

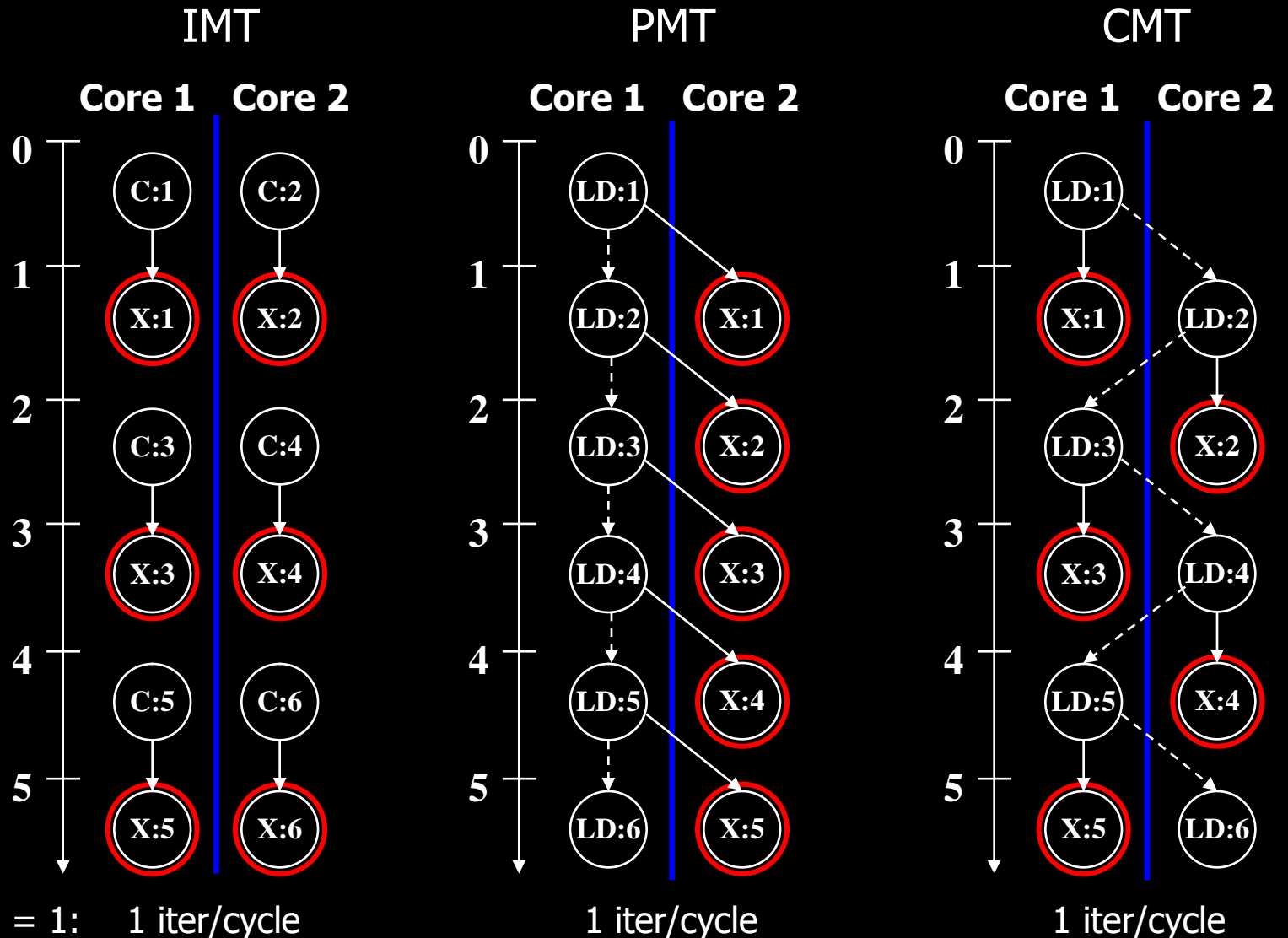
Liberty Queues for EPIC Architectures



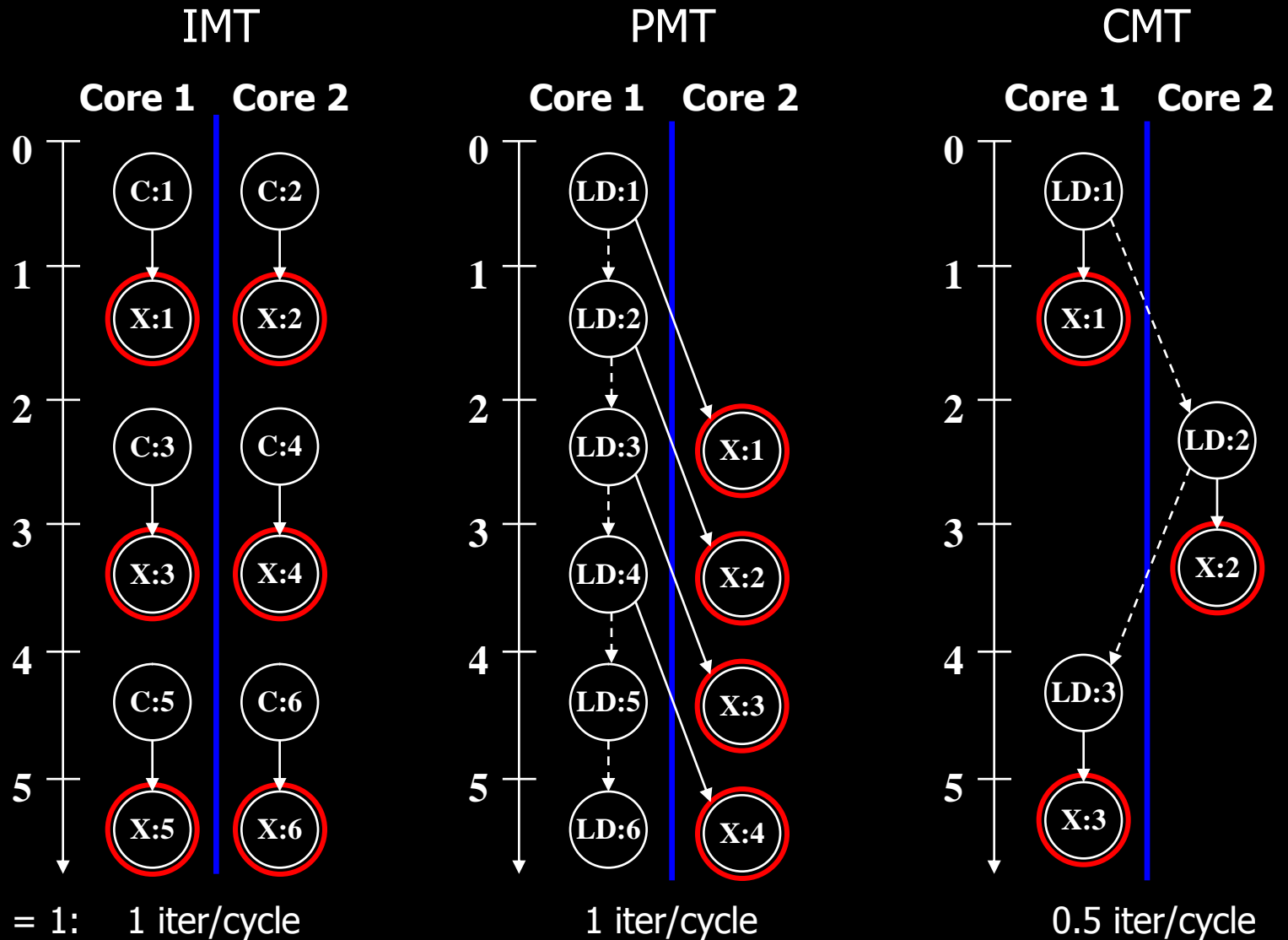
Thomas Jablin, Yun Zhang,
James A. Jablin, Jialu Huang,
Hanjun Kim, &
David I. August

