CE443 - Computer Networks

TA Session

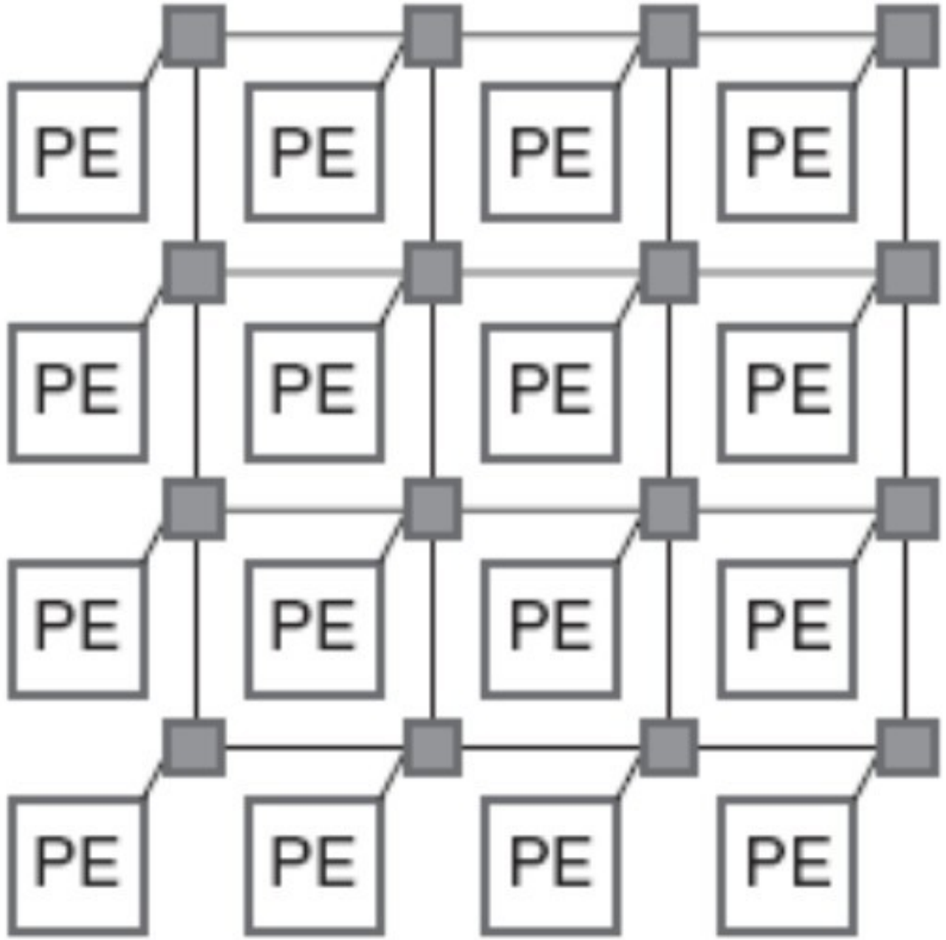
Today Topic

Programming Assignment 1

- Introduction to NoC
- Proposed NoC
- Assignment Details
- Introduction to Partov

