

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?

-Using a conditional GET HTTP request

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

-False. HTTP protocol is implemented in the Application layer.

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

-No, it simply transfers transmits email from one server to another server and from the client to the server.

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

-Let's say A wants to email his friend B with a message. Now, A will send his email to the email server he uses by using the SMTP protocol. In case B uses a different email service ,the message will be sent from A's email server to B's email server. Now, B will use the POP3 protocol to receive and download the email.

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

-DNS servers maintain a hierarchical structure because

- **A centralized organization would have problems such as having a single point of failure and being vulnerable to security breaches.**
- **Traffic is not too much for a single server that decreases the speed.**
- **The operation and maintenance of a massive DNS server will be time-consuming.**

- **Cost effective.**

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.

- Yes, I will be able to attend the quiz because in an iterative process, the local DNS server will initially query the root DNS server for the IP address if it does not already know it. The DNS server for the top-level domain, ".ac.bd," can be found by querying the root DNS server for its IP address. Then, the authoritative name server IP address for "bracu.ac.bd" will be retrieved from the root DNS server. To obtain the IP address for 'bux.bracu.ac.bd', a DNS query will be made using the 'bracu.ac.bd' server.

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?

-No, I can't. My PC will ask for the IP addresses of different websites to the DNS server every time I type in any URL. If it doesn't get that, it won't be able to determine which IP address is associated with a certain URL. However, I may access the site, though, if I know its IP address.

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

-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?

-If the ARP request packet is received by a host that does not match the target IP address of the request, the packet is rejected.

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

-The value of the 'operation' field in ARP reply is 0x0002

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

-During TCP connection established, the SYN(synchronization) and ACK (acknowledgement) flags are used and when TCP connection is terminated, the FIN (finish) flag is used.

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?

-This is the second stage of the 3-way handshake. The sequence number being 0 represents that no data has been sent yet and the acknowledgement number being 1 represents that a byte of data has been received and the next byte of data is being expected.

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

-The source port: 80 means the protocol HTTP and the destination port: 1027 means the protocol is TCP.