

Exercise Session 5

Consensus

Exercise 1

Consider all our fail-stop consensus algorithms (Consensus Algorithm I and Consensus Algorithm II). Explain why none of those algorithms would be correct if the failure detector turns out not to be perfect.

Exercise 2

Explain why any fail-noisy consensus algorithm (one that uses a $\diamond P$ failure detector) actually solves uniform consensus (and not only the non-uniform variant).

Exercise 3

Explain why any fail-noisy consensus algorithm (one that uses a $\diamond P$ failure detector) requires a majority of the correct processes. More precisely, provide a “bad run” in the case where there is no correct majority.