The Liberty Research Group
Princeton University

Comparison: IMT, PMT, CMT

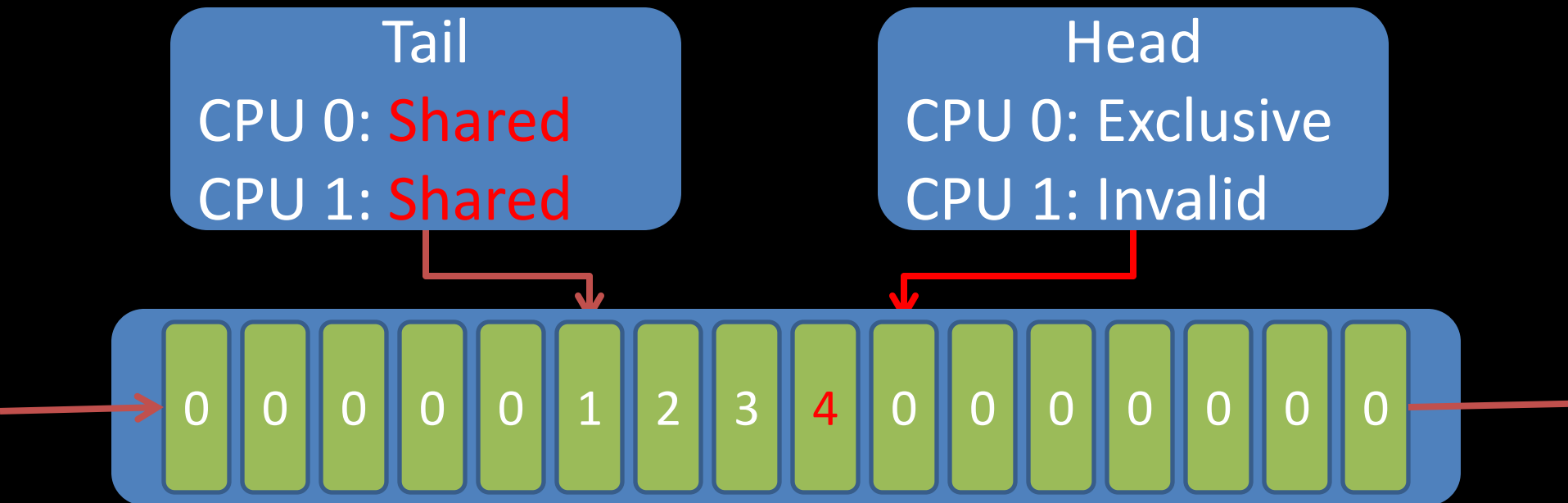


Comparison: IMT, PMT, CMT

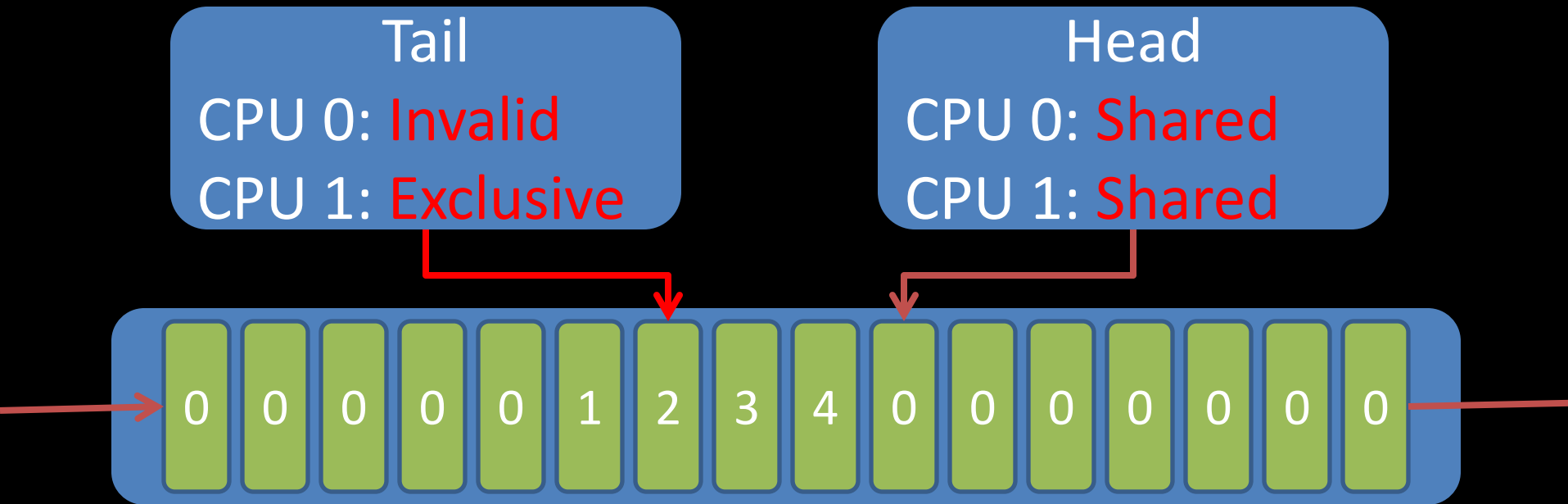


Bandwidth	40MB/s	430MB/s	2Gb/s
Technology	Lamport '83	DBLS '07 FastForward '08 MCRB '09	Liberty '10
Applications	DSWP StreamIt	Line-Rate Network Traffic Monitoring	Transactional Memory SRMT Multithreaded Assertions

