Algorithm

Graph traversal is carried out by starting from every vertex in the graph and "visiting" all its outbound neighbours. The recurrence stops when the length of the current path reaches the number of nodes in the graph.

The algorithm uses an AtomicBoolean which is set whenever the first Hamiltionian cycle is found, and so the search from the other nodes will be skipped.

The search was parallelized by using a Thread Pool with a fixed number of threads, and runnable tasks were submitted to the pool with each task having different starting vertex. This evenly distributed workload made parallelization possible.

Experiments

Nb. of	Nb. of	Time (ms)
vertices	Threads	
5	1	4
5 5 5 5 5 5 5 5	2	1
5	3	1
5	4	0
5	5	1
5	10	1
5	15	1
5	30	0
10	1	0
10	3	0
10		1
10	4	2
10	5	0
10	10	1
10	15	1
10	30	5
50	1	0
50	2	1
50	3	0
50	4	1
50	5	1

50 15 2 50 30 3 100 1 0 100 2 1 100 3 0 100 4 0 100 10 2 100 15 1 100 30 3 500 1 1 500 2 1 500 3 1 500 4 2 500 5 2 500 10 1 500 15 3 500 30 3 1000 1 1 1000 2 2 1000 3 3 1000 4 3 1000 4 3 1000 15 4 1000 30 7 2500 2 8 2500 3 8			
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5000	30	95	