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Exercise for the lecture

# Distributed Systems

Summer 2012

Sheet 1

**EXERCISE 1:**

1. Client-Server architecture

   - Describe and illustrate the client-server architecture of one or more major Internet applications (for example the Web, email or netnews).

   - State how the servers in the described application cooperate in providing a service.

   - How does this application involve the partitioning and/or replication (or caching) of data amongst servers?

2. Time Synchronisation

   A client attempts to synchronize with a time server. It records the round-trip times and time-stamps returned by the server in the table below.

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

   - Which of these times 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?