Lamport Queues

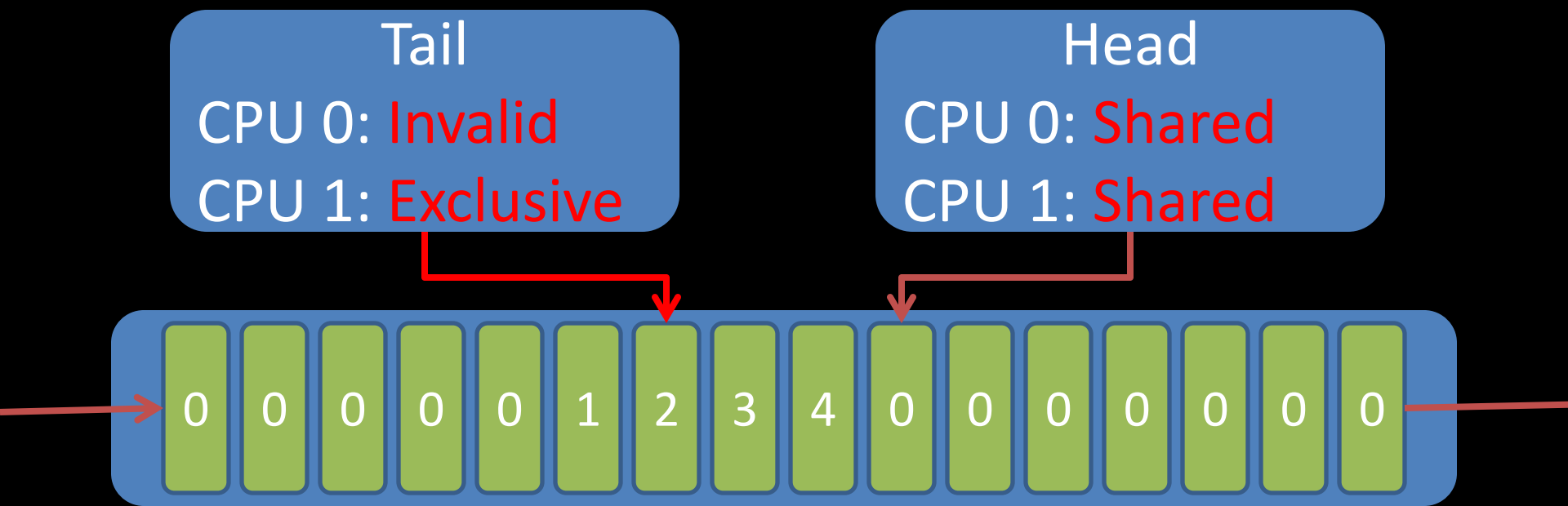


Lamport Queues



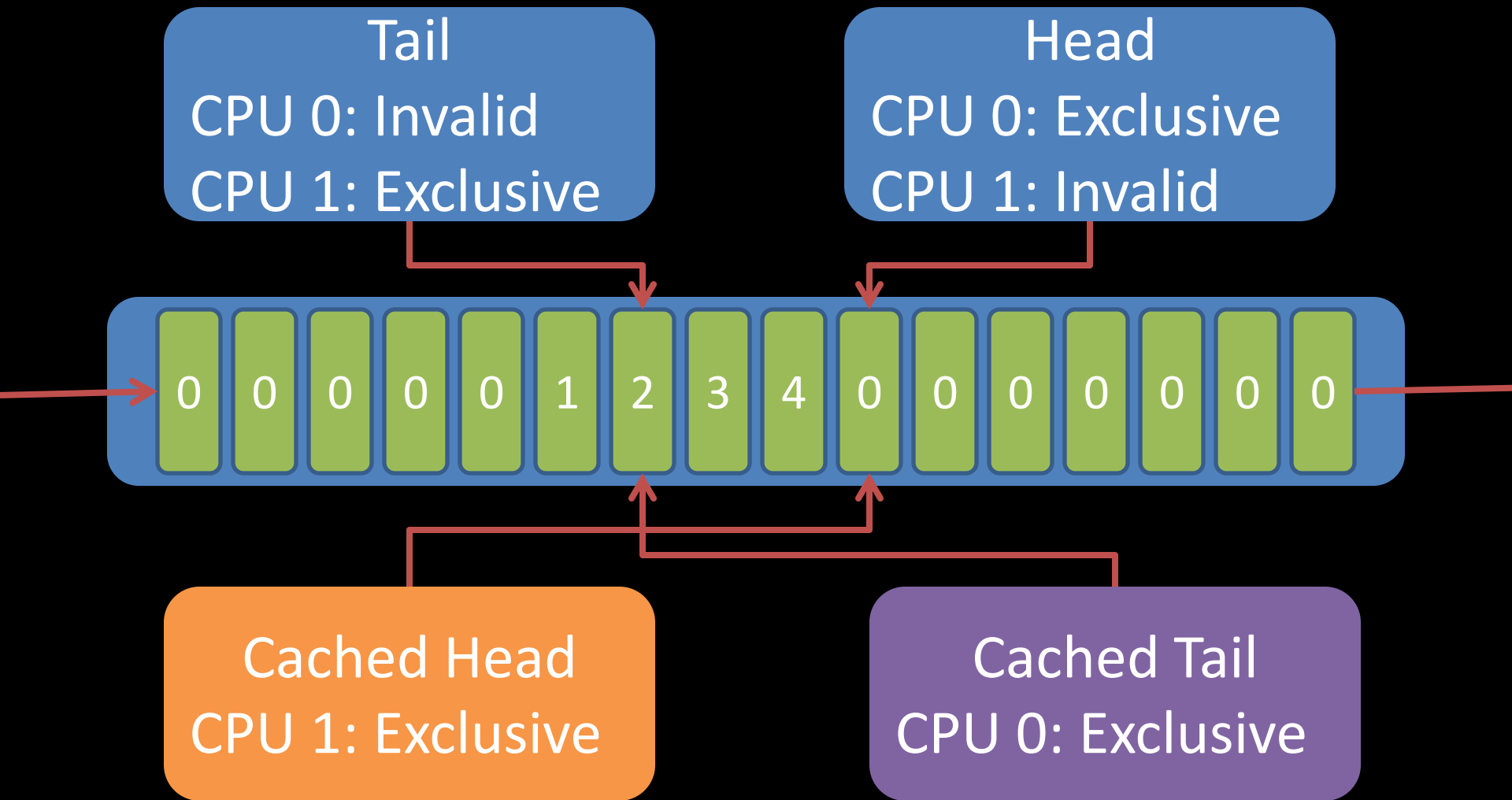
Every produce-consumer pair
produces a cache ping-pong!