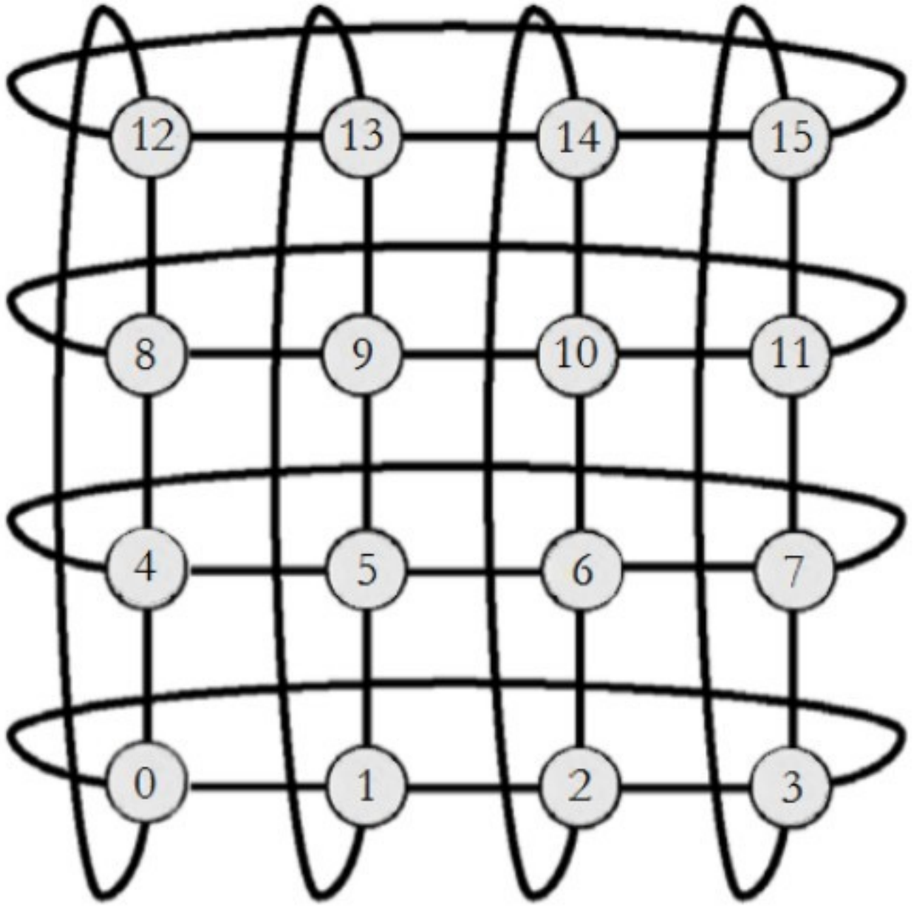
Introduction to NoC

- Network on chip (NoC) is a communication subsystem typically between processor elements.

