total++
1. read total from mem
2. add one (on processor)
3. write back

Threads t1, t2

\[ \text{total} = 1500 \]

\[ \begin{array}{cccc}
\text{t1.1} & \text{t2.1} & \text{t2.2} & \text{t2.3} \\
1500 & 1500 & 1500 & 1500
\end{array} \]

\[ \text{time} \]
Monitors

- lock an object or class
- make a modification
- unlock
Critical Section Problem

portions of program that can only be accessed by one thread/process

Producer\[\rightarrow\]generates data\[\rightarrow\]Shared\[\rightarrow\]uses data

Consumer
Readers/Writers

Writer:
must be the only thread
accessing shared data

Readers: multiple readers can read
the data.
Executables

- build a runnable
- ThreadPool - create a bunch of threads - assign runnables as needed
GUI

- updated/managed by event thread
- synchronize our thread w/ the event thread