Concurrent Programming
August—November 2015

Concurrent Objects

Lecture 5, 20 August 2015

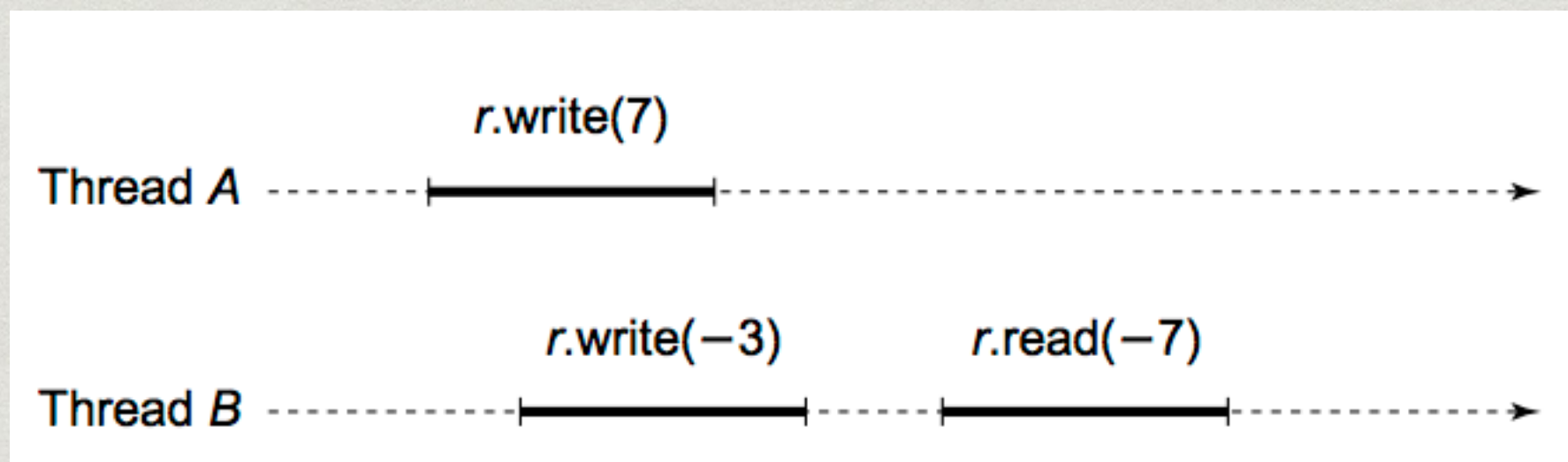MADHAVAN MUKUND, http://www.cmi.ac.in/~madhavan

S P SURESH, http://www.cmi.ac.in/~spsuresh
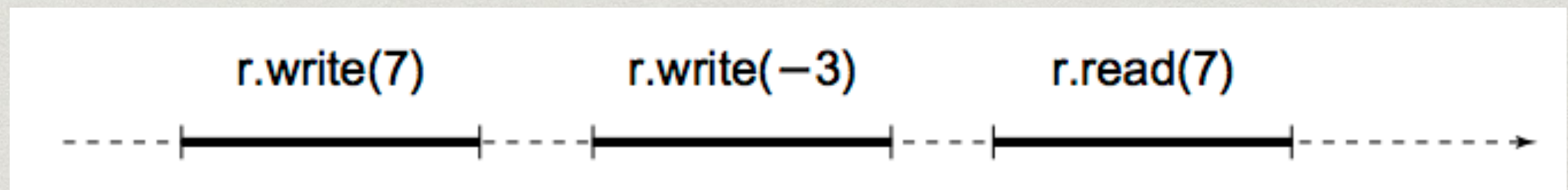
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Quiescent consistency

