

nbody.py: (original version)

326007706 function calls in 136.084 seconds

Ordered by: cumulative time

ncalls	tottime	percall	cumtime	percall	filename:lineno(function)
1	0.000	0.000	136.084	136.084	{built-in method builtins.exec}
1	0.000	0.000	136.084	136.084	nbody_0.py:1(<module>)
1	0.670	0.670	136.084	136.084	nbody_0.py:125(nbody)
20000000	28.252	0.000	135.405	0.000	nbody_0.py:67(advance)
20000000	34.176	0.000	96.341	0.000	nbody_0.py:54(update_vs)
120000000	32.152	0.000	62.164	0.000	nbody_0.py:47(compute_b)
120000000	30.013	0.000	30.013	0.000	nbody_0.py:51(compute_mag)
10000000	3.907	0.000	3.907	0.000	nbody_0.py:62(update_rs)
20002000	3.268	0.000	3.268	0.000	nbody_0.py:44(compute_deltas)
20002000	2.105	0.000	2.105	0.000	{method 'append' of 'list' objects}
14001401	1.533	0.000	1.533	0.000	{method 'keys' of 'dict' objects}
200	0.004	0.000	0.006	0.000	nbody_0.py:88(report_energy)
100	0.003	0.000	0.003	0.000	{built-in method builtins.print}
2000	0.001	0.000	0.001	0.000	nbody_0.py:85(compute_energy)
1	0.000	0.000	0.000	0.000	nbody_0.py:108(offset_momentum)
1	0.000	0.000	0.000	0.000	{method 'disable' of
'_lsprof.Profiler'					objects}

nbody_1.py:

54002006 function calls in 43.538 seconds

Ordered by: cumulative time

ncalls	tottime	percall	cumtime	percall	filename:lineno(function)
1	0.000	0.000	43.538	43.538	{built-in method builtins.exec}
1	0.000	0.000	43.538	43.538	nbody_1.py:1(<module>)
1	0.000	0.000	43.538	43.538	nbody_1.py:116(nbody)
100	22.669	0.227	43.533	0.435	nbody_1.py:58(advance)
20000000	17.757	0.000	17.757	0.000	nbody_1.py:49(update_vs)
20001000	1.803	0.000	1.803	0.000	{method 'append' of 'list' objects}
14000701	1.304	0.000	1.304	0.000	{method 'keys' of 'dict' objects}
100	0.003	0.000	0.003	0.000	{built-in method builtins.print}
100	0.001	0.000	0.001	0.000	nbody_1.py:79(report_energy)
1	0.000	0.000	0.000	0.000	nbody_1.py:99(offset_momentum)
1	0.000	0.000	0.000	0.000	{method 'disable' of
'_lsprof.Profiler'					objects}

nbody_2.py:

326007706 function calls in 129.340 seconds

Ordered by: cumulative time

ncalls	tottime	percall	cumtime	percall	filename:lineno(function)
1	0.000	0.000	129.340	129.340	{built-in method builtins.exec}
1	0.000	0.000	129.340	129.340	nbody_2.py:1(<module>)
1	0.606	0.606	129.340	129.340	nbody_2.py:130(nbody)
2000000	25.038	0.000	128.725	0.000	nbody_2.py:72(advance)
20000000	32.867	0.000	93.169	0.000	nbody_2.py:59(update_vs)
120000000	31.255	0.000	60.303	0.000	nbody_2.py:52(compute_b)
120000000	29.047	0.000	29.047	0.000	nbody_2.py:56(compute_mag)
10000000	3.812	0.000	3.812	0.000	nbody_2.py:67(update_rs)
20002000	3.265	0.000	3.265	0.000	nbody_2.py:49(compute_deltas)
20002000	2.016	0.000	2.016	0.000	{method 'add' of 'set' objects}
14001401	1.426	0.000	1.426	0.000	{method 'keys' of 'dict' objects}
200	0.004	0.000	0.006	0.000	nbody_2.py:93(report_energy)
100	0.003	0.000	0.003	0.000	{built-in method builtins.print}
2000	0.001	0.000	0.001	0.000	nbody_2.py:90(compute_energy)
1	0.000	0.000	0.000	0.000	nbody_2.py:113(offset_momentum)
1	0.000	0.000	0.000	0.000	{method 'disable' of

'_lsprof.Profiler' objects}

nbody_3.py:

326007706 function calls in 132.748 seconds

Ordered by: cumulative time

ncalls	tottime	percall	cumtime	percall	filename:lineno(function)
1	0.000	0.000	132.748	132.748	{built-in method builtins.exec}
1	0.000	0.000	132.748	132.748	nbody_3.py:1(<module>)
1	0.654	0.654	132.748	132.748	nbody_3.py:134(nbody)
2000000	27.120	0.000	132.086	0.000	nbody_3.py:73(advance)
20000000	33.676	0.000	94.435	0.000	nbody_3.py:60(update_vs)
120000000	31.438	0.000	60.759	0.000	nbody_3.py:53(compute_b)
120000000	29.321	0.000	29.321	0.000	nbody_3.py:57(compute_mag)
10000000	3.807	0.000	3.807	0.000	nbody_3.py:68(update_rs)
20002000	3.229	0.000	3.229	0.000	nbody_3.py:50(compute_deltas)
20002000	2.028	0.000	2.028	0.000	{method 'append' of 'list' objects}
14001401	1.468	0.000	1.468	0.000	{method 'keys' of 'dict' objects}
200	0.004	0.000	0.006	0.000	nbody_3.py:95(report_energy)
100	0.003	0.000	0.003	0.000	{built-in method builtins.print}
2000	0.001	0.000	0.001	0.000	nbody_3.py:92(compute_energy)
1	0.000	0.000	0.000	0.000	nbody_3.py:116(offset_momentum)
1	0.000	0.000	0.000	0.000	{method 'disable' of

'_lsprof.Profiler' objects}

nbody_4.py:

294004507 function calls in 113.640 seconds

Ordered by: cumulative time

ncalls	tottime	percall	cumtime	percall	filename:lineno(function)
1	0.000	0.000	113.640	113.640	{built-in method builtins.exec}
1	0.000	0.000	113.640	113.640	nbody_4.py:1(<module>)
1	0.523	0.523	113.640	113.640	nbody_4.py:127(nbody)
2000000	14.887	0.000	113.110	0.000	nbody_4.py:75(advance)
20000000	32.058	0.000	91.268	0.000	nbody_4.py:59(update_vs)
120000000	30.864	0.000	59.210	0.000	nbody_4.py:52(compute_b)
120000000	28.346	0.000	28.346	0.000	nbody_4.py:56(compute_mag)
10000000	3.761	0.000	3.761	0.000	nbody_4.py:67(update_rs)
20002000	2.998	0.000	2.998	0.000	nbody_4.py:49(compute_deltas)
2000202	0.196	0.000	0.196	0.000	{method 'keys' of 'dict' objects}
200	0.003	0.000	0.004	0.000	nbody_4.py:92(report_energy)
100	0.002	0.000	0.002	0.000	{built-in method builtins.print}
2000	0.001	0.000	0.001	0.000	nbody_4.py:89(compute_energy)
1	0.000	0.000	0.000	0.000	nbody_4.py:110(offset_momentum)
1	0.000	0.000	0.000	0.000	{method 'disable' of

'_lsprof.Profiler' objects}

nbody_opt.py:

22000606 function calls in 29.483 seconds

Ordered by: cumulative time

ncalls	tottime	percall	cumtime	percall	filename:lineno(function)
1	0.000	0.000	29.483	29.483	{built-in method builtins.exec}
1	0.000	0.000	29.483	29.483	nbody_opt.py:1(<module>)
1	0.000	0.000	29.483	29.483	nbody_opt.py:116(nbody)
100	11.690	0.117	29.479	0.295	nbody_opt.py:60(advance)
20000000	17.616	0.000	17.616	0.000	nbody_opt.py:49(update_vs)
2000301	0.173	0.000	0.173	0.000	{method 'keys' of 'dict' objects}
100	0.002	0.000	0.002	0.000	{built-in method builtins.print}
100	0.001	0.000	0.001	0.000	nbody_opt.py:80(report_energy)
1	0.000	0.000	0.000	0.000	nbody_opt.py:98(offset_momentum)
1	0.000	0.000	0.000	0.000	{method 'disable' of

'_lsprof.Profiler' objects}

How much speedup:

nbody_1 speeds up by $136.084/43.538 = 3.1256$

nbody_2 speeds up by $136.084/129.340 = 1.0521$

nbody_3 speeds up by $136.084/132.748 = 1.0251$

nbody_4 speeds up by $136.084/113.640 = 1.1975$

nbody_opt speeds up by $136.084/29.483 = 4.6157$