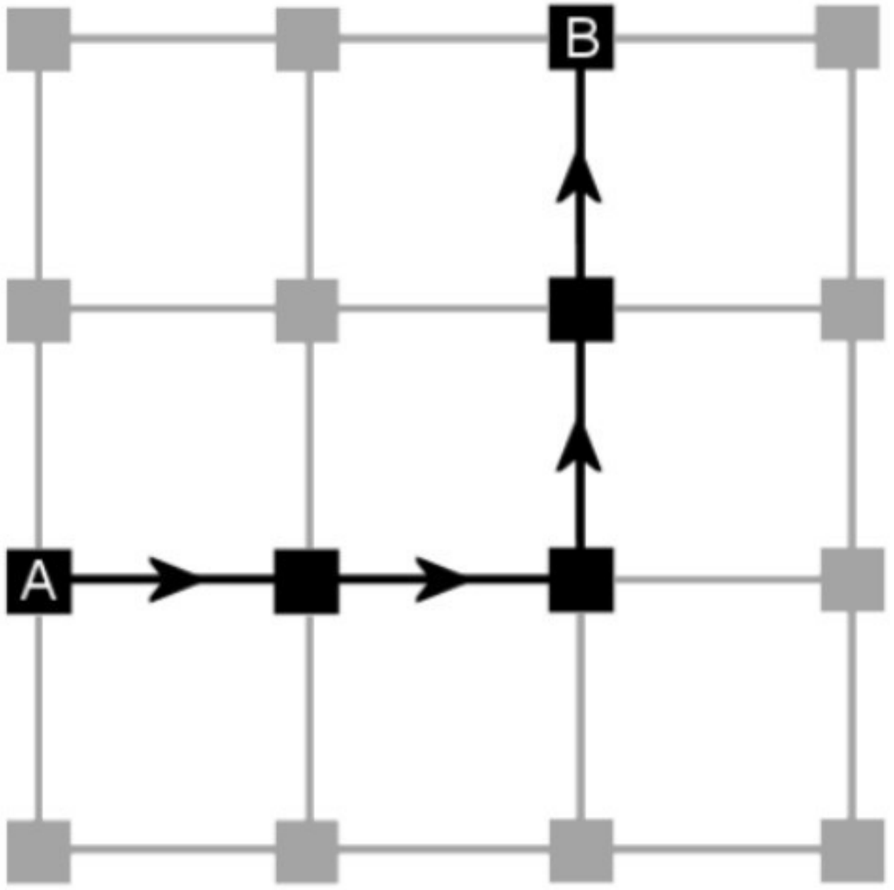


Proposed NoC

- Torus Topology

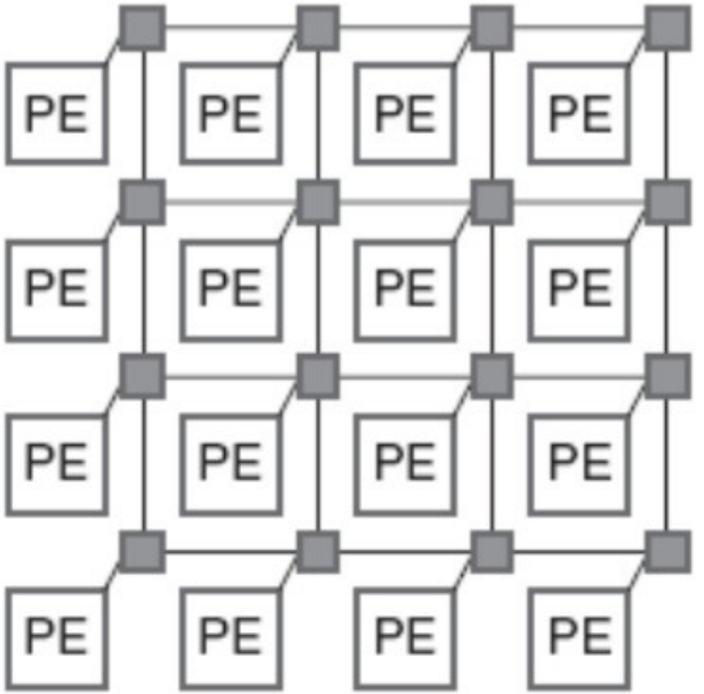


- XY Routing Algorithm



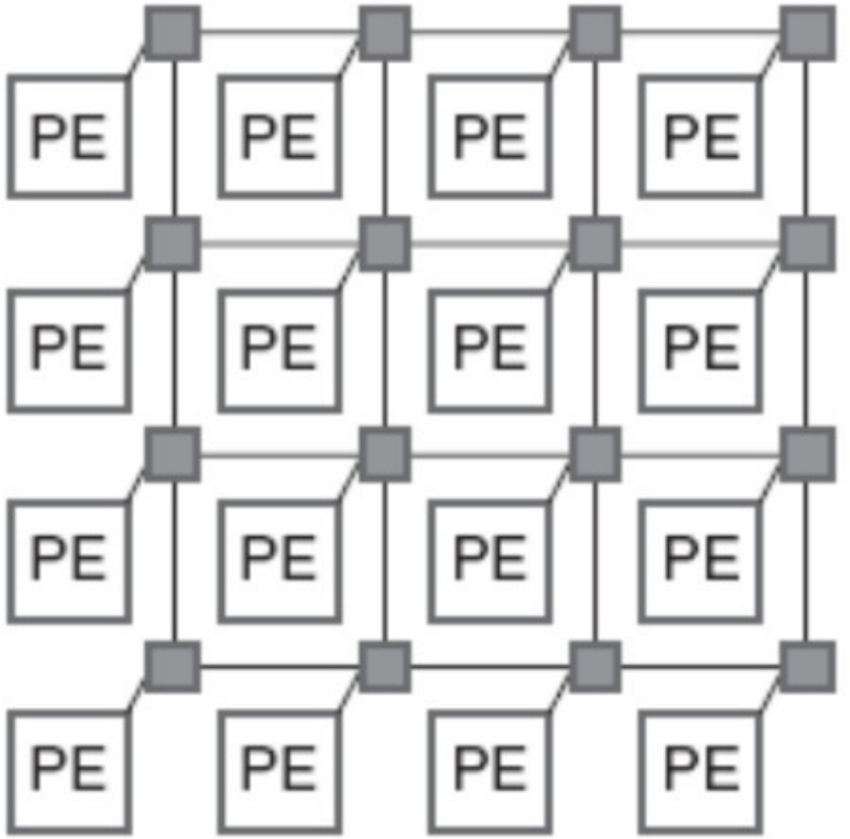
Assignment Details

- Two independent programs:
  + One for processors,
  + One for routers.
- Each processor:
  + Has a respective router and a link to it from its only interface,
  + Has a private memory,
  + May request a data specified by an address from other processor.
- Each router:
  + Coupled with respective processor,
  + Has five interfaces: east, north, west, south, processor,
  + Is responsible for delivering packets to their destination processors.
    - From optimal path,
    - Using specified algorithm.
- And also there is a "Main Memory" that all processors can access to its content.



Assignment Details (Cont.)

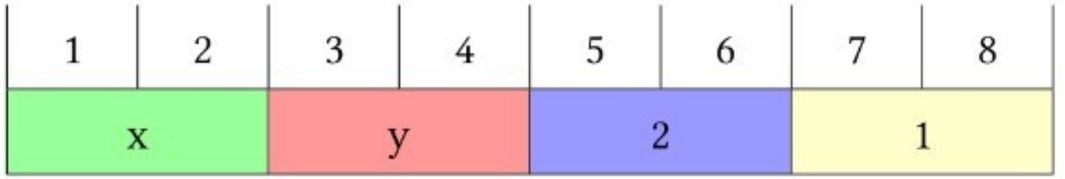
- Processor program:
  - + Takes command from STDIN:
    - – `load [Address]`
    - – `print [Address]`
    - – `request [Processor ID] [Address]`
  - + Responses to the requests from other processors.
- Router program:
  - + Just sends a packet to the next hop.



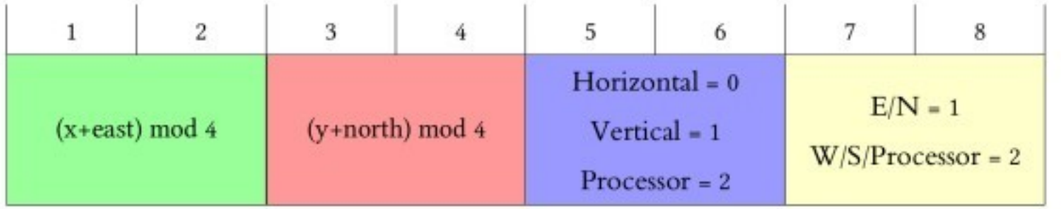
Assignment Details (Cont.)

- Each interface has an IP address:

  + Processor in place (x, y) has only one interface, which its IP is 192.168.0.X and X is:



  + Router in place (x, y) has five interfaces, which their IPs are 192.168.0.X and X is:



- Protocol between processors:

1 bit	1 bit	6 bit	2 byte	8 byte
Message Type	Valid Data	Mode	Address	Data

Partov