

# SEQUENTIAL CONSISTENCY

SC/1

WHY: TO PROTECT AGAINST TWO THREADS SIMULTANEOUSLY ACCESSING A CRITICAL SECTION

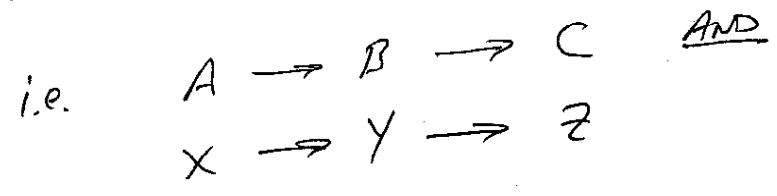
<u>THREAD 1</u>	<u>THREAD 2</u>
$L1 = \phi$	$L2 = \phi$
$\vdots$	$\vdots$
A $L1 \leftarrow 1$	X $L2 \leftarrow 1$
B $\text{if}(L2 = \phi)$ {critical section}	<del>Y</del>
C $L1 \leftarrow \phi$	Y $\text{if}(L1 = \phi)$ {critical section}
	Z $L2 \leftarrow \phi$

WHAT CAUSES THE PROBLEM:

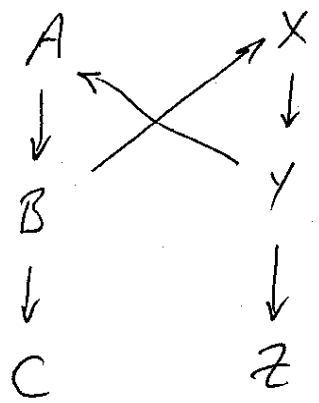


## SEQUENTIAL CONSISTENCY

LD/ST ACCESS MEMORY IN PROGRAM ORDER.



IN ORDER FOR CRITICAL SECTION TO BE ACCESSIBLE BY BOTH AND SEQUENTIAL CONSISTENCY TO BE MAINTAINED



$\Rightarrow A \rightarrow B \rightarrow X \rightarrow Y \rightarrow A$

IMPOSSIBLE!

$\therefore$  SEQUENTIAL CONSISTENCY  $\rightarrow$  MUTUALLY EXCLUSIVE ACCESS TO CRITICAL SECTION

ACCESSES (LEGITIMATE) FOR SEQUENTIAL CONSISTENCY

