CSC 6220: Parallel Computing I: Programming
Homework 4
Fall 2022

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```
> ./mm
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Starting square matrix (1024x1024) multiplication program...

Initialized matrices!
END TIME: -2.520735!
finished serialized matrix multiplication!
END TIME: -0.362404!
finished parallelized matrix multiplication (# of Threads: 2)!
END TIME: -0.354562!
finished parallelized matrix multiplication (# of Threads: 4)!
END TIME: -0.345452!
finished parallelized matrix multiplication (# of Threads: 8)!
END TIME: -0.351479!
finished parallelized matrix multiplication (# of Threads: 16)!
END TIME: -0.377346!
finished parallelized matrix multiplication (# of Threads: 32)!
END TIME: 1668464173.313792!
finished parallelized matrix multiplication (# of Threads: 2)!
END TIME: 1668464173.698408!
finished parallelized matrix multiplication (# of Threads: 4)!
END TIME: 1668464174.056475!
finished parallelized matrix multiplication (# of Threads: 8)!
END TIME: 1668464174.421519!
finished parallelized matrix multiplication (# of Threads: 16)!
END TIME: 1668464174.784189!
finished parallelized matrix multiplication (# of Threads: 32)!
END TIME: -0.341716!
finished parallelized matrix multiplication (# of Threads: 2)!
END TIME: -0.338861!
finished parallelized matrix multiplication (# of Threads: 4)!
END TIME: -0.339268!
finished parallelized matrix multiplication (# of Threads: 8)!
END TIME: -0.339984!
finished parallelized matrix multiplication (# of Threads: 16)!
END TIME: -0.340393!
finished parallelized matrix multiplication (# of Threads: 32)!
END TIME: -0.338558!
finished parallelized matrix multiplication (# of Threads: 2)!
END TIME: -0.338112!
finished parallelized matrix multiplication (# of Threads: 4)!
END TIME: -0.338297!
finished parallelized matrix multiplication (# of Threads: 8)!
END TIME: -0.338244!
finished parallelized matrix multiplication (# of Threads: 16)!
END TIME: -0.337884!
finished parallelized matrix multiplication (# of Threads: 32)!

End of program. Exiting...
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```

```
------------------------------------------------
Starting square matrix (1024x1024) multiplication program...

Initialized matrices!
END TIME: -2.554915!
finished serialized matrix multiplication!
END TIME: -0.392219!
finished parallelized matrix multiplication (# of Threads: 2)!
END TIME: -0.392598!
finished parallelized matrix multiplication (# of Threads: 4)!
END TIME: -0.396456!
finished parallelized matrix multiplication (# of Threads: 8)!
END TIME: -0.402602!
finished parallelized matrix multiplication (# of Threads: 16)!
END TIME: -0.379635!
finished parallelized matrix multiplication (# of Threads: 32)!
END TIME: -0.377955!
finished parallelized matrix multiplication (# of Threads: 2)!
END TIME: -0.417695!
finished parallelized matrix multiplication (# of Threads: 4)!
END TIME: -0.366853!
finished parallelized matrix multiplication (# of Threads: 8)!
END TIME: -0.403399!
finished parallelized matrix multiplication (# of Threads: 16)!
END TIME: -0.375247!
finished parallelized matrix multiplication (# of Threads: 32)!
END TIME: -0.349352!
finished parallelized matrix multiplication (# of Threads: 2)!
END TIME: -0.342409!
finished parallelized matrix multiplication (# of Threads: 4)!
END TIME: -0.354898!
finished parallelized matrix multiplication (# of Threads: 8)!
END TIME: -0.362124!
finished parallelized matrix multiplication (# of Threads: 16)!
END TIME: -0.362344!
finished parallelized matrix multiplication (# of Threads: 32)!
END TIME: -0.341566!
finished parallelized matrix multiplication (# of Threads: 2)!
END TIME: -0.338593!
finished parallelized matrix multiplication (# of Threads: 4)!
END TIME: -0.338508!
finished parallelized matrix multiplication (# of Threads: 8)!
END TIME: -0.337386!
finished parallelized matrix multiplication (# of Threads: 16)!
END TIME: -0.339513!
finished parallelized matrix multiplication (# of Threads: 32)!

End of program. Exiting...
------------------------------------------------
```

The first image was displaying strange outputs, and I struggled to get comprehensible results.

The second image seems more correct, especially when compared to the time difference for serialized matrix multiplication.

However, what was surprising was that the differences between the number of threads used was not as significant as I thought it would be.