

CSE421
Lab 02 Hometask
Summer 2023

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?

Ans: Using its header information, a proxy server will determine whether its data is current by comparing it to the most recent data on the origin server.

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

Ans: False

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

Ans: No, I am unable to receive emails via SMTP because this protocol is only used for sending messages. Because SMTP cannot be used in both directions, I am unable to use it to receive messages.

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

Ans: Waheed is sending Mahin an email, as an illustration. Waheed will first use an email program to send Mahin an email. Waheed's device will put the sent email into her email server over SMTP. The email will then be resent to the recipient's email server through SMTP from Waheed's email server. Since Mahin uses an email client to access his inbox, emails that he receives will be downloaded over POP3 to his device from Mahin's email server. As a result, emails are pulled or received using POP3, whereas emails are sent or pushed using SMTP.

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

Ans: DNS is essentially a distributed system. Therefore, if a system is centralized, it will fall apart if the core experiences any issues. Additionally, there will be a lot of data transfer traffic, making it challenging to remotely manage a centralized database. In addition, maintenance is highly expensive. DNS employs a hierarchical structure as a result.

6. 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.

Ans: Yes, in order to find out the IP address of the ac.bd DNS server, the root server will initially be queried. As soon as ac.bd requests bracu.ac.bd's IP address, bracu.ac.bd replies with bux.bracu.ac.bd, from which we can get the IP address and access the test.

7. 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?

Ans: No, I can find the IP address of any URL.

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

Ans: 28 Bytes.

9. 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?

Ans: The request will not be accepted.

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

Ans: Operation field contains source IP, source MAC, target IP, and target MAC.

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

Ans: TCP connection establishment SYN flag(0000 0010) and TCP connection termination FIN flag(0000 0001).

12. 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?

Ans: When a client receives a TCP packet from a web server, this is the second phase of a three-way handshake. Here, the sequence number is 0, indicating that no data has been delivered, and the acknowledgement number is 1, indicating that packet 1's SYN flag from the client has been received.

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

Ans: Source port: 80 for Internet Communication Protocol HTTP and port: 1027 is Transmission Control Protocol (TCP) which is free for all.