Lamport Queues

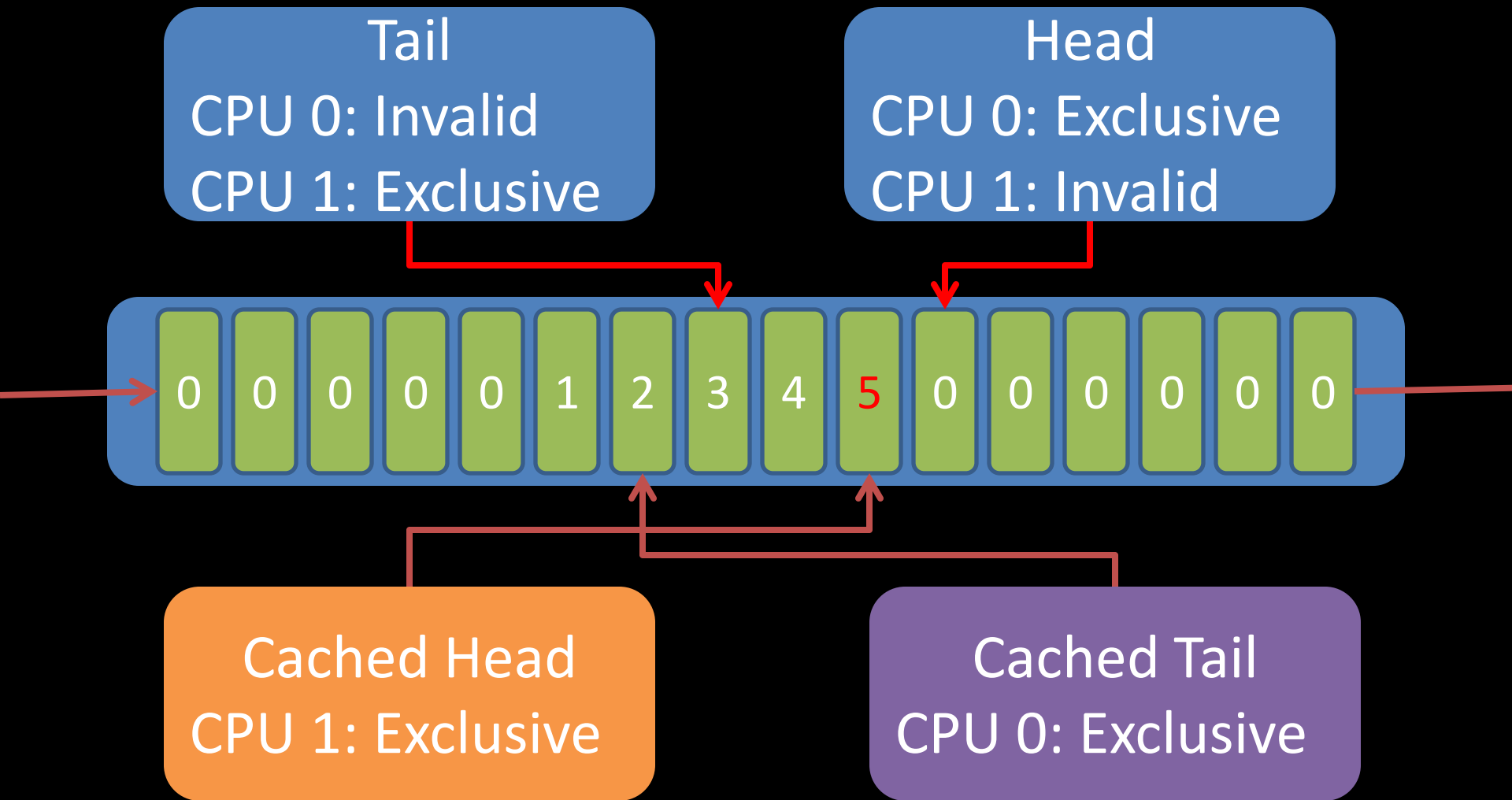


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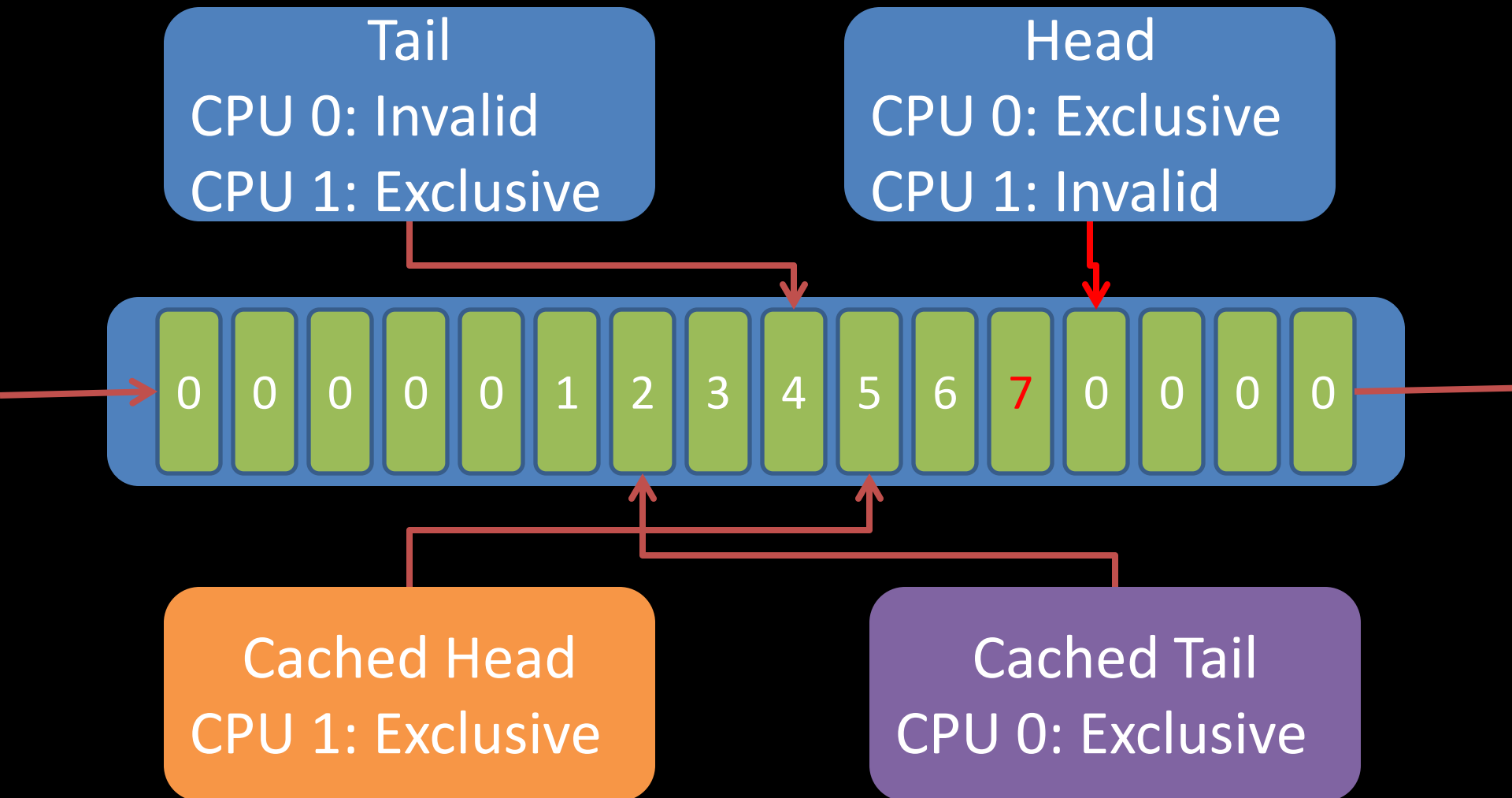
MCRB and DBLS



