**CSE421**

**Lab 02 Home Task**

**Summer 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?

Ans: A proxy server would check whether its data is updated or not via sending an HTTP Conditional GET request to the origin server, through which the proxy server will come to know the last modification date from the header lines.

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

Ans: This statement is false because HTTP is an application layer protocol.

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

Ans: No we can not receive mail using SMTP because SMTP is used only for sending the mail from the sender’s device to the receiver’s email server. And the receiver needs POP/POP3 or IMAP to receive the mail from his/her email server.

1. Briefly explain how SMTP and POP3 protocol works using a scenario.
2. Why does root DNS servers maintain a hierarchical structure rather than a centralized structure?

Ans: The root DNS server maintains a hierarchical structure rather than a centralized structure because hierarchical structure distributes the load that ensures proper load balancing. Again it's easier for maintenance when it is hierarchical. Moreover, there remains no single point of failure when using hierarchical 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.

Ans: Yes, I will be able to attend the quiz because if my local DNS server does not know the IP address of bux.bracu.ac.bd , it will request for this IP address to the root server via a DNS query. And the root server will handle it on the basis of the DNS query type (iterative or recursive). And finally the local server will get the IP address of bux.bracu.ac.bd and send it to my browser.

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?

Ans: No, I can not browse the internet properly because now I have to put the IP address rather than the URL to my browser for accessing any webpage. And it is too problematic.

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

Ans: 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?

Ans: The packet will be simply discarded.

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

Ans: Value of 2.

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

Ans: For TCP connection establishment → SYN (synchronization) flag and ACK (acknowledgement) flag.

And for TCP connection termination → FIN (finished) flag and ACK (acknowledgment) flag.

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?

Ans: This is a SYN-ACK stage of the 3 way handshake. Here the Server sends a TCP packet that is why here sequence number = 0 means the server is sending its initial data byte to the client and this number is set randomly. And acknowledgment number = 1 means, 0 no data byte from the client has been received by the server and server is now expecting 1 no data byte.

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

Ans: In an outbound PDU packet source port: 80 and destination port: 1027 means data is transmitting from a web server(using HTTP protocol) to a TCP / UDP socket. Because here port 80 is reserved for web servers (HTTP) and port 1027 is for TCP/UDP.