Distributed Algorithms

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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, *π* and *ρ*. Give a register execution such that each process performs at most two operations and the execution is **unsafe**.

Exercise 3 - Safe execution

Consider a system with two processes, π and ρ. Give a register execution such that each process performs at most two operations and the execution is **safe** but not **regular**.

Exercise 4 - Regular execution

Consider a system with two processes, *π* and *ρ*. 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]