Distributed Algorithms
Fall 2019

Shared Memory
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Exercise 1 - Majority voting

Explain why every process needs to maintain a copy of the register value in the “Majority voting”\(^{(1)}\) algorithm.

\(^{(1)}\) [ABD95, slides 24 and following]
Exercise 2 - Unsafe execution

Consider a system with two processes, $\pi$ and $\rho$. Give a register execution such that each process performs at most two operations and the execution is unsafe.
Consider a system with two processes, $\pi$ and $\rho$. Give a register execution such that each process performs at most two operations and the execution is safe but not regular.
Consider a system with two processes, $\pi$ and $\rho$. Give a register execution such that each process performs at most two operations and the execution is regular but not atomic.
Exercise 5 - Timestamps

Explain why a timestamp is needed in the “Majority voting”\(^{(1)}\) algorithm, but not in the “Read-one, write-all”\(^{(2)}\) algorithm.

(1) [ABD95, slides 24 and following]
(2) [Slides 16 and following]