

Homework 2

1. Why is it not possible to ensure 100% accuracy of the current real time using Network Time Protocol (NTP)? [0.25 marks]
2. Mention the two situations in which the “happens-before” relation holds true for two events **a** and **b** in a distributed system. [0.25 marks]
3. Describe Lamport’s algorithm for logical clocks in 3-4 steps. [0.25 marks]
4. What is the limitation of logical clocks (Lamport’s) which is overcome by vector clocks? [0.25 marks]
5. Describe how each process maintains/updates its vector clock in 3-4 steps. [0.25 marks]
6. Mention one advantage and disadvantage of the centralized algorithm for ensuring mutual exclusion. [0.25 marks]
7. Mention two disadvantages of the distributed algorithm for ensuring mutual exclusion. [0.25 marks]
8. What kind of data structure is used by Apache Zookeeper to facilitate different coordination services? [0.25 marks]