CS447 - Computer Networks and Data Communication
Possible Quiz Questions for Quiz #2 on August 29th, 2023

The following is a list of possible questions for our Quiz #2 on August 29th. Some of the questions will not be asked in the quiz. All the questions that will appear in the quiz will appear exactly as shown below (however, parameters may be changed). The quiz is closed textbook, closed notes and closed neighbors. Note that the questions, which did not appear in this quiz, still may appear in the exams.

#1: Why we want “networks” instead of full mesh of one-to-one communication channels? Explain with an example (using some mathematical formula).

#2: If a computer system (not necessarily limited to computer networks) can grow for a larger system without a serious problem in explosive increase in components, how is it called?
   Good ____________ (one word after “good”).

#3: Network has good scalability compared to full mesh of one-to-one communication channels, but what are the two disadvantages (tradeoffs) in network?


#5: What are “packet-switching networks”?

#6: What are “virtual-circuit packet-switching networks”?


#8: Complete the following table that compares circuit switching networks, packet switching networks, and virtual circuit networks.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Circuit-Switching</th>
<th>Virtual Circuit</th>
<th>Datagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>No overhead after TX starts?</td>
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<td></td>
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<tr>
<td>Routing delay?</td>
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<td></td>
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<tr>
<td>Guaranteed Tx Bandwidth?</td>
<td></td>
<td></td>
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<tr>
<td>Advantages</td>
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<tr>
<td>Disadvantages</td>
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<tr>
<td>Applications</td>
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</tbody>
</table>
#9: What are the primary advantages and disadvantages in “circuit-switching networks”?

#10: What are the primary advantages and disadvantages in “datagram packet-switching networks”?

#11: What are “blocking services (in telecommunication)” (definition of “blocking services”)? Mention one example of blocking telecommunication services.

#12: What is a protocol (define "network protocol" by providing the three keywords)?

A protocol is (1) ________________, (2) ________________ and (3) ____________.

Give two examples of the existing network protocols.

#13: What is an interface (define "network protocol" by providing the three keywords)?

An interface is (1) ________________, (2) ________________ and (3) ____________.

#14: What is “layered structure” for a protocol?

#15: Why we want “layered structure” for a protocol? Name the three benefits (please mention those we discussed in the class – you do NOT have to describe them).

#16: What is the primary tradeoff in using “layered architecture”?

#17: Why do some computer networks use packets to transmit data? Provide one primary advantage and disadvantage in using packets for data transmission.

#18: Answer the following questions to describe what packet header: is:

(1) What do packets consist of?

(2) Where is the packet header?

(3) What kind of information is in the packet header (you need to name at least two different types of information)?

#19: What is “packet encapsulation”? What is it for (i.e., what is the purpose of “packet encapsulation”)?

#20: If network protocols are implemented without “packet encapsulation”, what problems would we have?