Homework #2

CIS 340: Concepts of Telecommunications and Networking Instructor: Yi Yang

Due: before class begins (9:30am) on October 12th, 2017 (Thursday)

Total: 100 points.

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P3 (15 points) – Application Layer Protocols: DNS and HTTP / Transport Layer Protocols: UDP for DNS; TCP for HTTP.

P7 (15 points) – The total amount of time to get the IP address is RTT1 + RTT2 + L + RTT0. Once the IP address is known, RTT0 elapses to set the TCP connection and another RTT0 elapses to request and receive the small object. The total response time is RTT0 + RTT1 + RTT2 + L + RTTn 2

P8 (15 points) – A request and response are RTT long. Then TCP connections and actual file sending is 2 RTT. So, 1 HTML file and 8 other objects is 9 separate connections. For non-persistent http with no parallel, total response time is: (2 \* RTT) \* 8 since the connection closes each time a file is loaded. Since non-persistent with 5 parallel connections has 5 connections we only have two rounds. So total response time is (2 \* RTT) \* 2. Persistent http keeps the same tcp connection going and loads files iteratively. So total response is (2 \* RTT) + (RTT \* 8)

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P1 (24 points) –

Source port numbers Destination port numbers

1. A -> S 1467 23
2. B -> S 1513 23
3. S -> A 23 1467
4. S -> B 23 1513
5. Yes, there is no relationship between port numbers on different hosts.
6. No, a port number identify Univocally a process

P2 (16 points) – Assume the IP addresses of the host A, B, and C are a, b, c, respectively (Note that a, b, c are distinct.)

* To host A: Source port = 80, source IP address = b, destination port = 26145, destination IP address = a
* To host C, left process: Source port = 80, source IP address = b, dest. port = 7532, destination IP address = c
* To host C, right process: Source port = 80, source IP address = b, dest. port = 26145, destination IP address = c

P5 (15 points) – It does not appear that the receiver would be absolutely certain that no bit errors have occurred. If the checksum and its 1s complement equal to the value that was originally sent, it will verify. Basically, a 0 or 1 can possibly be swapped somewhere in the checksum, but no bit errors will be detected if the addition sent by the sender and checksum received by the receiver match.

1. Reading assignment: Chapter 2 and Chapter 3 of textbook.