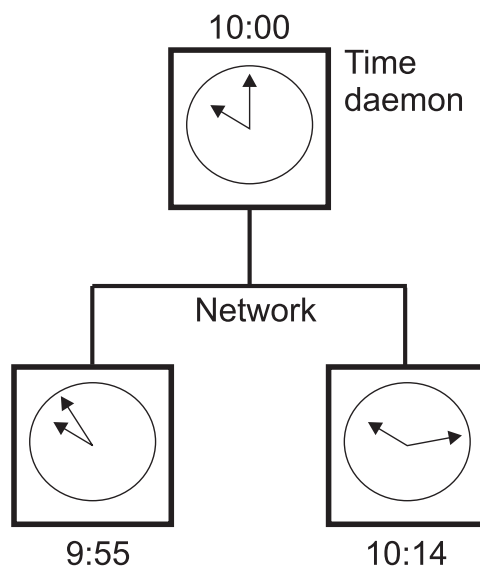


Homework Assignment 3

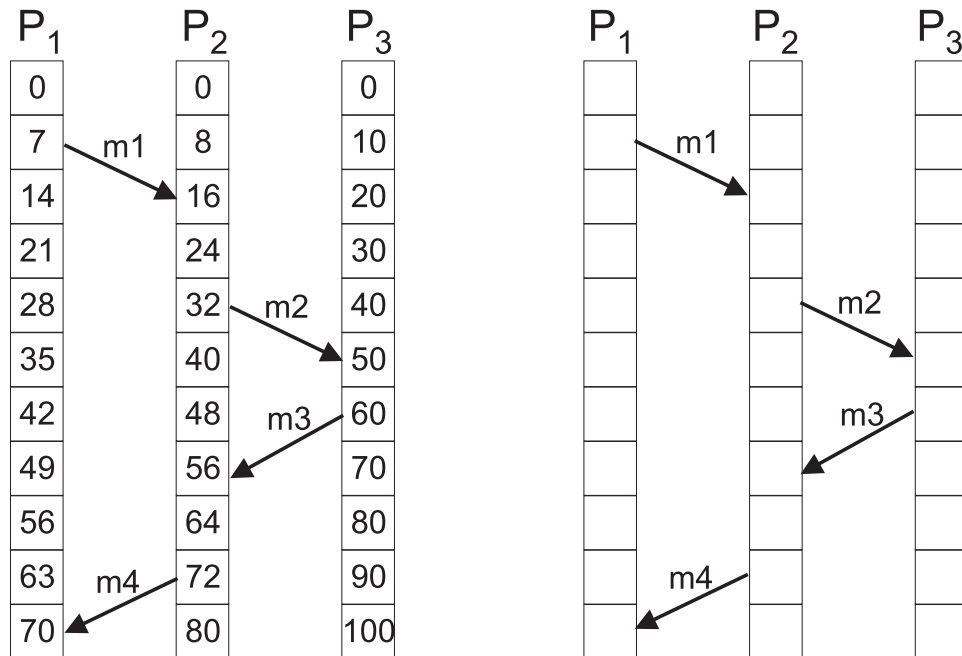
ECE 151 / CMPSC 171 - Spring 2014

Due Monday, April 21

1. (a) Explain the difference between a **name**, an **identifier** and an **address** of an entity in a distributed system. (b) Give an example of an entity in a distributed system with a particular name, a particular identifier and a particular address.
2. Consider the **Chord system** as shown in Lecture 5, Slide 13, and assume that node 24 has just joined the system. (a) Draw the finger table of the new node 24. (b) Draw the finger tables of all the other nodes, after node 24 joined the system.
3. (a) Explain what is meant by **name resolution**. (b) Explain what is meant by **mounting name spaces**. (c) Explain how name resolution is used in mounting name spaces.
4. Given a distributed system with a time daemon and machines with physical clocks as shown in the diagram below. Using the **Berkeley algorithm** for synchronization of physical clocks, draw the three steps of the algorithm, as is done in Lecture 6, Slide 13, and explain the three steps.



5. Consider three processes, with **physical clocks** that run at different rates, as shown in the diagram on the left, with exchange of messages as shown by the arrows. Using **Lamport's algorithm**, show how each process adjusts its **logical clock** by filling in the logical clock values in the diagram on the right, as is done in Lecture 6, Slide 18.



6. A distributed system uses **vector clocks** for **causally ordered multicast**, as shown in Lecture 6, Slide 24. In the following diagram, fill in the values of the vector clocks and show the point at which process P_2 delivers the message m^{***} .

