

HW5

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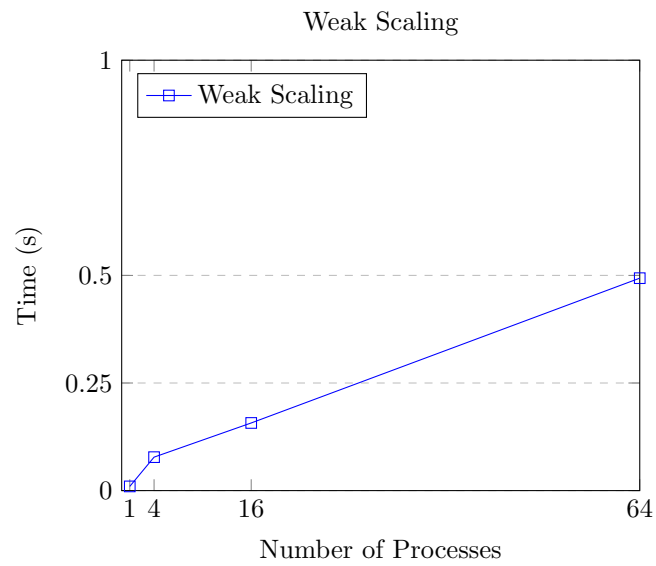
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1 MPI-parallel two-dimensional Jacobi smoother

See jacobi2d-mpi.cpp.

Weak scaling: $N_t = 100$, for 1000 iterations.

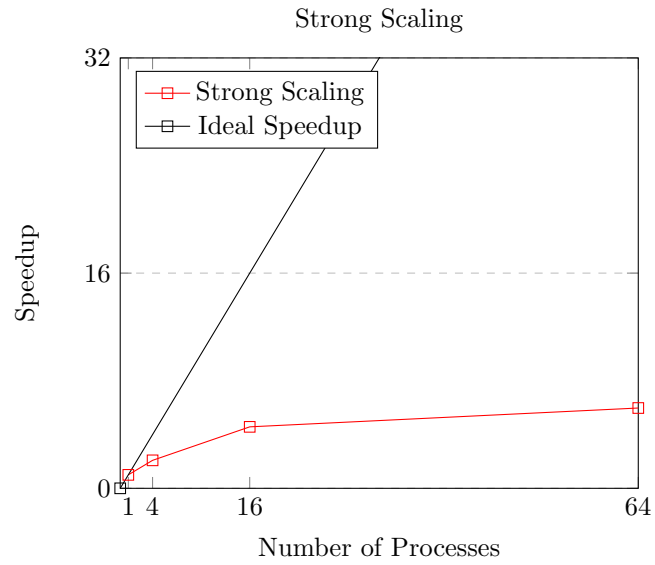
p	Time (s)
1	0.009742
4	0.077736
16	0.157146
64	0.493577



Weak scaling study suggests high communication overhead.

Strong scaling: $N = 1600$, for 1000 iterations.

p	Time (s)	Speedup
1	5.630781	1
4	2.705367	2.08
16	1.232431	4.57
64	0.942672	5.97



Strong scaling study shows speedup but its growth is nowhere close to ideal.

2 Parallel sample sort

See `ssort.cpp`.

$p = 64$

N	Time (s)
10^4	0.024693
10^5	0.047699
10^6	0.227989