

C. Might have some unsafety if full is released early, if it runs T1[insert.full.release] -> T2[remove.full.acquire] -> T2[remove.mutex.acquire], T2's mutex.acquire might possibly deadlock when trying to acquire the mutex permit before the insert has released it. "full" guards this pre-reversing the lines to prevent this

Thread 1	Thread 2
Insert: full.release()	Remove: full.acquire()
	Remove: mutex.acquire()
Insert: mutex.release()	<i>Deadlocked because acquire() is blocking</i>
	<i>Deadlocked because acquire() is blocking</i>