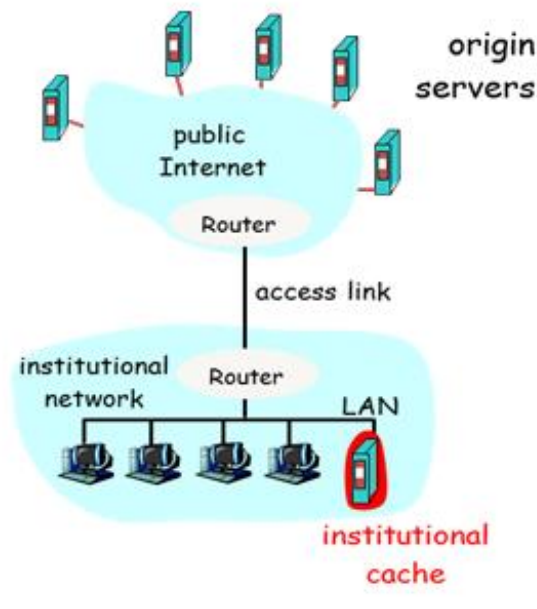


1. (12%) What is traffic intensity? Please elaborate on the relationship between the traffic intensity and average queuing delay?
2. (15%) By using the following example, please describe how Web caching can significantly reduce the delay in receiving a requested object with low-cost installation.



3. (10%) Suppose Host A sends two TCP segments back to back to Host B over a TCP connection. The first segment has sequence number 90; the second has sequence number 110.
 - a. How much data is in the first segment?
 - b. Suppose that the first segment is lost but the second segment arrives at B. In the acknowledgment that Host B sends to Host A, what will be the acknowledgment number?
4. (18%) How should the Internet evolve to better support multimedia? Please elaborate on the three kinds of the solution philosophy, i.e., (i) integrated services philosophy, (ii) differentiated services philosophy, and (iii) laissez-faire.
5. (15%) Please describe and compare two approaches to handle mobility by respectively router and end system.
6. (20%) Message Confidentiality, Message Integrity and Endpoint Authentication.
 - a. Why do we need “message integrity” and “endpoint authentication” if we already have “message confidentiality”?
 - b. What is “Digital Signature”? Why do we need certification authorities for “Digital Signature”?
7. (10%) Please elaborate on the operations of CSMA/CA for IEEE 802.11.