

CS 4230, Parallel Computing PThreads

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PThreads

We will study the main ideas from the LLNL Pthreads tutorial
You must also begin reading from Pacheco's book

- ▶ Creating threads
- ▶ Passing arguments to them
- ▶ Collecting answers
- ▶ Holding onto locks
- ▶ Implementing monitors

PThread Nomenclature

- ▶ pthread_
 - ▶ pthread_create
 - ▶ pthread_exit
 - ▶ ...
- ▶ pthread_attr_
 - ▶ pthread_attr_init
- ▶ pthread_mutex_
 - ▶ pthread_mutex_init_
 - ▶ pthread_mutex_destroy_
- ▶ pthread_cond_
 - ▶ pthread_cond_wait
 - ▶ pthread_cond_signal
 - ▶ pthread_cond_signal
- ▶ pthread_barrier_
- ▶ pthread_rwlock_

Check your code before parallelizing!

- ▶ Commonsense suggests that you parallelize only non-buggy code
- ▶ Commonsense suggests that you parallelize only that code where all obvious inefficiencies have been removed
- ▶ Yet, we will now show that many a bug lurk in C codes
- ▶ We will introduce you to these tools:
 - ▶ AddressSanitizer
 - ▶ ThreadSanitizer