

# Homework 2 (due 09/23)

- Imagine a processor grid of  $P \times P$  processors, placed in a 2D cyclic distribution. Create communicators following the direction of the main diagonal.
- On each of the obtained communicator circulate a unique token. Each process waits until a token is passed in, and then forward the token to the next in line. The last processor circulate the token back to the first processor (in the communicator). Initially the process with rank 0 in each communicator has the token.
- Redo Question 1 with communicators following the direction of the anti-diagonal.
- Redo Question 2 with the additional rule that the token received on a diagonal communicator will be forwarded on the anti-diagonal communicator (the token received in one communicator is sent to the next process in the other communicator). Initially the process with rank 0 in each communicator has the token. A token can be retired once it reaches the originator process, on the other communicator than the one it was initially sent. In the example on the right, the token initially sent left from P1 will only be retired once it come back from left (step 15).

