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CS4370

Parallel Programming Many-Core GPUs

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Parallel Reduction and Prefix sum

My Parallel Reduction program has all required functionality. It lets you set matrix size, tile size, and then calculates the parallel reduction on CPU and GPU to compare the results. It then displays the computation speeds, memory transfer speeds, and displays matrices sizes and first 20 numbers.

For the 131072 array size with 128 thread block size  
 CPU = .33ms  
 GPU= .077ms  
 Mem= .19ms

For the 1048576 size array, with 64 thread block size  
 CPU=2.6ms  
 GPU=.24ms  
 Mem=.74ms  
For the 16777216 size array, with 64 thread block size  
 CPU=42ms  
 GPU=2.8ms  
 Mem=7.5ms

My Parallel Prefix Sum program has all requested functionality. It lets you set matrix size, tile size, and then calculates the parallel prefix on CPU and GPU to compare the results. It then displays computation speeds, memory transfer speeds, and displays first 20 of input and output arrays. It only worked for the smallest array size of 2048.  
  
For the 2048 array size with 64 thread block size  
 CPU=..0096ms

GPU=.11ms

Mem=.048ms

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A screenshot of a computer

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