MultithreadedInputStream
Purpose

• InputStream wrapper
• Used when reading stream is computationally expensive
• might want to do it in background
Design

• InputStream wrapper
• Background thread reads from input
  – stores in buffer(s)
• read calls read from buffer(s) if filled
  – otherwise, reads directly from input
Buffer Queue

read requests

either/or

only if current buffer and queue is empty

in

background thread

current buffer
read function

• If current buffer empty
  – Try to dequeue buffer from buffer queue
  – make result new current buffer

• Does current buffer contain data?
  – if so, fulfill request out of current buffer

• else, try to read data directly
Notes:

• read should not hold lock for entire operation
  – don’t hold lock while copying data
background thread

• **loop**
  – get lock
  – read from in into new buffer
  – put buffer into buffer queue
  – release lock
  – if buffer queue had been empty
    • sleep for 10 milliseconds
    • allow foreground thread to read directly