CS5352.0501/0502, Distributed Computing, Summer I, 2009
Assignment 1

Issued: 06/15/2009
Due: 06/22/2009

1. (15 pts)

(1) Describe two issues that are common to both distributed systems and computer networks.

(2) Describe two issues that exist only in distributed system.

2. (15 pts) For the transaction shown in Figure 1 please write a program that uses *fork* and *join* constructs to implement the transaction.

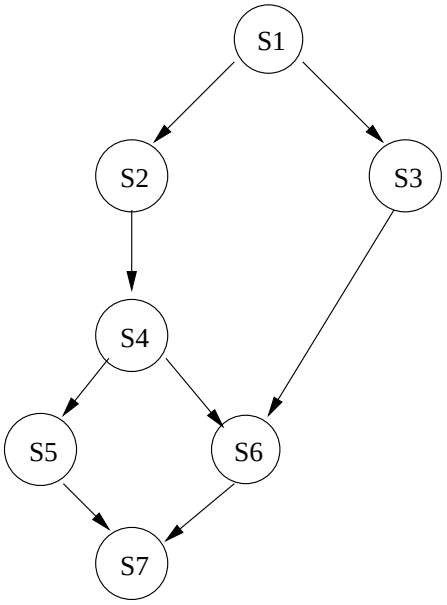

Figure 1: Comparison of fork-join and parbegin-parend Statement

3. (15 pts. Problem 3.2, p.128) The Internet is far too large for any router to hold routing information for all destinations. How does the Internet routing scheme deal with this issue?

4. ($10 + 20 = 30$ pts)

(1) What is the most important factor that affects the accuracy of Cristian's algorithm? Explain your answer.

(2) Provide two examples that show how Cristian's algorithm works.

5. (25 pts. Problem 11.4, p.465) A client attempts to synchronize with a time server. It records the round-trip times and timestamps returned by the server in the table below.

Which of these items should it use to set its clock? To what time should it set it? Estimate the accuracy of the setting with respect to the server's clock. If it is known that the time between sending and receiving a message in the system concerned is at least 8 ms, do your answers change?

Round-trip (ms)	*Time*(*hr:min:sec*)
22	10:54:23.674
25	10:54:25.450
20	10:54:28.342