**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?

**Answer:**

A proxy server check to see if it’s data is up to date with the help of conditional get system.

It can check it by using the following HTTP request message (If-modified-since: <data>).

In this system, whenever a user request for a file, the proxy server send a request to original server to check it’s last modified version. If it thinks that it does not have the latest modified version, then it will update it’s file and after that it will send those data to the user. If there is no modification, then it will send data to the user.

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

**Answer:**

False

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

**Answer:**

No, I cannot receive email through SMTP. SMTP is used to send email from client to server. Then POP3 is used to receive email from server to receiver.

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

**Answer:**

Email will be sent to the server with SMTP protocols and we use push. After sending the mail, it will be stored on the outgoing cell of the mail server. From the outgoing server, it will be stored on personal cell. To check that available email, we have to follow POP3 protocols and we use pull.

For SMTP:

At first the server will introduce it self. For example, 220 hamburger.edu. Then, client will receive and introduce himself. Then, client will say that, it has a mail from his mail address ([Xyz@gmail.com](mailto:Xyz@gmail.com)). After that, send will check is it ok or not. Then, it will reply that sender([b@gmail.com](mailto:b@gmail.com)) ok. Then it will send the data. ‘.’ Means the data sending is done.

For POP3:  
It will start with authorization. Client([b@gmail.com](mailto:b@gmail.com)) will login with username & password. After successful login, there will be two option which are ‘download & keep’/’download & delete’. Then, POP3 will provide the list where the mail number and size of the mail will be included.

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

**Answer:**

DNS servers do not use centralized server because it has some drawbacks. Due to centralized server, there can be single point of failure, traffic volume, distant centralized database and maintenance issues. Because of those issues, DNS does not use centralized structure. It main a hierarchical structure for better performance. Here, the system divided into multiple server. For example, if a client request for something, at first this request will be sent to the local DNS server. Then, local DNS server ask to the root DNS server. After that, root DNS server will call TLD server and TLD DNS server will get the information from Authoritative DNS server. By following those steps, clients will get the information. If the system will be centralized, it could not be able to provide better performance because there will be more pressure in one server.

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.

**Answer:**

Yes, I will be able to attend the quiz. If the local DNS server does not know the IP address, it will request the root DNS server to get the IP address. Then, the root DNS server will provide the IP address to the local DNS server and I will be able to attend the quiz.

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?

**Answer:**

Yes, I can browse the internet properly.

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

**Answer:**

The size of an ARP request or reply packet 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?

**Answer:**

If the target IP address does not match with the ARP request, then it will be rejected by that host IP address and will try to find out it’s target IP address by moving to another host.

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

**Answer:**

The value of the 'operation' field in an ARP reply packet is 2.

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

**Answer:**

To established to connection, they use SYN. To terminate the connection, they use FIN.

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?

**Answer:**

It is the second stage of 3 way handshake. Here, after receiving the TCP connection establishment from the client, the web server responses to the request. The sequence number will be arbitrary. Then, the acknowledgement number means web server is ready to receive packet from sequence number 1.

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

**Answer:**

In an outbound PDU packet, what does source port: 80 and destination port: 1027 means the packet is going from test server’s port 80 to the PC1’s port 1027.