PDP Lab 6 – Hamiltonian Cycle

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Problem Requirements

Algorithm description: in order to search for a Hamiltonian cycle in a graph, backtracking is used. The search starts from every vertex in the graph and "visits" all its outbound neighbours, while keeping track of the current path. The recurrence stops when the length of the current path has reached the number of nodes in the graph.

Parallelizing the search was done using a Thread Pool with a fixed number of threads, and runnable tasks are submitted to the pool, with each task consisting of a different starting point for the search, meaning a different vertex. Thus, the workload is split evenly.

Computer Specifications:

- Intel Core i7-4790 CPU @ 3.60GHz, 4 Cores, 8 Logical Processors
- 16GB RAM

Computer Specifications
Tests Run
Times are measured in ms

Vertices	Sequential	Parallel
100	4	31
500	260	170
1000	547	1138
1300	2497	6141
1500	3718	9470

Conclusion: switching between threads is rather costly when talking about backtracking, as the time starts increasing exponentially, at least when n is still in the order of thousands.