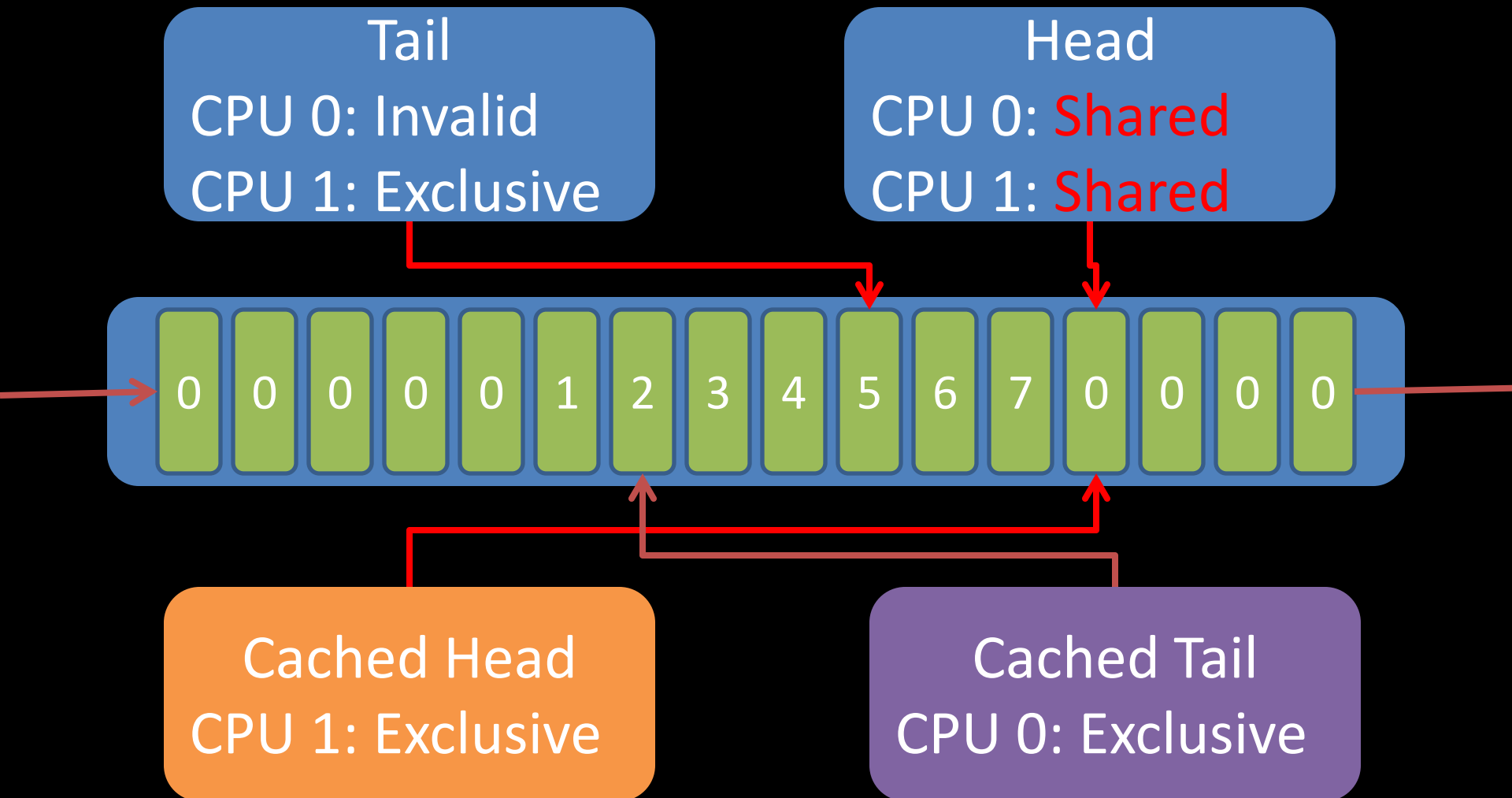
MCRB and DBLS



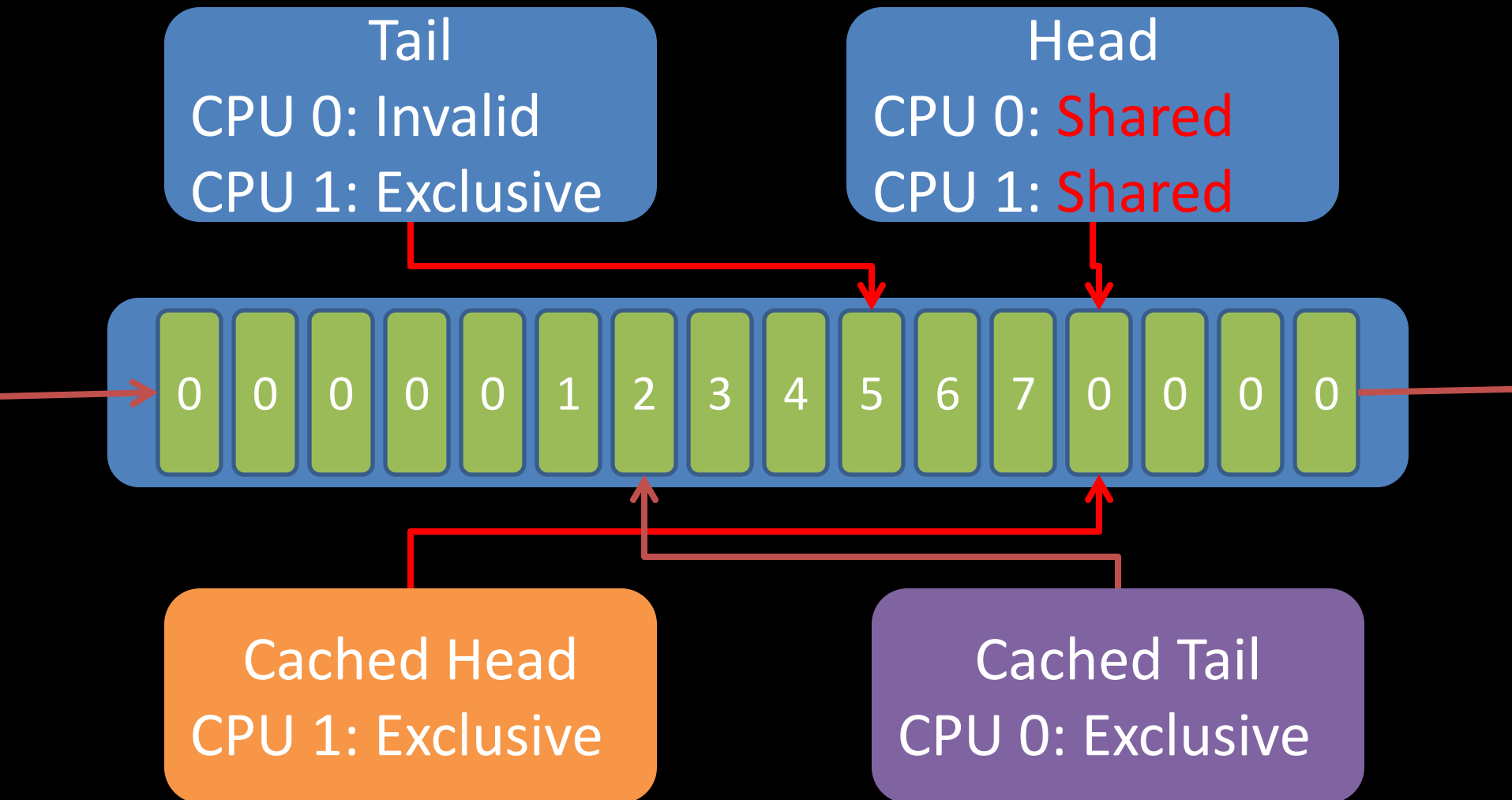
MCRB and DBLS



