

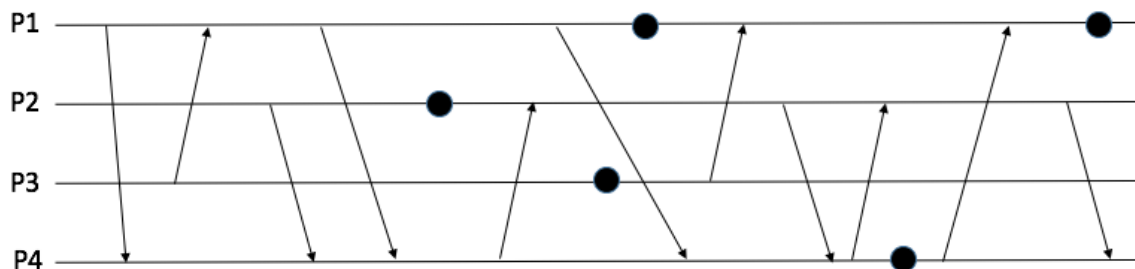
PAC 2

The solution should be written in PDF, DOC or ODT format and it should be delivered before the deadline date.

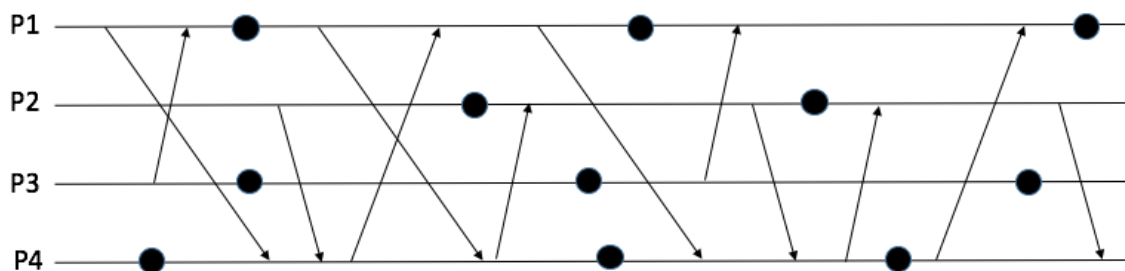
Deadline: 09/11/2015

1. In the next scenarios, where arrows and dots indicate progress of the clock in each process, answer these questions:
 - a. With Lamport clocks. All clocks start at zero. Label the diagram with the Lamport clock values. Show the final state of the clocks.
 - b. With vector clocks. All clocks start at (0,0,0,0). Label the diagram with the vector clock values. Show the final state of the clocks.
 - c. Using the happened before relationship, explain what can be achieved with vector clocks that is impossible with Lamport clocks.

Case 1



Case 2



2. Compare the following multicast ordering: FIFO, causal and total. Present an example of each of them.
3. Compare Two-Phase Commit (2PC) with Three-Phase Commit (3PC) taking into account functionality and performance of these protocols.
4. Compare BASE and ACID databases. Describe two examples of real applications that are based on BASE/ACID databases.
5. Describe and compare passive replication with active replication. Explain how does the gossip architecture apply replication, how does it detect and solve conflicts, and what can be done to provide scalability?