Part 2. A comparison of versions of the N body problem

Objective:

Exploring N body problem looking at the performance figures of the N body solvers.

Tabulation:

Threads	Basic	Reduced Default Sched	Reduced Forces Cyclic	Reduced All Cyclic
1	7.71	3.90	3.90	3.90
2	3.87	2.94	1.98	2.01
4	1.95	1.73	1.01	1.08
8	0.99	0.95	0.54	0.61

Discussion:

For p > 1, cyclic outperforms block partitioning; in other words, enhanced load balancing more than makes up for cache misses.

The performance of the cyclic partitions differs little for p = 2, but as p rises, applying a cyclic partition just to the force computations works better; in other words, the overhead associated with changing partitions is smaller than that associated with false sharing.

Execution times that don't take advantage of symmetry are around twice as long as when a cyclic partition is employed for the force computations. The later implementation calls for p times more RAM, though. Therefore, the partially cyclic solution is the preferred option if enough memory is available.

Conclusion:

I did not understand this section of the assignment but I did try to state the observations for the table that was provided in the textbook the book.