CS558 - System Lab
Assignment 2 - Socket Programming

Group No:- 14

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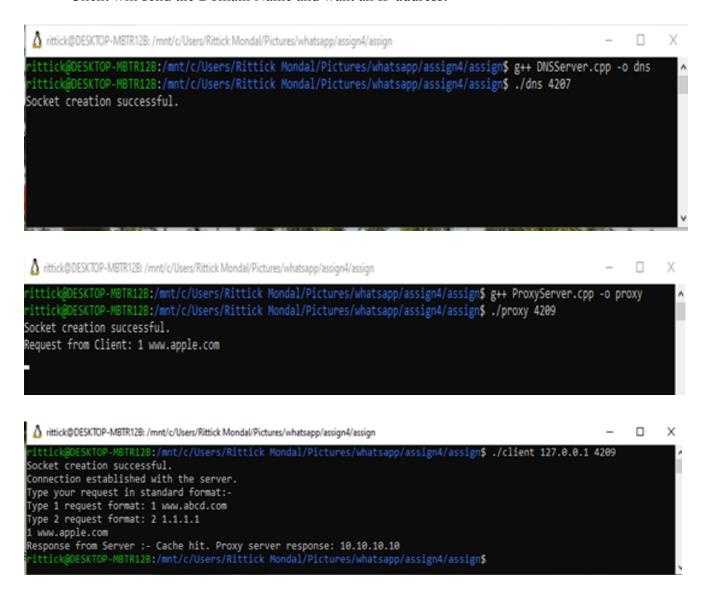>
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- We have implemented 3 programs **Client.cpp**, **ProxyServer.cpp** and **DNSServer.cpp**.
- Open 3 terminals where one terminal will behave like a live **client**, second one will behave like **Proxy Server** and third one will behave like a **DNS Server.**
- Compile 3 programs with the command (**g++ Client.cpp –o client, g++ ProxyServer.cpp** and **g++ DNSServer.cpp –o dns**).
- 3 Executable files will be generated as **client, proxy** and **dns**. We have to run all the 3 files with proper argument.
- We have considered all 3 programs run on a local host (127.0.0.1).
- While running Client.cpp we have to provide the IP address and Port number, for running the DNSServer.cpp we have to provide the DNS Server's port number and while running ProxyServer.cpp we have to provide the port number for the proxy server.

One example like:-

-    **$. /dns 4207**

-    **$. /proxy 4209**

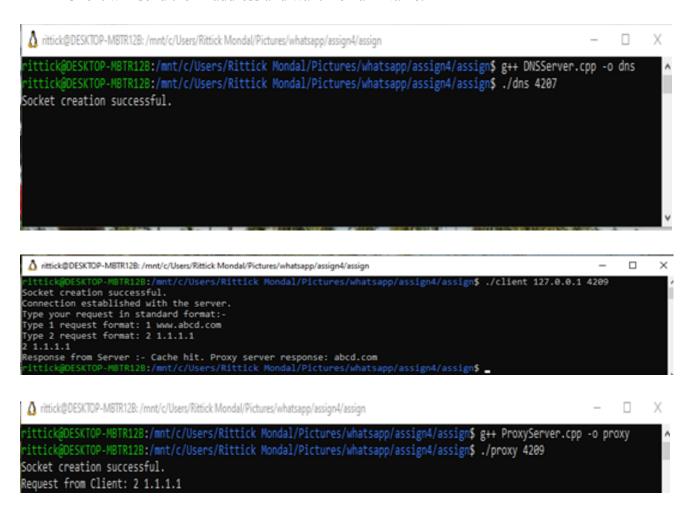-   **$. /client 127.0.0.1 4209**

1. Type 1 Request :-

- Client will send the Domain Name and want an IP address:

- Here DNS Server will use Port No 4207 and Proxy Server will use Port No 4209. Clint Program will use the IP address 127.0.0.1 and Port No 4209 and send the request to the Proxy server for the IP address for a Domain Name.
- Proxy server finds it in his cache and returns the IP address.
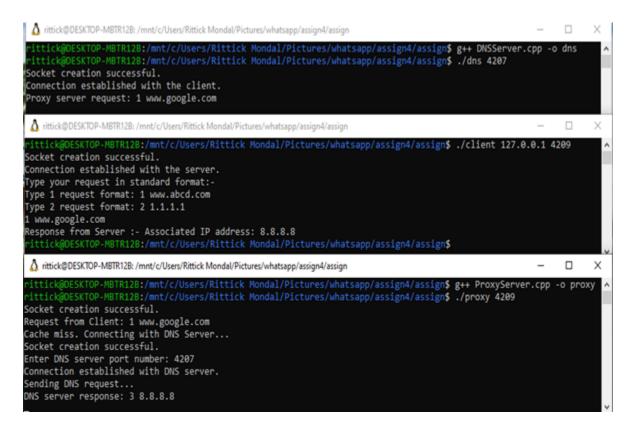
2. Type 2 Request :-

- Client will send the IP address and want Domain Name:

- Here DNS Server will use Port No 4207 and Proxy Server will use Port No 4209. Clint Program will use the IP address 127.0.0.1 and Port No 4209 and send the request with an IP address and want corresponding domain name.
- Proxy server will return the Domain Name.
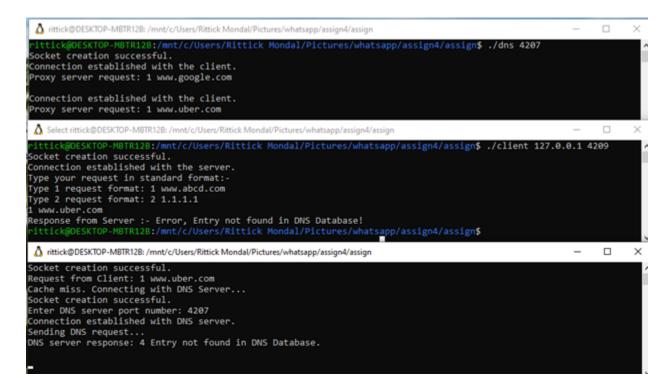
3. Type 3 Request :-

- Client will send the Domain Name/IP Address and that will not be present in Proxy server's cache. Proxy server sends request to DNS Server's database and gets response from it. After that it's cache using FIFO. Now the Proxy server returns the Ip address to the client.

- Here DNS Server will use Port No 4207 and Proxy Server will use Port No 4209. Clint Program will use the IP address 127.0.0.1 and Port No 4209 and send the request to the Proxy server for the IP address for a Domain Name.
- IP not present in Proxy Server's cache, so proxy server will request to the DNS Server for the IP address. From DNS server IP will be received to the Proxy server. It updates its cache and returns to the client.

4. Type 4 Request:-

- Client will send the Domain Name/IP Address and that will not present in Proxy server's cache. Proxy server sends the request to the DNS server, but the IP address will not be present in the DNS server's Database also. So it will show an Error Message.

- Here DNS Server will use Port No 4207 and Proxy Server will use Port No 4209. Clint Program will use the IP address 127.0.0.1 and Port No 4209 and send the request to the Proxy server for the IP address for the Domain Name.
- IP not present in Proxy Server's cache, so proxy server will request to the DNS Server for the IP address. But, the IP address is not present in the Database of DNS Server, so it will return an Error message to the client.