复查测验提交: 期末考试

用户	软件1804 罗琮林
课程	2019-2020-2-计算机网络(合)
测试	期末考试
已开始	20-4-22 上午11:49
已提交	20-4-22 上午11:58
状态	需要评分
尝试分数	成绩尚未公布。
已用时间	8 分钟，共 3 小时
说明	时间：2020年4月22日 第九周 周三 8：30——11：30 形式：8：30分在BB平台公布试题，学生手写完成题目解答，将每道题的答案拍照片上传到BB平台。上传截止时间11：30。在截止时间之前，学生可以多次修改、替换上传的答案，若同一道题目上传多分答案，以最后一次上传为准。 要求：学生独立自主完成考试，在考试期间，严格遵守考试纪律，不许以任何形式与其他人讨论题目相关问题。若在阅卷过程中发现雷同卷，一律按零分处理。
显示的结果	已提交的答案

问题 1

TCP Potpourri.

a. Consider two TCP connections, one between Hosts A (sender) and B (receiver), and another between Hosts C (sender) and D (receiver). The RTT between A and B is half that of the RTT between C and D. Suppose that the senders' (A's and C's) congestion window sizes are identical. Is their throughput (number of segments transmitted per second) the same? Explain.

b. Now suppose that the *average* RTT between A and B, and C and D are identical. The RTT between A and B is constant (never varies), but the RTT between C and D varies considerably. Will the TCP timer values of the two connections differ, and if so, how are they different, and why are they different?

c. Give one reason why TCP uses a three-way (SYN, SYNACK, ACK) handshake rather than a two-way handshake to initiate a connection.

d. It is said that a TCP connection “probes” the network path it uses for available bandwidth. What does this mean?

e. What does it mean when we say that TCP uses “cumulative acknowledgement”? Give two reasons why cumulative acknowledgment is advantageous over selective acknowledgment.

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问题 2

In chapter 2, we studied a number of multiple access protocols, including TDMA, CSMA, slotted Aloha, and token passing.

a. Suppose you were charged with putting together a large LAN to support IP telephony (only) and that multiple users may want to carry on a phone call at the same time. Recall that IP telephony digitizes and packetizes voice at a constant bit rate when a user is making an IP phone call. How well suited are these four protocols for this scenario? Provide a brief (one sentence) explanation of each answer.

b. Now suppose you were charged with putting together a LAN to support the occasional exchange of data between nodes (in this part of this question, there is no voice traffic). That is, any individual node does not have data to send very often. How well suited are these four protocols for this scenario? Provide a brief (one sentence) explanation of each answer.

c. Now suppose the LAN must support both voice and data and you must choose one of these multiple access strategies in order to support both applications on the same network, with the understanding that voice calls are more important than data. Which would you choose and why? How would voice and data be sent in this scenario? That is, which access protocol would you use, or adapt/modify, and why?

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问题 3

Try to compare the main advantages and disadvantages of circuit switching and packet switching from various aspects.

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问题 4

Describe the network architecture of the five-layer protocol, including the main functions of each layer.

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问题 5

What are the main features of LAN? Why does LAN use broadcast communication while WAN does not?

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问题 6

Try to compare the advantages and disadvantages of these two services, virtual circuit and datagram, from multiple aspects.

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问题 7

(1) What does the subnet mask 255.255.255.0 mean?

(2) The subnet numbers of a certain type A network and a certain type B network are subnet-id of 16bit and 8bit respectively. How are the subnet masks of these two networks different?

(3) The subnet mask of a certain class B address is 255.255.240.0. What is the maximum number of hosts on each subnet?

(4) The subnet mask of a Class A network is 255.255.0.255. Is it a valid subnet mask?

(5) The hexadecimal representation of an IP address is C22F1481. Try to convert it to dotted decimal format. What type of IP address is this address?

(6) Is it practical to use subnet masks for Class C networks? Why?

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问题 8

In the lecture we list a number of different services that a link layer can potentially provide to the network layer. These services include: a) framing, b) medium access, c) reliable delivery, d) flow control, e) error detection, f) error correction, g) full-duplex and half-duplex. For each of these services, discuss how or how not Ethernet provides the service.

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问题 9

Consider a packet of length L which begins at end system A, travels over one link to a packet switch, and travels from the packet switch over a second link to a destination end system. Let d_i, s_i and R_i denote the length, propagation speed, and transmission rate of link i, for i = 1, 2. The packet switch delays each packet by d_{proc}. Assuming no queuing delays, in terms of d_i, s_i, R_i, (i = 1, 2) and L, what is the total end-to-end delay for the packet? Suppose the packet is 1,000 bytes, the propagation speed on both links is $2.5 * 10^8$ m/s the transmission rates of both links is 1 Mbps, the packet switch processing delay is 1 msec, the length of the first link is 4,000 km, and the length of the last link is 1,000 km. For these values, what is the end-to-end delay?

Suppose R_1=R_2=R and d_{proc} = 0.Furthermore, suppose the packet switch does not store-and-forward packets but instead immediately transmits each bit it receives before waiting for the packet to arrive. What is the end-to-end delay?

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问题 10

Consider sending a packet of F bits over a path of Q links. Each link transmits at *R* bps. The network is lightly loaded so that there are no queuing delays. Propagation delay is also negligible.

a. Suppose the network is a packet-switched datagram network and a connection-oriented service is used. Suppose each packet has h * F bits of header where 0 < h < 1. Assuming t_s setup time, how long does it take to send the packet?

b. Suppose that the network is a circuit-switched network. Furthermore, suppose that the transmission rate of the circuit between source and destination is *R*/24 bps. Assuming t_s setup time and no bits of header appended to the packet, how long does it take to send the packet?

c. When is the delay longer for packet switching than for circuit switching assuming h=0.5. Interpret your result?

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2021年3月18日 星期四 下午05时00分58秒 CST

← 确定