HPC project appendix tables

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Average execution time (s)				
	1 node	4 nodes	16 nodes	64 nodes
1K bodies	0.96	0.36	0.58	2.72
10K bodies	2.26	2.25	1.53	2.61
100K bodies	42.72	20.93	13.04	15.00
1M bodies	686.01	305.72	164.01	157.75

Execution time of 10,000 bodies with $O(n^2)$ and B-H algorithms (TBB vs OpenMP) (s)					
	run 1	run 2	run 3	run 4	average
$O(n^2)$ TBB	68.77	67.39	67.23	67.54	67.74
$O(n^2)$ OpenMP	71.63	71.87	69.43	71.35	71.07
Barnes–Hut TBB	1.92	1.94	1.94	1.93	1.93
Barnes–Hut OpenMP	2.32	2.37	2.34	2.31	2.34

Execution time of 10,000 bodies B-H algorithm with different θ (s)					
θ	run 1	run 2	run 3	run 4	average
0.1	17.41	18.15	18.51	18.49	18.14
0.2	6.75	6.83	6.82	7.07	6.87
0.3	3.86	3.89	3.89	3.86	3.87
0.4	2.66	2.64	2.61	2.78	2.67
0.5	2.00	1.97	1.97	1.96	1.97
0.6	1.60	1.58	1.57	1.59	1.59
0.7	1.37	1.38	1.39	1.35	1.37
0.8	1.14	1.16	1.16	1.18	1.16
0.9	1.02	0.99	0.99	0.99	1.00

1,000 bodies Barnes–Hut algorithm timing details (s)				
	1 node	4 nodes	16 nodes	64 nodes
Own bounding box computation	-	0.000006	0.000006	0.000006
Bodies filtering by subquadrant	-	0.001	0.001	0.001
Own quadtree construction	0.07	0.01	0.003	0.002
Complete quadtree gathering	-	0.24	0.39	1.63
Bodies update	0.47	0.03	0.01	0.015
All bodies gathering	-	0.07	0.17	1.06
Complete bounding box computation	0.40	0.002	0.002	0.002
Total	0.96	0.36	0.58	2.72

10,000 bodies Barnes–Hut timing details (s)				
	1 node	4 nodes	16 nodes	64 nodes
Own bounding box computation	-	0.000009	0.00001	0.00001
Bodies filtering by subquadrant	-	0.01	0.01	0.008
Own quadtree construction	0.69	0.15	0.035	0.009
Complete quadtree gathering	-	1.19	1.04	1.66
Own bodies update	1.56	0.40	0.14	0.05
All bodies gathering	-	0.48	0.29	0.88
Complete bounding box computation	0.002	0.002	0.002	0.002
Total	2.26	2.25	1.53	2.61

100,000 bodies Barnes–Hut timing details (s)				
	1 node	4 nodes	16 nodes	64 nodes
Own bounding box computation	-	0.00001	0.00001	0.00001
Bodies filtering by subquadrant	-	0.14	0.08	0.08
Own quadtree construction	11.19	1.81	0.37	0.09
Complete quadtree gathering	-	9.04	8.89	10.74
Own bodies update	30.92	6.15	1.61	0.53
All bodies gathering	-	3.75	2.06	3.53
Complete bounding box computation	0.60	0.01	0.005	0.004
Total	42.72	20.93	13.04	15.00

1,000,000 bodies Barnes–Hut timing details (s)				
	1 node	4 nodes	16 nodes	64 nodes
Own bounding box computation	-	0.00002	0.00002	0.00002
Bodies filtering by subquadrant	-	1.87	0.7	0.69
Own quadtree construction	210.81	33.81	4.92	1.07
Complete quadtree gathering	-	125.38	106.90	116.79
Own bodies update	474.44	101.59	23.25	6.89
All bodies gathering	-	42.90	28.03	32.16
Complete bounding box computation	0.75	0.12	0.11	0.12
Total	686.01	305.72	164.01	157.75