

A Solution for the Exercise 4

EPFL, LPD

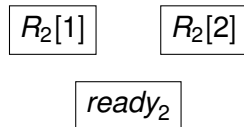
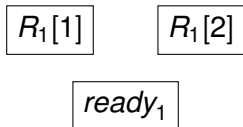
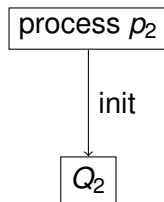
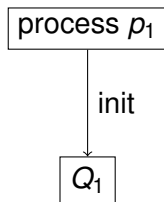
Concurrent Algorithms 2010

2-consensus on an initialized queue

```
procedure  $cons_i(Q, R, val_i)$   
   $R[i] \leftarrow val_i$   
   $q_i \leftarrow Q.deq()$   
  if  $q_i = \text{"winner"}$  then return  $val_i$   
  else return  $R[3 - i]$ 
```

Q initialized to $\langle \text{"winner"}, \text{"loser"} \rangle$.

2-consensus on uninitialized queues



2-consensus on uninitialized queues

```

procedure proposei(vali)
  Qi.enq("winner")
  Qi.enq("loser")
  readyi ← true
  for k ← 1, 2 do
    if readyk then vali ← consi(Qk, Rk, vali)
  return vali

```

Uses: queues $Q_{1,2}$ (initially empty), registers $R_{1,2}[1, 2]$ and registers $ready_{1,2}$ (initialized to *false*).