CSS 534 Program 5 Report

Nick Rohde

11^{th} of December 2018

Contents

1 Overview

2 Discussion

3 Analysis

Table 1: Comparison of Computation for MPI

# Nodes	Average Execution Time (s)†	Performance Improvement
1	32.8419	N/A
2	16.0231	2.050
4	7.2312	4.542

† Average over 100 trials

4 Source Code

4.1 Program 5

The source code for Program 5 can also be found in the included src.zip folder.

4.2 Laboratory 5

The source code for laboratory 5 #TODO

---

5 Output

This section provides the output generated by program 5 #TODO

5.1 Program 5

Performance: 1 compute node, 1 core: 457 seconds.
4 compute nodes, 5 cores: 193 seconds.
Improvement: $\frac{457}{193} \approx 2.368$ times.

```
/** Sequential Program **/
java SA 1000000 ../input_files/cities.txt
Best solution found:path: 21 -> 27 -> 24 -> 25 -> 7 -> 31 -> 2 -> 22 -> 18 -> 12 -> 15 -> 28 -> 26
    -> 4 -> 20 -> 9 -> 32 -> 14 -> 8 -> 34 -> 30 -> 19 -> 13 -> 23 -> 6 -> 10 -> 35 -> 5 -> 0 ->
    11 -> 33 -> 17 -> 29 -> 3 -> 1 -> 16 | distance: 447.38786463942176
Elapsed time:11409 ms.

-----------------------------------------

/** MPI Program **/
run_mpi 4 Runner 2000000 ../input_files/cities.txt
Solution is:path: 21 -> 27 -> 24 -> 25 -> 7 -> 31 -> 2 -> 22 -> 18 -> 12 -> 15 -> 28 -> 26 -> 4 ->
    20 -> 9 -> 32 -> 14 -> 8 -> 34 -> 30 -> 19 -> 13 -> 23 -> 6 -> 10 -> 35 -> 5 -> 0 -> 11 -> 33
    -> 17 -> 29 -> 3 -> 1 -> 16 | distance: 447.38786463942176
Execution time: 7898 ms.

-----------------------------------------

/** MapReduce Program **/

-----------------------------------------

/** Spark Program **/

-----------------------------------------

/** MASS Program **/
```

5.2 Laboratory 5