CSE421: Computer Networks

Spring 2024

Quiz-1 Section: 7 Marks: 15 Duration: 20 minutes

Name: ID:

CO1:	CO2:	CO3:	Total:

Q1 [CO3] Suppose, you are visiting bux-home.bracu.ac.bd from your web browser. The whole process uses a non-persistent HTTP connection. There are 364 objects to be retrieved in total, and the time to download each object is 105ms. A TCP connection is established at first, in 85ms. After this, an HTTP Request takes 41ms to be sent to the server only. From the given information, **calculate** the **[i]** Total RTT (in ms) **[ii]** FTT (in ms) and **[iii]** HTTP Response Time (in ms). **[4 + 4 + 4 marks]**

Q2 [CO2] Suppose you visit the website www.daraz.com at 12:00 PM on a Sunday. Due to some malfunctions, you had to uninstall the Chrome browser with which you visited the website. One week later, you visited the same website using a freshly installed Chrome browser on your device. Will you be able to view the past content that you browsed one week ago? **Justify** briefly. **[3 marks]**

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Quiz-1 Section: 8 Marks: 15 Duration: 20 minutes

Name: ID:

CO1:	CO2:	CO3:	Total:

Q1 [CO3] Suppose, you are visiting bux-home.bracu.ac.bd from your web browser. The whole process uses a persistent HTTP connection with pipelining, where the pipeline size is 5. There are 407 objects to be retrieved, and the time to download each object is 101 ms. A TCP connection is established at first, where the TCP request takes 26ms to be sent only. After this, each HTTP Request-Response takes 65ms for a round trip. From the given information, **calculate** the **[i]** Total RTT (in ms) **[ii]** FTT (in ms) and **[iii]** HTTP Response Time (in ms). **[4+4+4 marks]**

Q2 [CO2] The last-modified field of some data in a proxy server has the value Sun, 4 Feb 2024. A client makes an HTTP request to obtain this data. After receiving the request, will the proxy server send the data from its cache directly to the client, or will it check for updates from the origin server? **Explain** your answer briefly. Suppose the data in the origin server was updated on Tues, 6 Feb 2024. **[3 marks]**

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Quiz-2 Section: 7 Marks: 15 Duration: 20 minutes

Name: ID:

CO1:	CO2:	CO3:	Total:

Q1 [CO2] Suppose you are sending an email to your friend using a browser on your PC. Which protocols will be used to send the email? **Mention** the name/s, how and where they function in brief. **[5 marks]**

Q2 [CO2] You are visiting the website google.com.bd using your mobile phone. How many RTTs will be required to fetch the IP address for this domain if you use Iterated Query? Will there be any change in RTT for Recursive Query? Consider that there is no local DNS server. **[5 marks]**

Q3 [CO2] What is the need for a protocol such as UDP when it does not provide any congestion or error control features? **Justify** your reasoning briefly. **[5 marks]**

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Quiz-2 Section: 8 Marks: 15 Duration: 20 minutes

Name: ID:

CO1:	CO2:	CO3:	Total:

Q1 [CO2] If you want to ensure security for the emails you receive, which protocol between POP3 and IMAP will you prefer using? Why are they called pull protocols? **[3 + 2 marks]**

Q2 [CO2] 'Not establishing a connection before sending data helps UDP.' - Do you agree with this statement? **Explain** in brief. **[marks]**

Q3 [CO2] Consider a scenario where you are visiting the same website, bracu.ac.bd, from a single device using two different browsers. In this case, how will the bracu web server differentiate between the two processes executing on the same device? **Justify** your reasoning. **[5 marks]**

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Quiz-3 Section: 7 Marks: 15 Duration: 20 minutes

Name: ID:

CO1:	CO2:	CO3:	Total:

Q1 [CO3] In a TCP connection using Selective Repeat protocol, the ISN of the client and server are given as **3400** and **400** respectively. RWND of the client is **5500** bytes. The client sends an HTTP request of **535** bytes to the server along with the third step of TCP handshake. The server sends 4 segments, one after the other, carrying data of **390**, **280**, **758** and **40** bytes respectively. But the 3rd segment got lost in transaction.

a. Find the sequence and acknowledgement number of the server when it is sending the first data segment **[4 marks]**

b. Calculate the RWND of the client after it receives all data segments **[3 marks]**

c. Suppose the lost segment was retransmitted and this time it was received successfully by the client. Find the sequence and acknowledgement number of the client after receiving the retransmitted segment. **[4 marks]**

Q2 [CO2] How does a sender know when to retransmit a data segment? Explain one such process in brief. **[4 marks]**

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Quiz-3 Section: 8 Marks: 15 Duration: 20 minutes

Name: ID:

CO1:	CO2:	CO3:	Total:

Q1 [CO3] In a TCP connection using Go-Back N protocol, the ISN of the client and server are given as **2020** and **1042** respectively. RWND of the client is **8750** bytes. The client sends an HTTP request of **440** bytes to the server along with the third step of TCP handshake. The server sends 5 segments, one after the other, carrying data of **30**, **480**, **258**, **140** and **399** bytes respectively. But the 3rd segment got lost in transaction.

a. Find the sequence and acknowledgement number of the client after receiving the 4th data segment **[4 marks]**

b. Calculate the RWND of the client after it receives all data segments **[3 marks]**

c. Suppose the client has sent an acknowledgement segment after all segments were sent by the server. Find the sequence and acknowledgement number of this segment. **[4 marks]**

Q2 [CO2] What do you understand by a Half Close termination? Explain in brief. **[4 marks]**