* Method calls should appear to happen in a one-at-a-time sequential order

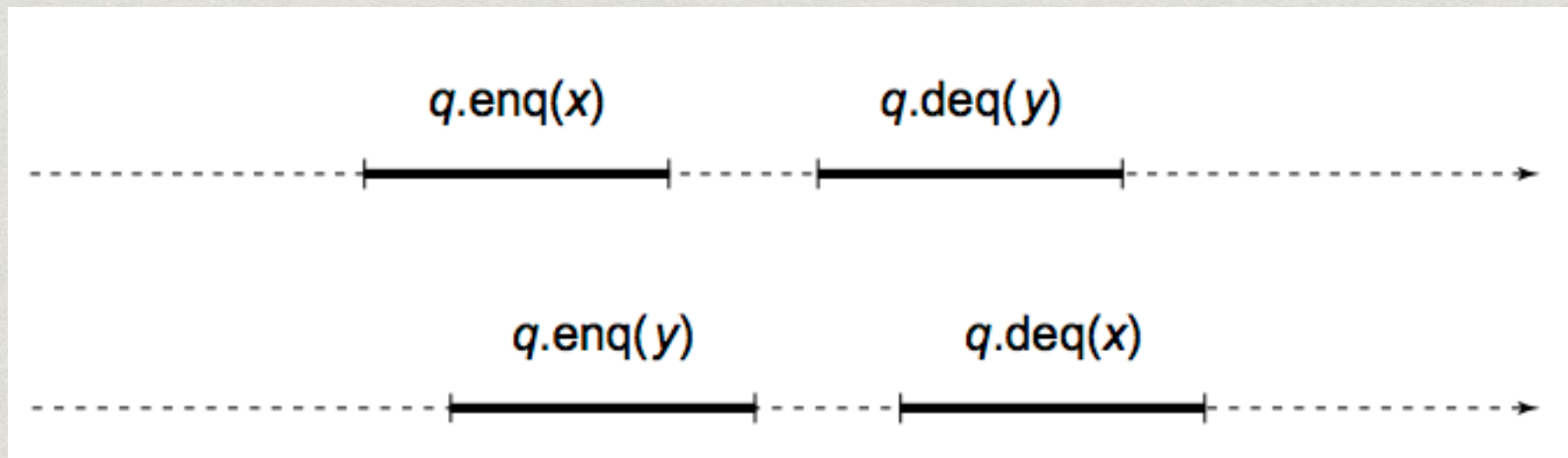* Method calls separated by a period of quiescence should appear to take effect in their real-time order.

Sequential consistency

* Method calls should appear to happen in a one-at-a-time sequential order

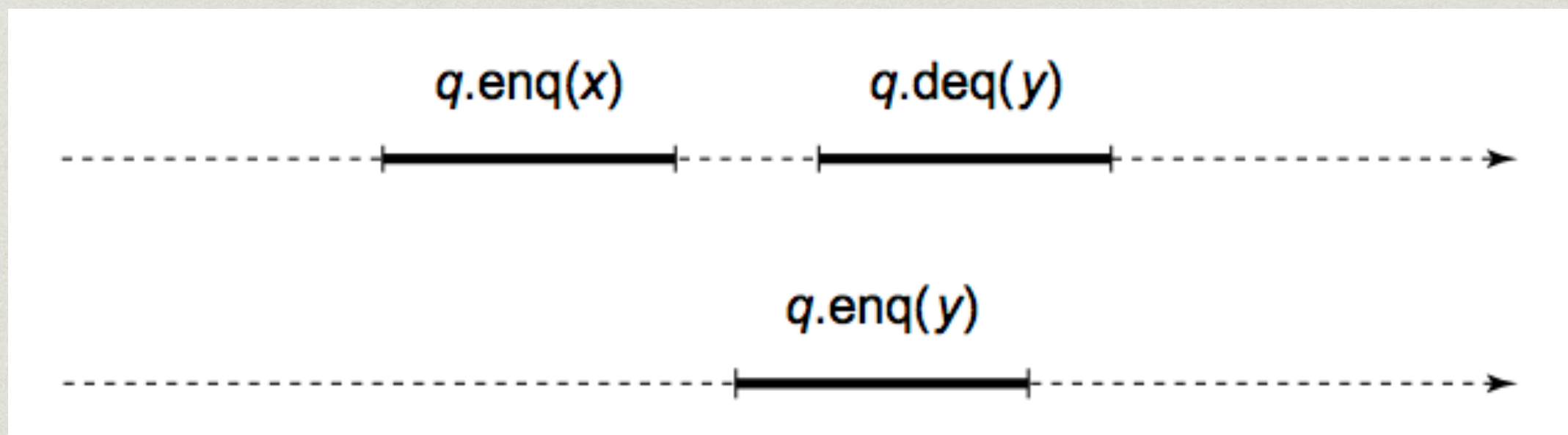* Method calls should appear to take effect in program order.

Sequential consistency

* Two possible executions

  * q.enq(x); q.enq(y); q.deq(x); q.deq(y)

  * q.enq(y); q.enq(x); q.deq(y); q.deq(x)

Sequential consistency

* Sequential consistency may not match our intuition about real-time

Sequential consistency

* Not compositional

  * p and q are individually sequentially consistent

  * Overall there is a cycle