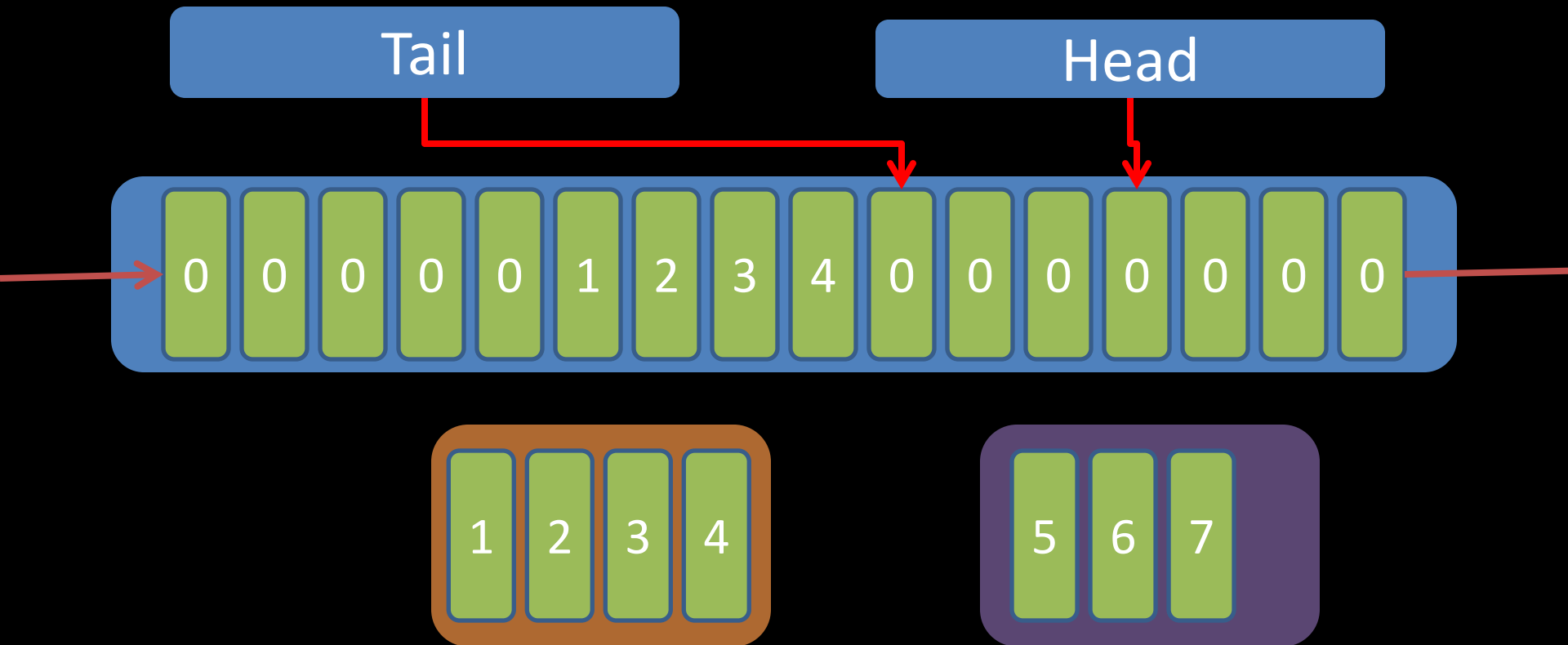
MCRB and DBLS



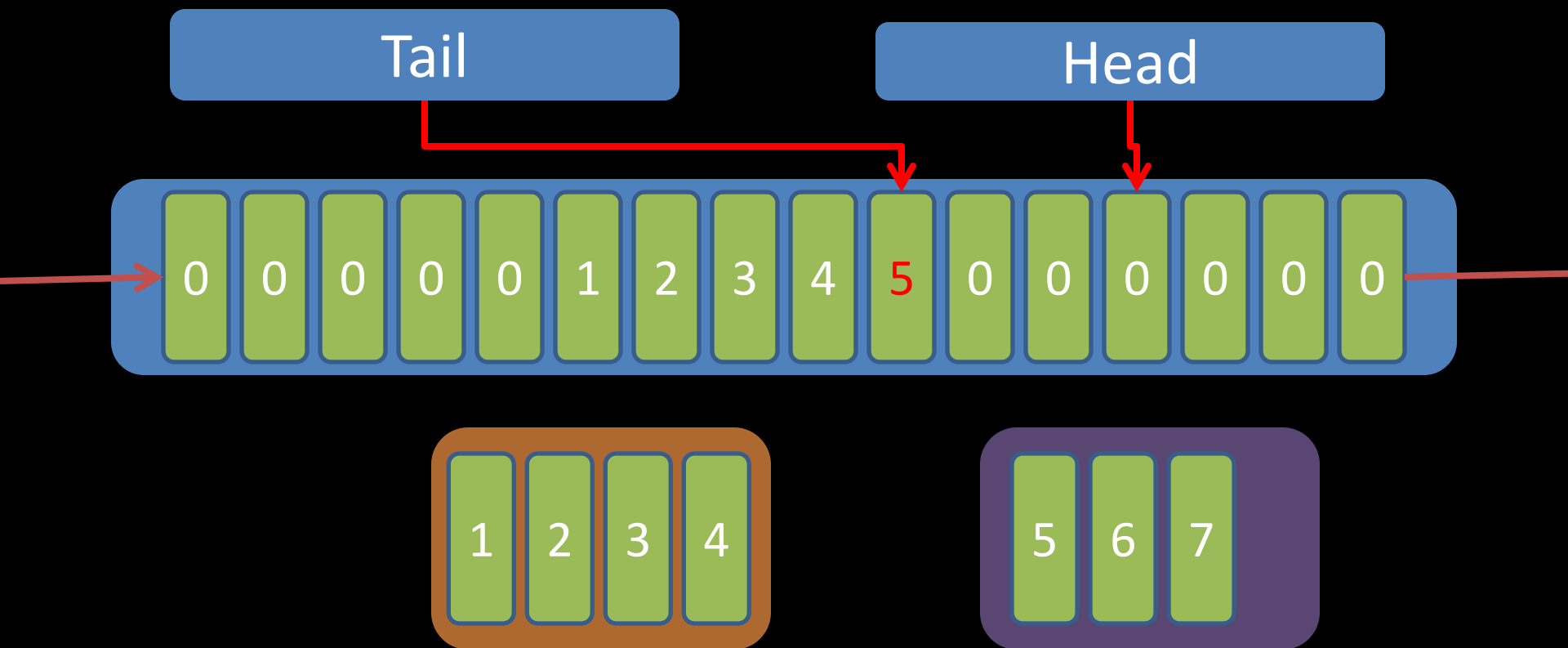
Caching eliminates ping-ponging!



