

CSE421
Lab 02 Home Task
Summer 2022

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

Answer: Proxy servers are the ones that accept web requests, gather response data, and then use the date and most recent modifications to determine whether or not the data is current.

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

Answer: FALSE.

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

Answer: SMTP is for mail transfer from the client to the server which means a simple message transfer protocol. It cannot pull out the emails from the server. POP3, IMAP, and HTTP are used for that purpose

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

Answer: SMTP is for sending email and POP3 is for receiving. Suppose MKBHD wants to email Tim Cook for an interview. Now MKBHD will use SMTP to send the mail to the mail server. Whenever Tim Cook opens his email he will then use POP3 to fetch the recent emails and receive MKBHD's one.

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

Answer: The root DNS server maintains a hierarchical structure rather than a centralized one because it eliminates the possibility of a single point of failure. The distributed architecture also relieved some of the stress on the primary DNS servers.

6. Suppose, you have a quiz that 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: No, I won't be able to get to the quiz as the DNS server is unaware of the IP address. It is impossible to recognize a domain without knowing its IP address. You must first ask for an ARP and then obtain the MAC address from the nearby DNS server in order to obtain the IP address. Then, using the MAC address, it can obtain the destination URL's IP address acknowledgment and display the URL. I may then take the quiz when the IP address has been acknowledged.

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?

Answer: No, the internet could not be browsed or accessed properly.

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

Answer: 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?

Answer: When a host receives an ARP request packet but the target IP address does not match, the packet is ignored.

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

Answer: 2

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

Answer: When a TCP connection is established, the SYN flag is used to signal it, and when a connection is terminated, the FIN flag is used.

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

Answer: This scenario indicates the 2nd part of the 3-way handshake. Sequence number = 0 means no data transmission and acknowledgment number = 1 means the acceptance response that the server provided to the client.

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

Answer: Source port: 80 means HTTP; Destination port: 1027 means TCP