

## Exercise Session 3

### Causal Broadcast

October 15, 2012

#### Exercise 1

Can we devise a broadcast algorithm that does not ensure the causal *delivery* property but only its nonuniform variant: no correct process  $p_i$  delivers a message  $m_2$  unless  $p_i$  has already delivered every message  $m_1$  such that  $m_1 \rightarrow m_2$ ?

#### Exercise 2

Suggest an optimization of the garbage collection scheme of *Algorithm 1'* (slide 24).

#### Exercise 3

Why is the condition on slide 30  $VC[pk] \geq VC_x[pk]$  and not just  $VC[pk] = VC_x[pk]$ ? Can you construct an execution where the local vector clock is greater than the received local clock for one place?