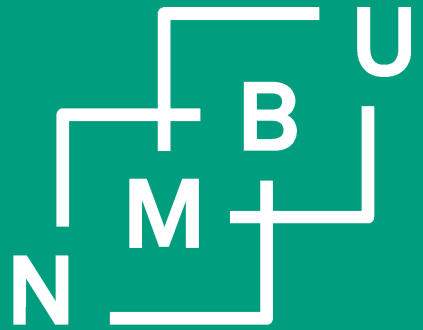
U
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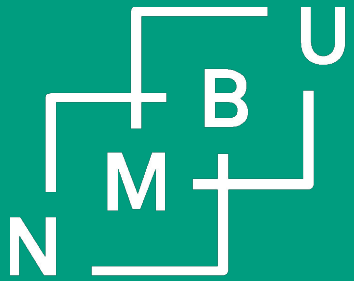


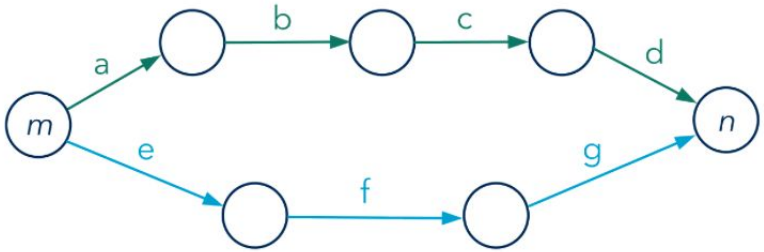
Norwegian University
of Life Sciences

Paths in labelled graphs

By Jorid Holmen, Christine Isaksen and Christianie Torres
05.12.22

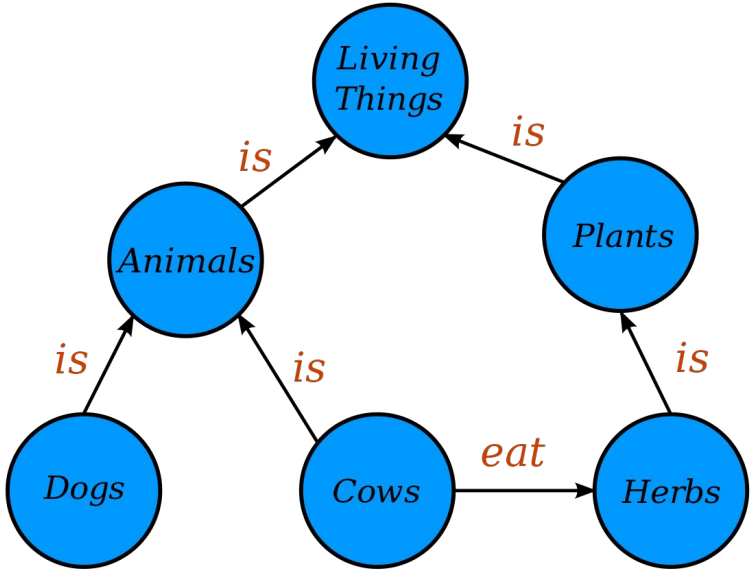
The project

Is there a path *p* and a path *q* that contains the same start node and end node?



