

Test 2 for Computer Architecture will be Thursday, Nov. 14 in class. The test will be open book and notes. Test 2 review topics are:

Chapter 2:

Parallel program design: Foster's methodology, Task vs. Data-parallel parallelism

Sources of parallel overhead

Examples: sum1DArray, matrix multiplication

C programming: arrays, command-line arguments

Parallel performance: speedup, efficiency, Amdahl's law

Chapter 4: Shared-Memory Programming with Pthreads

process vs. thread contrasts

pthread commands: create, join,

Pthread examples: sum1DArray, matrix-vector (textbook), your 2D SOR HW #6 program

Critical sections: mutexes

Producer-consumer synchronizations: condition variables and mutexes

Barrier synchronization: implementation

Read-Write locks: usage and implementation options

Deadlock issues with pthreads

Cache issues: cache coherence, false sharing, performance considerations w.r.t design

Thread-safety issues of some C functions (static variables in shared memory)

Chapter 6: Parallel Program Development

Pthread versions of n-body and TSP problems - focus more on the design choices made for the pthreads