:

Ubuntu / Windows
Java and Python installed
VS Code (code editor).
Terminal.

Theory:

What is DNS?

DNS is domain name system is the phonebook of the internet. Human access information online through domain names, like Facebook.com. Web browsers interact through Internet Protocol IP addresses. 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 server eliminate the need for humans to memorize IP addresses such as 192.168.1.1 (in IPV4) or more complex newer alphanumeric IP addresses such as 2400:cb00:2048:1::c629:d7a2 (in IPV6).

The process of DNS resolution involves converting a hostname into a computer-friendly IP address. An IP address is given to each device on the Internet and that address is necessary to find the appropriate internet device.

When a user wants to load a webpage, a translation must occur between what is user types into their web browser and the machine-friendly address necessary to locate that page.

In order to understand the process behind the DNS resolution it is important to learn about the different hardware components a DNS query must pass between. For web browser the DNS lookup occurs behind the scenes and requires no interaction from the users computer apart from the initial request.

JAVA Code:-

```
import java.net.*;
import java.util.*;

class Dnslookup {
    public static void main(String[] args) {
        try {
            Scanner scan = new Scanner(System.in);
            System.out.println("DNS to IP\n Enter Hostname:");
            String host = scan.nextLine();
            System.out.println("IP: " + InetAddress.getByName(host)
                .getHostAddress());

            System.out.println("\n IP to DNS\n Enter HostName:");
            String ip = scan.nextLine();
            System.out.println("Domain: " + InetAddress.getByName(ip).getHostName());
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
}
```


Python Code:

```
import socket
```

```
while(1):
```

```
    try:
```

```
        print("In DNS to IP")
```

```
        domain = input("Enter Domain Name: ")
```

```
        ip = socket.gethostbyname(domain)
```

```
        print("Domain name {0} IP is {1}".format(domain, ip))
```

```
    except Exception:
```

```
        print("Error Occured in DNS to IP")
```

```
    try:
```

```
        print("IP to DNS In")
```

```
        ip = input("Enter IP address: ")
```

```
        domain_name = socket.gethostbyaddr(ip)
```

```
        print("IP {0} Domain name is {1}".format(ip, domain_name))
```

```
    except Exception:
```

```
        print("Error Occured")
```

Test Cases:

Python:

i) DNS to IP

Enter domain name:

Domain Name www.facebook.com IP is 157.240.16.35

IP to DNS

Enter IP address: 157.240.16.35

IP 157.240.16.35 Domain Name is ('edge-star-mini-slv-01-bom1.facebook.com', [], ['157.240.16.35'])

Java :

2) DNS to IP
Enter Hostname : gmail.com
IP : 216.58.196.101
IP to DNS
Enter ~~Host~~ IP : 8.8.8.8.
Domain : dns.google

3) DNS to IP
Enter Hostname : dns.google
IP : 8.8.8.8
IP to DNS
Enter Hostname : 216.58.196.101
Domain : ma03s19-in-f101.1e100.net

Conclusion :

learned about DNS and lookup DNS to get IP address & vice versa

Activities Visual Studio Code Oct 8 18:00

Dnslookup.java - DNS Lookup - Visual Studio Code

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dnslookup.py Dnslookup.java X

Dnslookup.java > Dnslookup > main(String[])

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 1: bash

```
kkaneeki@loading:~/CHL/DNS Loopkup$ java Dnslookup
DNS to IP
Enter Hostname :gmail.com
IP :142.250.67.197
IP to DNS
Enter IP :8.8.8.8
Domain :dns.google
kkaneeki@loading:~/CHL/DNS Loopkup$ java Dnslookup
DNS to IP
Enter Hostname :dns.google
IP :8.8.8.8
IP to DNS
Enter IP :216.58.196.101
Domain :del11s05-in-f5.1e100.net
kkaneeki@loading:~/CHL/DNS Loopkup$
```

Python 3.8.2 64-bit 0 1 Ln 11, Col 50 Spaces: 4 UTF-8 LF Java JavaSE-14

Activities Visual Studio Code Oct 8 17:40 dnslookup.py - DNS Lookup - Visual Studio Code

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PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL 1: python3

```
kkaneeki@loading:~/CNL/DNS Lookup$ python3 dnslookup.py

DNS to IP
Enter Domain Name : www.facebook.com
Domain Name www.facebook.com IP is 157.240.16.35
IP to DNS

Enter IP address : 157.240.16.35
IP 157.240.16.35 Domain Name is ('edge-star-mini-shv-01-bom1.facebook.com', [], ['157.240.16.35'])

DNS to IP
Enter Domain Name :
```

There is an available update. Download Update Later Release Notes

Python 3.8.2 64-bit 0 1 Ln 14, Col 5 Spaces: 4 UTF-8 LF Python