

Threads & Locking

balance ++



balance = balance + 1

T1

$R_1 \leftarrow \text{balance} + 1$
Put R_1 in heap

$0 + 1 = 1$
balance = 1

$R_1 = 1$
balance in heap = 1

T2

$R_1 \leftarrow \text{balance} + 1$
Put R_1 in heap

$0 + 1$
balance = 1
 $R_1 = 1$

balance in heap = 1

What we need is a lock

We need to lock code
So only one thread
can update the heap
at a time.

In Java, there are
Thread Safe classes
that you should use.