

# SPRING 2005

## HOME WORK ASSIGNMENT 3

CS 4/55231 INTERNET ENGINEERING  
Department of Computer Science, Kent State University  
**Due Date:** \_\_\_\_ \_\_\_\_ (5x100=500 points)

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1. (DNS) (a) Explain the purpose of caches used in the DNS resolver? How it is used? (b) RFC1035 indicates that DNS Servers can also use cache. Why and How?
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. (WEB PROTOCOLS) A set of HTTP 1.0 clients in an office are connecting to three outside HTTP 1.1 server. Explain a setup how a client side proxy be established to optimize the number of TCP connections?
4. (HTTP 1.1 Persistent connection) A user has requested the document "http://www.cs.kent.edu/index.html" which has two embedded images "image1.jpg" and "image2.jpg". All three objects are in the same server. The Browser and the Server at [www.cs.kent.edu](http://www.cs.kent.edu) both are HTTP 1.1 enabled. Explain the communication sequence. Particularly include the steps involving TCP connection open, close, and HTTP messaging involving GET, CONTINUE, and connection CLOSE. (Hint: Check RFC2068, section 8 for detail).
5. (HTTP 1.1 Cache coherence) 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's cache. (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?