**CSE421**

**Lab 02 Home Task**

**Fall 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:** By using GET condition to check for any update in Origin Server

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

**Ans:** The statement is false. The HTTP protocol is implemented in the Application layer.

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

**Ans:**  No, We cannot receive mail using SMTP because SMTP is a push protocol. With SMTP we can send email only but can’t receive mail using SMTP.

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

**Ans:** If someone wants to send an email, at first it goes to the sender's side email server using SMTP protocol. Again, using SMTP the email goes to the receiver's side email server. Finally, the receiver uses the POP3 protocol to receive the email from the receiver side email server.

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

**Ans:** Root DNS servers maintain a hierarchical structure because it can avoid the single point of failure and at the same time, the traffic is distributed and less pressure goes on the root DNS server. Otherwise, the whole system could get down if all the traffic try to access the root DNS server at a same time.

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, if the local DNS server doesn’t have the IP address, it will first ask the root DNS server. The root DNS server will provide the IP address of top level domain server which is of the ‘.ac.bd’ DNS server. Then top level DNS server will be queried to get the IP of an authoritative name server of ‘bracu.ac.bd’. Then the ‘bracu.ac.bd’ DNS server will be queried to get the IP address for ‘bux.bracu.ac.bd’. Server of ‘bracu.ac.bd’. Then the ‘bracu.ac.bd’ DNS server will be queried to get the IP address for ‘bux.bracu.ac.bd’.

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, whenever I will type any url, my device will search for the local DNS server. It won't be able to determine whose IP address the given url belongs to. In this case, I can only use if I know the IP address of the website.

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:** it will simply drop the packet

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

**Ans:** 0x0002

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

**Ans:** SYN is use to establish TCP connection. On the other hand, FIN flag is used in TCP connection termination process. Besides, ACK flag is used as acknowledgement

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 the three way handshake. The sequence = 0 and acknowledgement = 1 number mean that the web server is acknowledging the request from the PC.

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

**Ans:** source port: 80 means HTTP request is sent from a webserver and as destination port: 1027 is for TCP/UDP, it means it is headed for a process.