

HOME WORK ASSIGNMENT#3

CS 4/59995 ST: INTERNET ENGINEERING

Fall 2007, Department of Computer Science, Kent State University

Due Date: _____ NOV 29 _____ (7x100=700 points)

1. (OPEN) I hope this class has given you the tools and knowledge to be one of the finest 'internet ready' graduates of your time. Now I will challenge your creativity to dream up something new. Describe in 1-2 pages some creative extensions to HTTP that you think can create new Web applications or in some way improve current ones. Your score will depend on the innovativeness of your idea, their impact on applications, and realizability of your solution. In your 1-2 page answer, (a) give a description of the extensions, (b) how they will benefit existing applications, or create new applications, and (c) then explain briefly how you will use Socket API to implement it. (Note: It is OK to read and borrow ideas from Science Fictions!)
2. (FTP:) You need to receive 2 files of sizes 2 MBytes and 50 KBytes from a remote computer via a 28.8Kbits/sec connection using FTP protocol. How many data and control connections will you need? Draw the event diagram (like Fig-22.2, p-313 in Comer's book), showing the events at the Client and Server sides. If each connection setup takes 50ms, and each way propagation delay is 20ms, compute the total amount of time that will be needed.
3. (HTTP:) Explain the Age computation mechanism in HTTP/1.1. A response chain has 2 caches in its path from user agent to the origin server. A page has date value 12:01:10 pm, and initial age value 10 sec at the origin server. (a) The first cache placed a request for it at 12:02:10 pm, and received it at 12:02:50 pm. The second cache placed the request for it at 12:05:10pm and received it at 12:05:60pm. What was the new age value the first cache passed to the second cache? (b) at 12:10:50pm a request arrives at the second cache for the page. What will be the CURRENT_AGE? What MAX_AGE_VALUE will force the second cache to initiate revalidation?
4. (HTTP:) The clocks at two different cache may not be synchronized. Explain if the age value based age computation will be effected by this? How about the date value based age computation?
5. (IP SECURITY: Comer 17.5-6) Suppose a computer receives two ARP replies for a single request. The first reply claims that the hardware address is H1 and the second reply claims that the hardware address is H2. How does ARP software handle the replies? How can a computer use ARP to break security?
6. (HTTP:) HTTP/1.1 is stateless. That is, in general a server does not remember anything about any earlier connection to any client. However, by using HIDDEN parameters it is possible to indirectly keep track of states. Explain a communication sequence between a CGI program, and HTTP Server and an HTTP client, by which it is possible to show that how many times a particular client has contacted a CGI program.
7. (MAIL: Comer 27.6) If an e-mail message is sent to a mailing list, is every recipient on the list guaranteed to receive a copy? Explain.