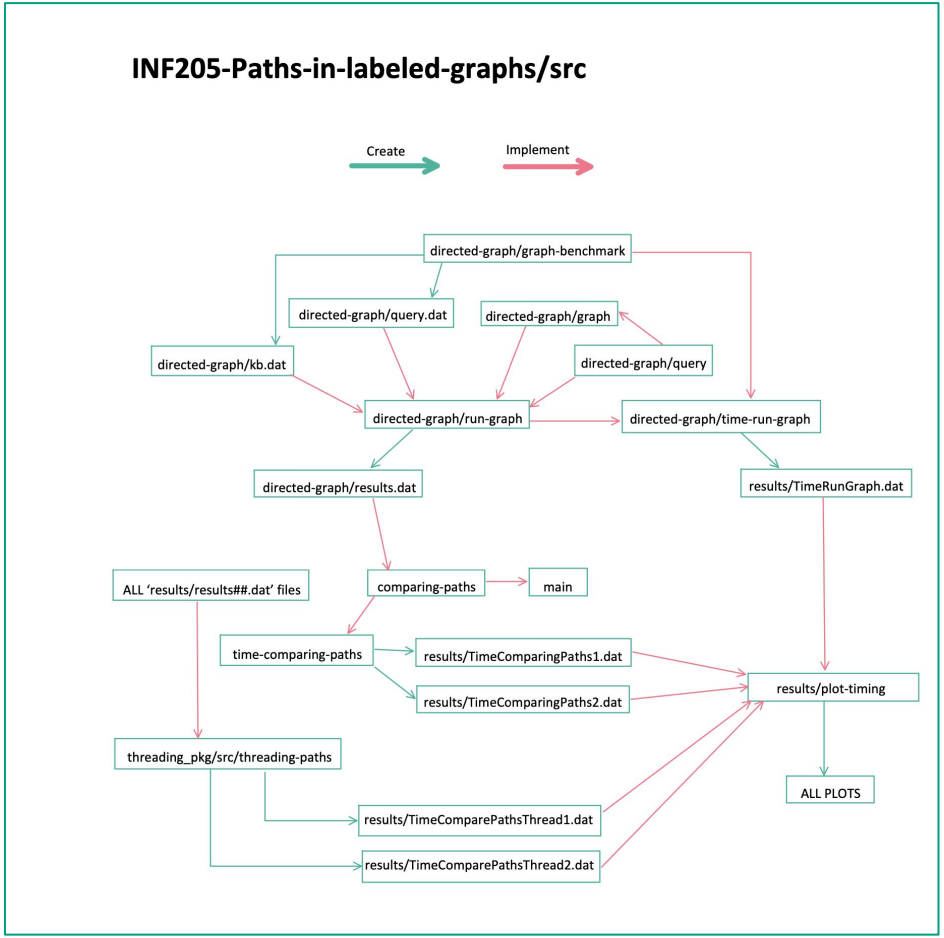
p = (a, b, c, d)

q = (e, f, g)



Data structure

- graph-benchmark.cpp
- run-graph.cpp
  - graph.cpp
  - query.cpp
- comparing-paths.cpp
  - main.cpp
- time-comparing-paths.cpp
- time-run-graph.cpp
- plot_timing_inf205.py
- threading-paths.cpp
- plot_time_threading.py



In-depth explanation of the code

- Already existing code
  - graph-benchmark.cpp
  - query.cpp
  - graph.cpp
  - run-graph.cpp
- comparing-paths.cpp
- time-comparing-paths.cpp
- time-run-graph.cpp
- threading-paths.cpp
- plot_timing_inf205.py
- plot_time_threading.py
- Header files

