

CO21BTECH11002  
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Theory Assignment 1

1)

*Variables*

set id\_border\_set

T master = -1

while (! received marker from all channels) {

*Marker sending rule for process  $p_i$*

(1) Process  $p_i$  records its state.

(2) For each outgoing channel C on which a marker has not been sent,  $p_i$  sends a marker along C before  $p_i$  sends further messages along C.

*Marker receiving rule for process  $p_j$*

On receiving a marker along channel C:

If master == -1:

//  $p_j$  has not recorded its state yet

Record the state of C as the empty set

master = C.sender

Execute the “marker sending rule”

else

id\_border\_set.insert(C.sender)

Record the state of C as the set of messages

received along C after  $p_j$ 's state was recorded

and before  $p_j$  received the marker along C

}

if (!initiator) {

while(! obtained local states of descendents) {

receive local states

}

send all local states, id\_border\_set to master

}

```
else {  
  while(! obtained local states of descendents) {  
    receive local states  
  }  
  assemble all snapshots of its region  
  
  send the assembled snapshot to all other initiators.  
  
  while(! Obtained snapshots from other initiators) {  
    receive snapshots  
  }  
}
```