MultithreadedInputStream

CMSC 433, project 3

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

Dataflow

- 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