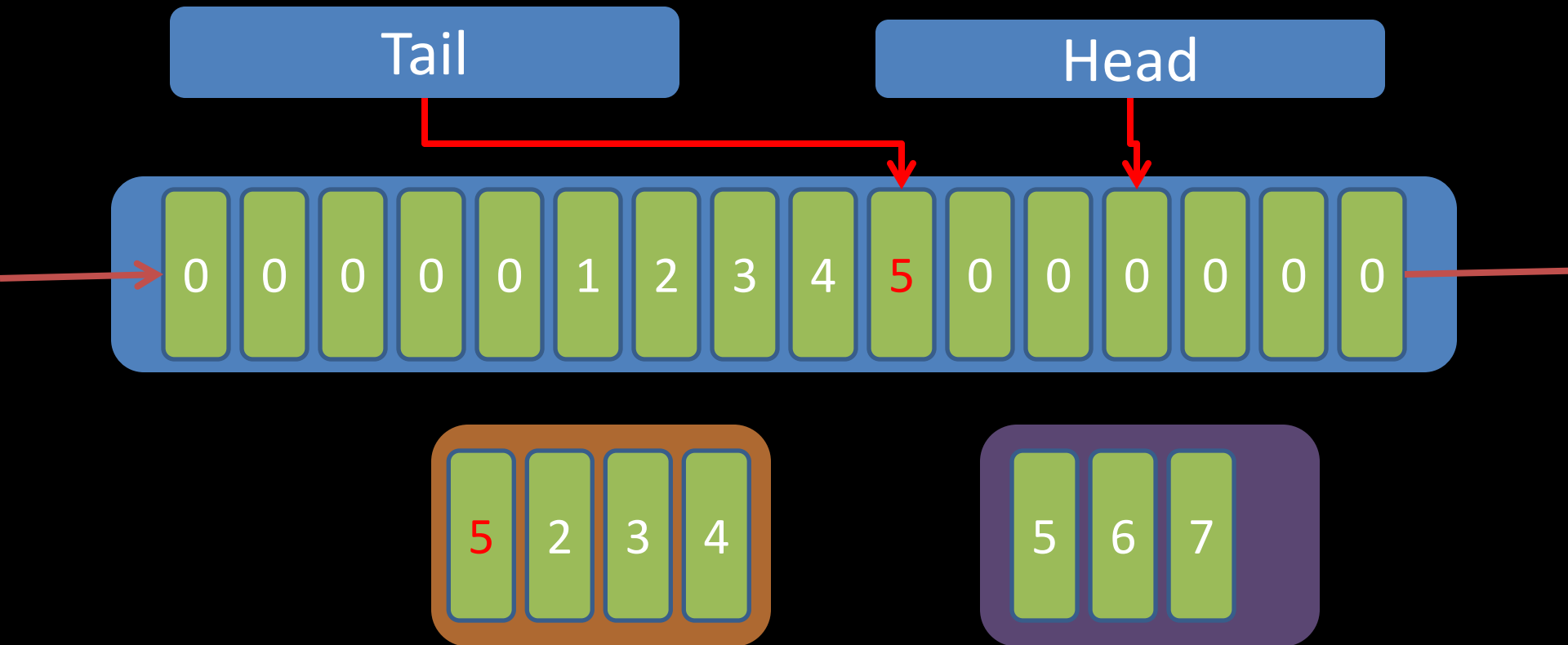
Liberty Queues



Liberty Queues

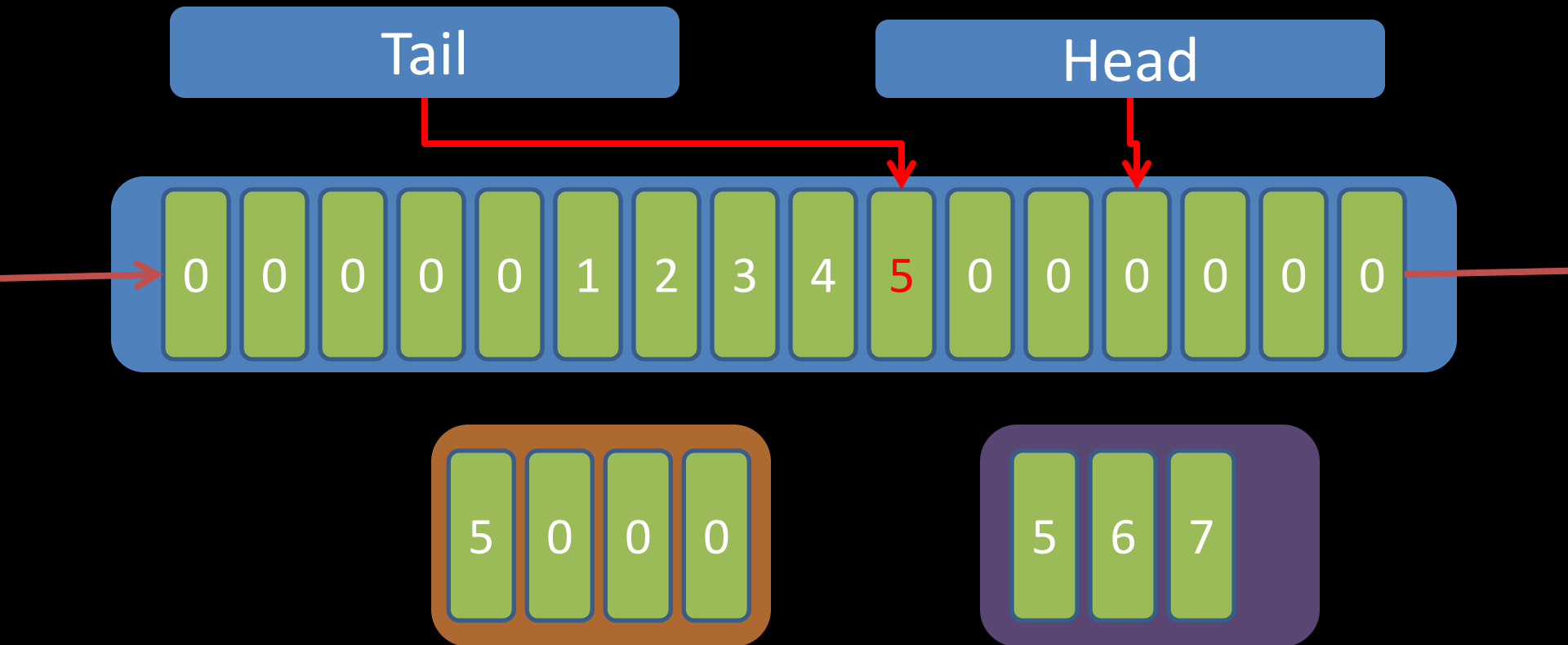


Liberty Queues

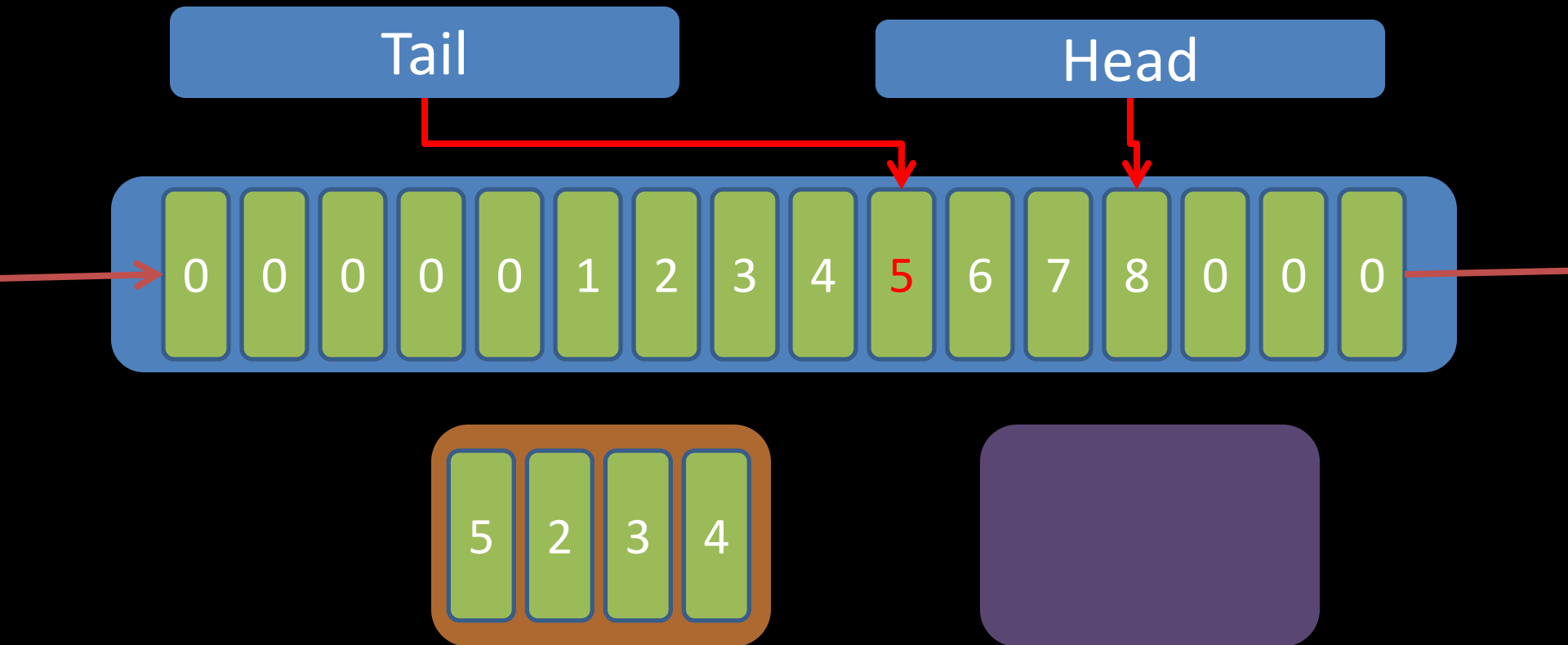


