**CSE421**

**Lab 02 Home Task**

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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 will check if it’s data is up to date with the most updated data in the origin server by using its header information.

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

Ans: Fasle.

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

Ans: No, I can not receive emails using SMTP because SMTP only works for delivering mail. SMTP doesn't work in both directions and so I can’t receive mail by SMTP.

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

Ans: For explanation, let’s assume that I want to send an email to my CSE421 LAB teacher ASAD sir. So, at first my PC will collect the IP and MAC address by DNS and ARP request. Then from my PC to sir’s PC a TCP connection will be established. After that, the email will be sent from my PC to the email server using SMTP protocol. On the other hand, a POP3 protocol will be generated on sir's side and it will send pull requests to the email server and then the mail will be visible to sir’s PC.

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

Ans: Basically, DNS is a distributed system. So, if there is a centralized structure then the system will collapse if the center has any problem. Moreover, there will be a huge traffic in data transfer and it’s difficult to maintain a centralized database remotely. Beside this, the maintenance cost is very high. For these reasons, DNS uses 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: No, I won't be able to attend the quiz because my local DNS server does not know the IP address of “bux.bracu.ac.bd”. First, my URL request will be sent to the DNS server and it will respond by providing the IP address of the URL request. As the DNS server does not have the IP address of bux, I can't be able to give 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?

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

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

Ans: 28bytes.

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 request will be rejected

1. 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.

1. 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).

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 the second stage of a 3-way handshake (as a web server sends a TCP packet to the client). Here , sequence number is 0 that means no data has been sent and acknowledgement number is 1 that means the receipt of the client's SYN flag in packet 1.

1. 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.