Concurrency

Threading

- Running 1 CPU for each thread
- Parallelization

ROS

- Messages
- Publisher

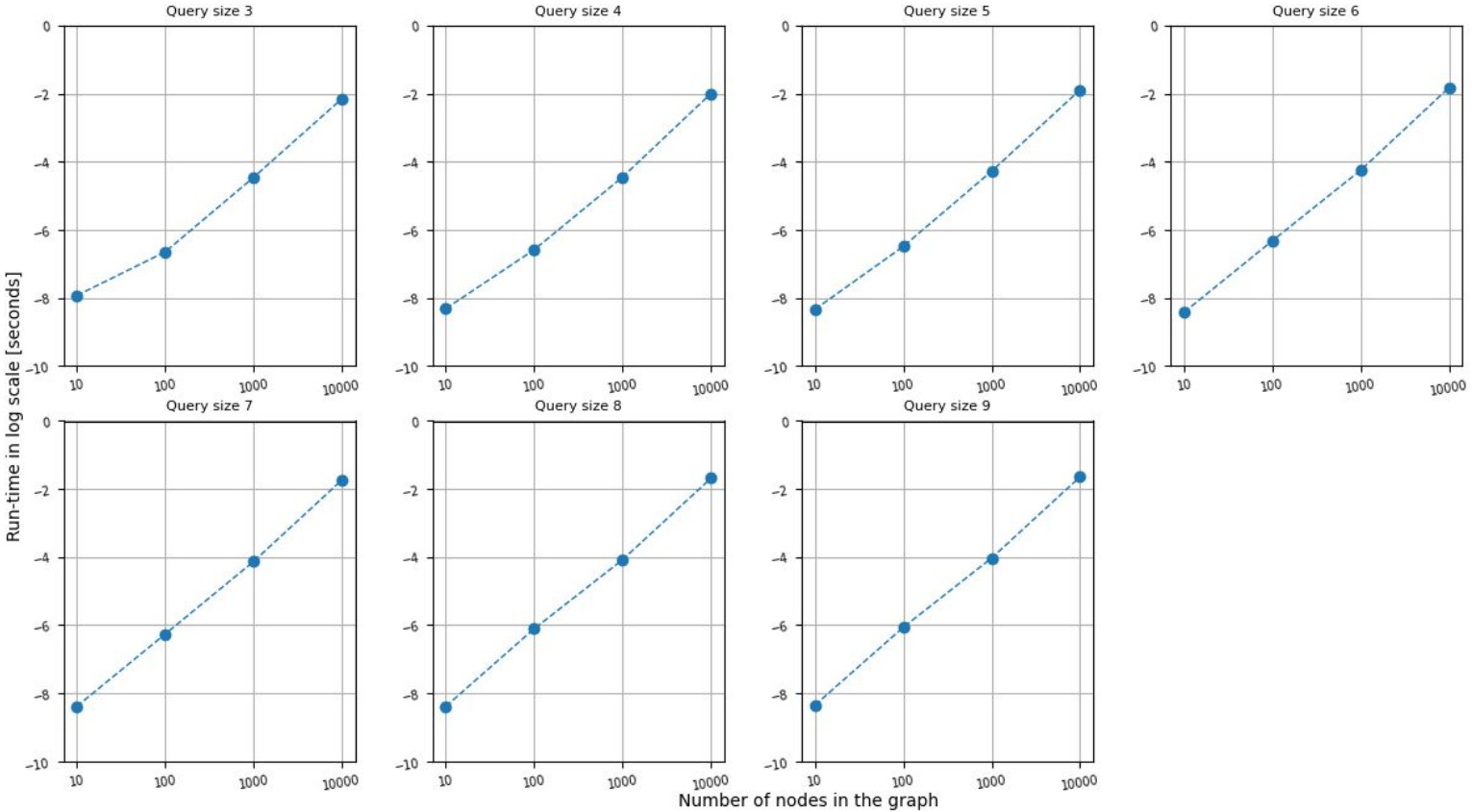
Implementation of concurrency in our code

