**CSE421**

**Lab 02 Home Task**

**Spring 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?

Answer: A proxy server checks to see if it’s data is up to date with the most updated data in the origin server by using the conditional get method. It asks the origin server if the object has been modified or not. If it is modified then it will be sent again.

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

Answer: The statement is false.

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

Answer: We cannot receive mail using SMTP. SMTP is not used for pulling sides. SMTP means simple mail transfer protocol. It is only responsible to send mail to specific mail server. This mail then will be received by different mail receiving protocol.We use POP3 or IMAP in order to receive mail from the mail server.

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

Answer: SMTP protocol uses to send mail and POP3 uses to receive the mail. For example:

[Arif Shakil](mailto:arif.shakil@bracu.ac.bd)wants to send mail to [Sadia Hamid Kazi](mailto:skazi@bracu.ac.bd). Now the sender side will use SMTP protocol to send the mail to the Mail server. When the receiver [Sadia Hamid Kazi](mailto:skazi@bracu.ac.bd) will check if she received any mail then POP3 protocol will ask the mail server that if it has any mail for the receiver side.

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

Answer: Root DNS server maintains a hierarchical structure rather than a centralized structure because it ensures that there are no single point of failure that will take place. Also, the distributed structure reduced the pressure on the root DNS servers.

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.

Answer: Yes, I will be able to attend the quiz. Since the local DNS server does not know the IP address of “bux.bracu.ac.bd” but it will be able to fetch the ip address through several procedures. Local DNS server will request the Root DNS server. Then Root DNS server will provide IP Address of “bd”.Then top level DNS server will then provide the IP Address of “ac” to the local DNS server. Next, local DNS server will reach to Authoritative DNS to fetch the IP Address of “bux.bracu”. After receiving the entire IP Address the local DNS server will provide me the ip Address of bux.bracu.ac.bd. That will Allow me to Access the quiz that will take place At bux.

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?

Answer: No, I will not be Able to browse the internet properly. It will show the DNS server is not responding.

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

Answer: The size of an ARP request or reply packet is 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?

Answer: When an ARP request packeis received by a host that does not match the target IP address of the request then the packet is discarded.

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

Answer: The value of the ‘operation’ field in an ARP reply packet is 2. The reason is that the ARP request packet is considered as packet 2.

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

Answer: SYN flag is used to indicate the establishment of TCP connection and FIN flag is used to indicate the termination of TCP connection.

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?

Answer: The given scenario is Stage 2 of the 3 way handshake. The sequence number=0 indicates that there are no data transmissions that took place between client and server. It’s still setting up connection with the server. However, acknowledgement number=1 is sent by the server in response to the request of the client.

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

Answer: In an outbound PDU packet source port: 80 means PDU packet sent from specific port 80. The destination port is 1027 means the PDU will be received through port 1027.