Additional Topics for the Final Exam

CS 220
Fall, 2015

In addition to the material covered on the first two midterms, any of the following topics may be covered on the final exam.

• General
  – Virtual memory, page, swapped-in/out.
  – Page-locked or pinned memory

• Distributed memory MIMD
  – Bitonic sort

• Shared memory MIMD
  – Implementations of barriers
  – Threadsafety
  – Implementations of a shared linked list

• Pthreads
  – Condition variables
  – Pthreads barriers
  – Read-write locks

• C
  – fgets
  – static storage class
• GPUs, GPGPU, CUDA
  • Nvidia architecture: SM, core, shared memory, global memory
  • Hardware context switch
  • Thread block
  • CUDA kernel
  • cudaMalloc, cudaMemcpy, cudaFree, cudaThreadSynchronize
  • blockDim, blockIdx, threadIdx
  • atomicAdd
  • Separate address spaces on host and device
  • No pass-by-reference or return value for kernels
  • Communication between host and device
  • Tree-structured sum and __syncthreads()
  • Using shared memory
  • Warp, thread divergence
  • Directly accessing host memory
  • SIMD execution.