- threading-paths

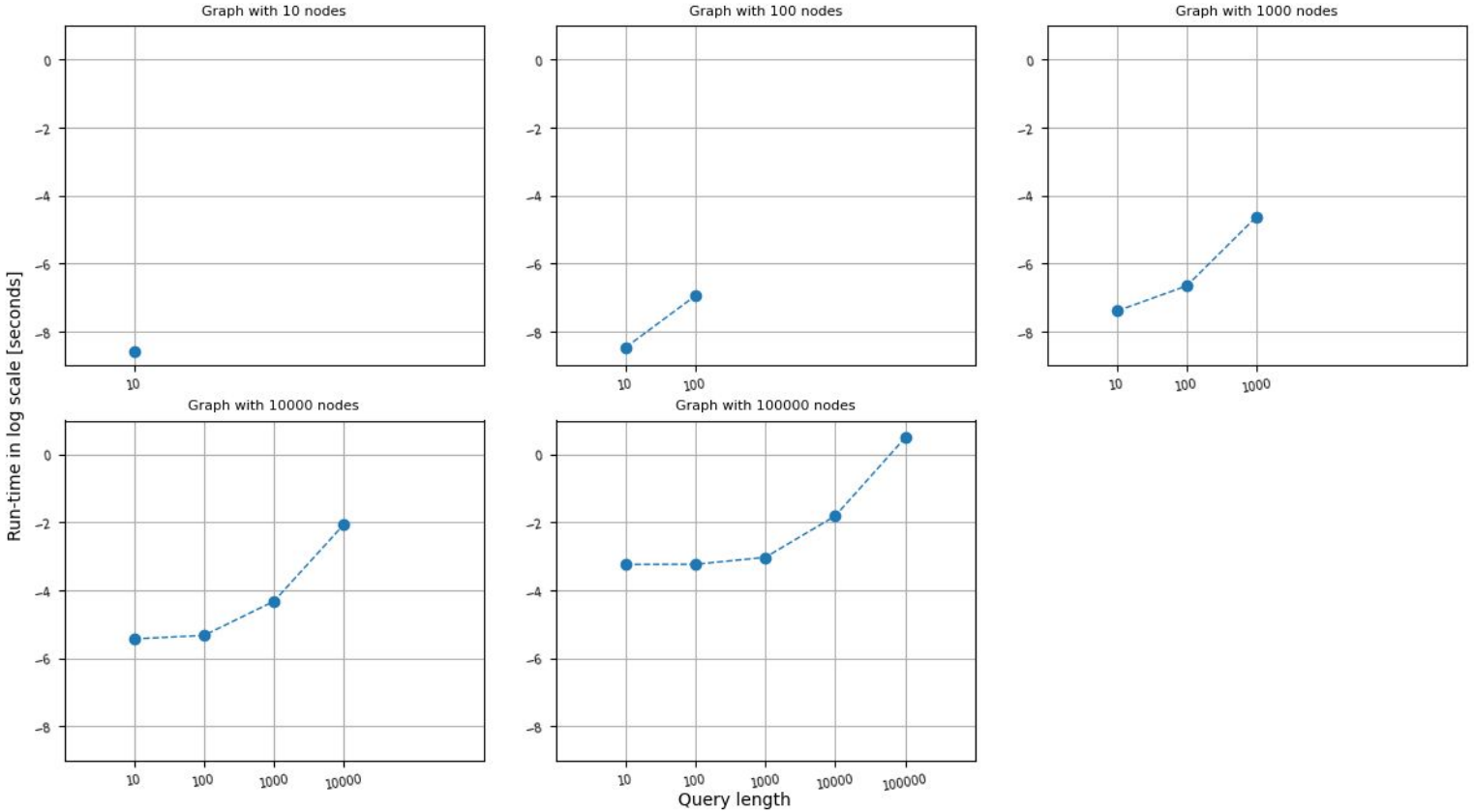
Performance

- time-run-graph.cpp
- time-comparing-paths.cpp

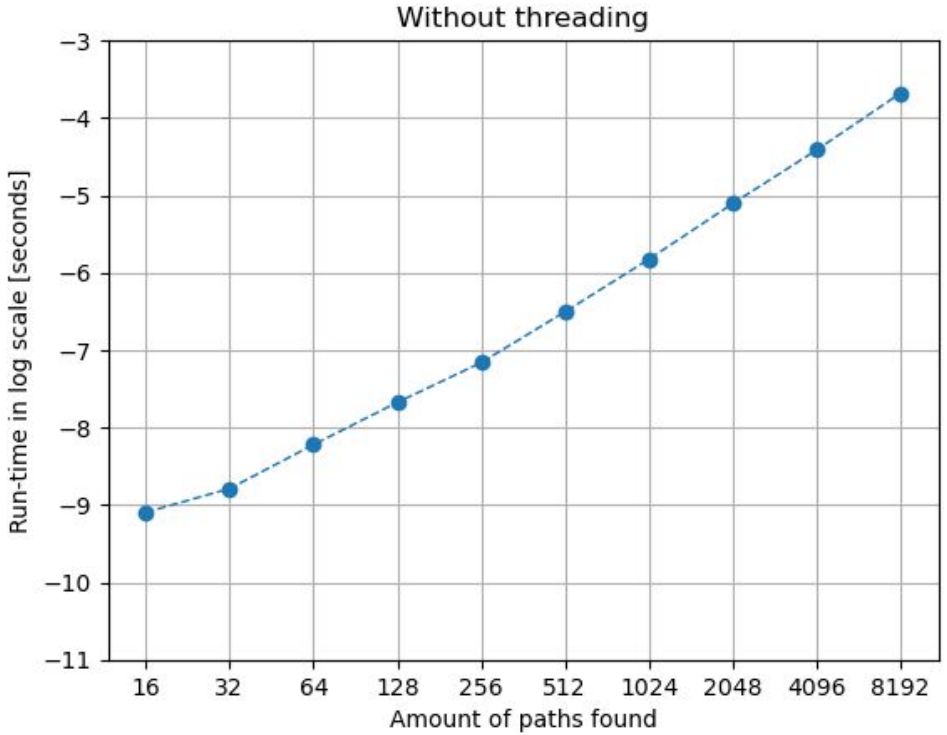
Run time for run-graph.cpp with different amount of nodes in the grap

