

High Performance Computing: Homework 3

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1 Pitch your final project

See email.

2 Approximating Special Functions Using Taylor Series & Vectorization

Adding additional terms into the Taylor expansion in `sin4_vector` gives

```
Reference time: 26.5879
Taylor time:    5.9070      Error: 6.928125e-12
Intrin time:    1.7174      Error: 2.454130e-03
Vector time:    2.8851      Error: 6.928125e-12
```

3 Parallel Scan in OpenMP

After increasing `N` by an order of magnitude to get more consistent runtimes, on an Intel(R) Xeon(R) CPU @ 2.53GHz with 8 cores we obtain the following runtimes for our parallel implementation.

OMP_NUM_THREADS	time (s)
2	5.29
4	5.29
8	5.99
16	3.84
32	2.91
64	2.91