**CSE421**

**Lab 02 Home Task**

**Spring 2022**

**Write answers to the following questions.**

1. **How would a proxy server check to see if it’s data is up to date with the most updated data in the Origin Server?**

HTTP uses one kind of mechanism called Conditional GET to check this. On behalf of client server, proxy cache sends a request message to web server. The web server sends a response message to proxy cache including an object. The cache performs up to date check using conditional get method.

1. **The HTTP protocol is implemented in the Physical layer. Is this statement true or false?**

False.

1. **Can you receive mail using SMTP, why or why not?**

No, SMTP uses push protocol to push mail from sender user agent to sender mail server and from sender mail server to recipient mail server. SMTP does not use pull protocol to pull mail from server to recipient user agent.

1. **Briefly explain how SMTP and POP3 protocol works using a scenario**.

SMTP uses push protocol to push mail from sender user agent to sender mail server and from sender mail server to recipient mail server. On the other hand, POP3 uses pull protocol to pull mail from recipient mail server to recipient user agent.

For instance, if I send mail to Bracu Accounts, SMTP protocol will push mail from my user agent to my mail server and from my mail server it will push mail to Bracu Accounts server.

Then POP3 protocol will pull mail from Bracu Accounts server to it’s user agent.

1. **Why does root DNS servers maintain a hierarchical structure rather than a centralized structure?**

* All will rely on one DNS server as a result network traffic will increase.
* If one single point failure occurs the whole internet will crash.
* Distant server will cause a problem for us to connect easily.

This why DNS uses a hierarchy to manage a distributed database system rather than centralized structure.

1. **Suppose, you have a quiz which will take place at bux but your local DNS server does not know the IP address of “bux.bracu.ac.bd”. Will you be able to attend your quiz? Please, provide a brief explanation.**

In iterated query the IP address will be fetched. If DNS server does not know the IP address of URL “bux.bracu.ac.bd”. It will forward it’s request to root domain in root domain it will check if it knows .bd. The root will forward a TLD address to Local DNS and local DNS will forward to Top level domain and search for .com in the TLD. The TLD will send another TLD address to Local DNS. Then the TLD will send authoritative DNS server address to Local DNS server. Then bux.bracu will be searched in Authoritative DNS server and forward the IP address of the URL.

1. **Suppose, you recently changed your ISP and the new ISP forgot to set the DNS server’s IP address when configuring your internet connection. Can you now browse the internet properly?**

If DNS server’s IP address is not set internet browsing will not possible. Because DNS server is primarily responsible for convert domain names into IP.

1. **What is the size of an ARP request or reply packet (in bytes)?**

An ARP request or reply packet size is 28 bytes.

1. **What happens to an ARP request packet when it is received by a host that does not match the target IP address of the request**?

A host will check a target IP address and then send it to the recipient.

1. **What is the value of the 'operation' field in an ARP reply packet?**

Operation fieldValue is 2.

1. **What flags are used during a TCP connection establishment and TCP connection termination process**.

Synchronization, Acknowledgment and Finish flags are used.

1. **A web server sends a TCP packet to a client with sequence number=0 and acknowledgement number =1. Which stage of the 3 way handshake is this and what does the sequence and acknowledgement number mean?**

This is the second stage of 3 way handshake. This means that the server is acknowledging the request from client server.

1. **In an outbound PDU packet, what does source port: 80 and destination port: 1027 means?**

The source port: 80 indicates that the process is sending the outbound PDU packet. The destination port:1027 means process is received by this port.