

Distributed Algorithms and Lower Bounds – Exercise 1

Question 1:

Show that the consensus number of **test&set** is *at most 2*, by showing that 3 processes cannot solve consensus using **test&set** and **read/write registers**.

Hint: what needs to change in the proof we saw for read/write registers alone?

Reminder: the test&set object supports only one method, test&set. The initial value of the object is 0. When test&set is called, if the current value is 0, the value is changed to 1 and the return value is 1. If the current value is 1, the value is not changed, and the return value is 0.

Question 2:

Show that the consensus number of a **stack** is at least 2.

Hint: the stack can be initialized to anything, it does not have to be empty initially...

Bonus:

Show that the consensus number of a **stack** is at most 2.