

MultithreadedInputStream

CMSC 433, project 3

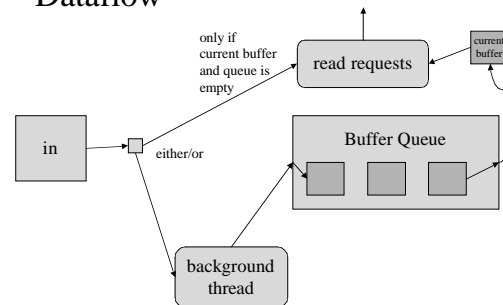
Purpose

- 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