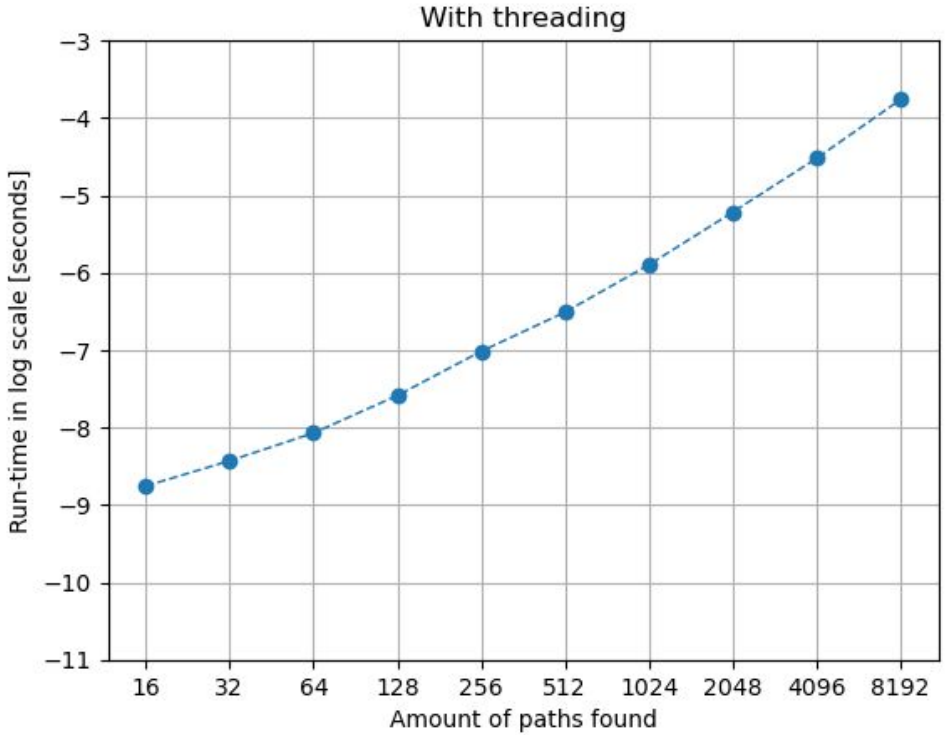


Run time for run-graph.cpp with different query size

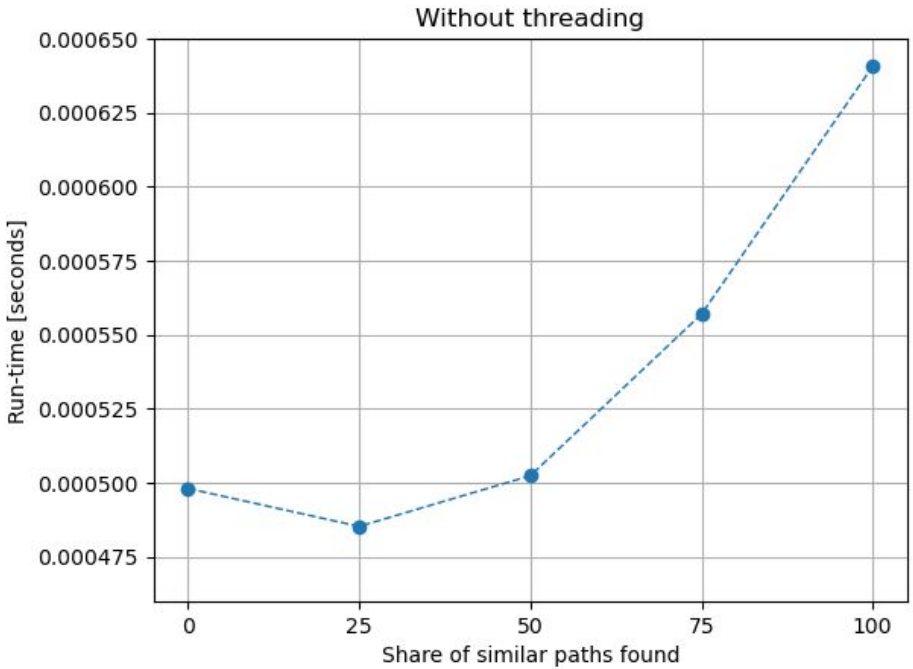


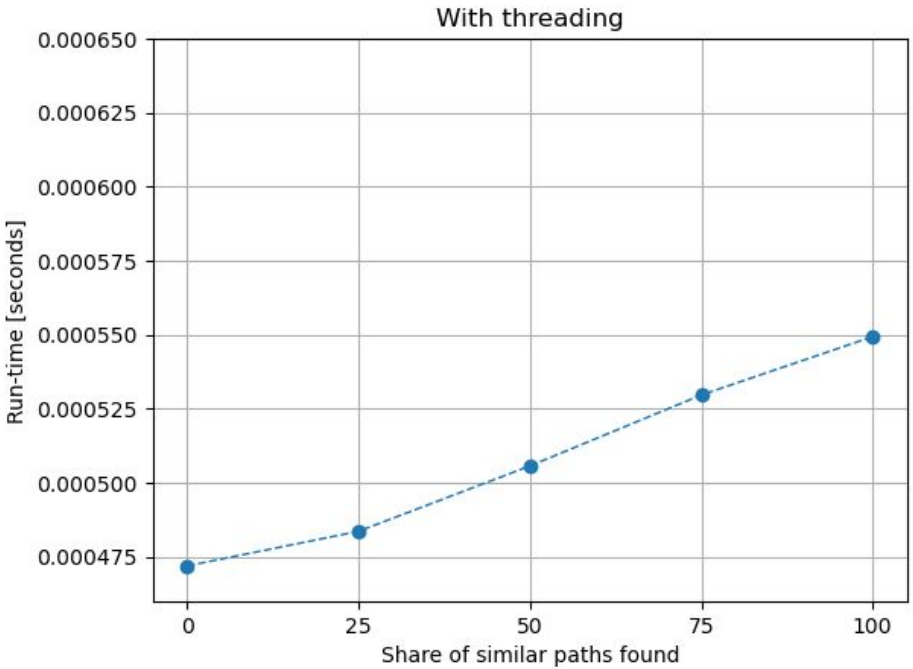
Run time for comparing the paths with different amounts of paths found





Run time for comparing the paths with different amounts of equal paths found





Memory leak

- No memory leak in the initial code
- There might be some in the threading

Documentation

- README.md
- Doxygen
- Comment blocks in code
- GitHub

https://github.com/joridho/INF205-Paths-in-labelled-graphs.git

NB! the amounts of commits does not represent the amount of work

Future improvements

- Track down the first queries, and assign p and q to either one of the paths
- An easier way to implement the threading
- Most likely memory leak

Thank you for your attention!