Liberty Queues

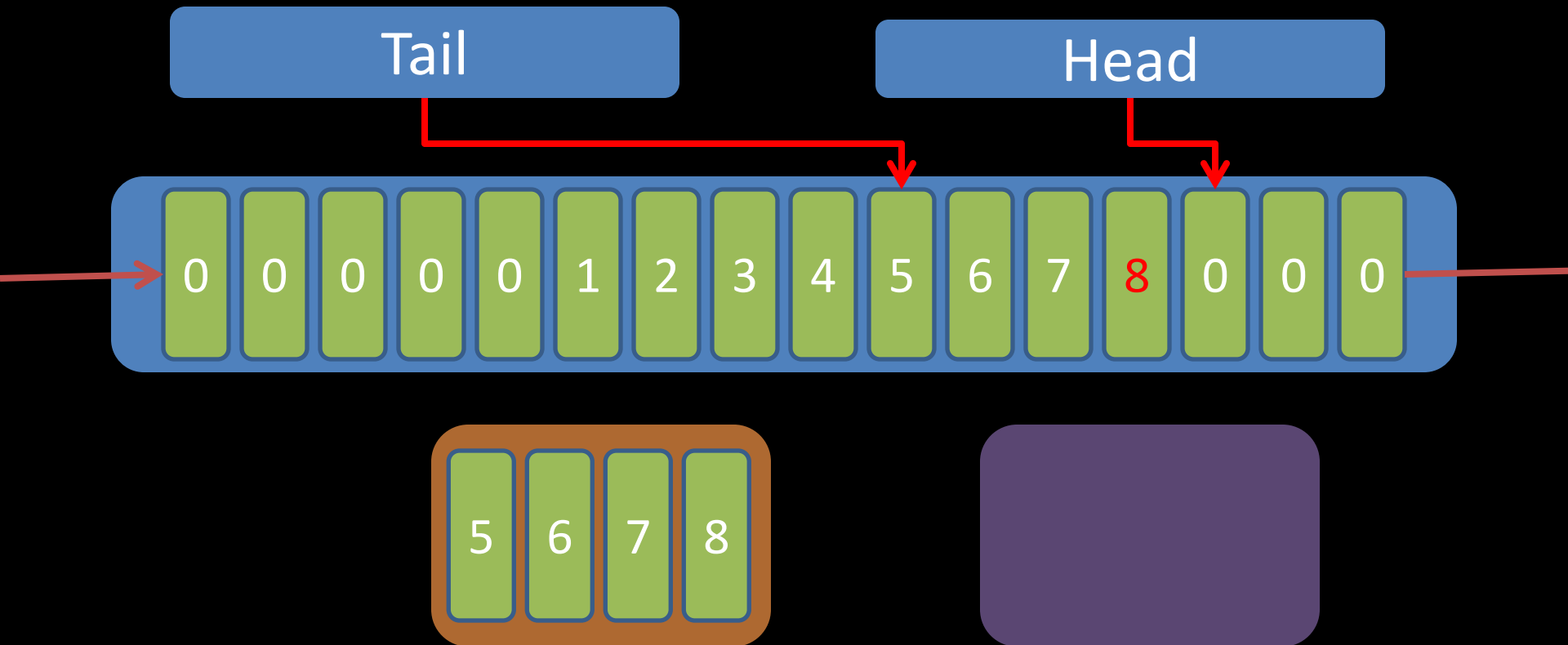
Prefetching doesn't help



Liberty Queues



Liberty Queues



Liberty Queue Bandwidth

