COMP 445 - Theoretical Assignment 1 (TA1)

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Instructions

- Please submit your assignment as a pdf file on Moodle. The name of the pdf file must contain your name and student id.

- All questions will receive equal points.

- Each question may have zero, one, or more than one correct choices. Wrong answers will be penalized with negative points.

- Partial answers will not receive any point.

- Blank answers (no answer) will not be penalized.

Student ID: 40031689

First Name / Last Name: Jonathan Del Corpo

Signature: Jonathan Del Corpo

Introduction

Q1: A protocol of the application layer is implemented:

1. At the network core.
2. At the network edge.
3. Both at the network core and at the network edge.

Q2: Consider two hosts A and B connected through a single router X (the net-work looks like A - X - B). Assume that the link between A and X is of capacity RA-X=8 Gbps and the link between X and B is of capacity RX-B=16 Gbps. What is the time required for N=5 packets of size L=1 MB to be delivered from A to B, assuming that all delays except the transmission delay are negligible? We assume that 1 Gb=1000 Mb.

1. 5.5 ms
2. 7.5 ms
3. 1.5 ms
4. None of the above.

Q3: Starting from the same network as in the previous question, we now assume that propagation delays are not negligible:

- A and X are connected by a 5000-km link (lA X=5000 km) where the prop-agation speed is s=108 m/s.

- B and X are connected by a 20-km link (lX B=20 km) where the propagation speed is s=108 m/s.

What is the new delivery time between A and B for the same N=5 packets?

1. 45.7 ms
2. 55.5 ms
3. 51.5 ms
4. 55.7 ms

Q4: In the Internet protocol stack, the transport layer can directly use services from:

1. The application layer.
2. The network layer.
3. The link layer.
4. All of the above.

Q5: What is the probability that more than 5 users are active at the same time in a network of 15 users where each user is active 20% of the time?

1. 1
2. 0.6
3. 0.04
4. 0.06

Application layer

Q6: The content below was captured using Wireshark:



This trace contains:

1. An HTTP request encapsulated in a DNS query.
2. A DNS query encapsulated in a TCP segment.
3. An IP datagram encapsulated in a UDP datagram.
4. A DNS query encapsulated in a UDP datagram.

Q7: Among the following HTTP methods, which one(s) may be used to upload a file to a Web server?

1. GET
2. POST
3. PUT
4. HEAD

Q8: Among the following protocols, which one(s) are not involved in the re-trieval of the Web page at URL http://www.concordia.ca/ with a Web browser?

1. TCP
2. DNS
3. HTTP
4. SMTP

Q9: DNS may be used to retrieve the name of the email server of a specific domain:

1. by querying records of type CNAME.
2. by querying records of type NS.
3. through any type of iterated query.
4. through any type of recursive query
5. None of the above

Q10: SMTP is:

1. a push protocol.
2. a deprecated protocol.
3. a transport protocol (a protocol belonging to the transport layer).
4. a text (ASCII) protocol.