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Message Passing Programming Coursework Assignment

Exam number B136013

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Contents

1 Introduction

What is the project? 2d domain decomposition

2 Description

Language used: C brief description of the design Tools from MPP (derived types, Async communication, virtual topologies) Boundary conditions: horizontal->sawtooth vertical->periodic Terminate condition: D parameter

3 Implementation

implementation of your MPI program

3.1 MPI Scatter

3.2 MPI Gather

4 Testing

Platform: backend of cirrus (.pbs), compiled using -O3 Build, Run and Submit job: in Readme.md

4.1 Correctness

Test: parallel code produces the same output as the serial

how long the code needs to run in order to give a reasonable assessment of its performance and/or correctness It is not necessary to run all and be correct

4.2 Performance

Timing: exclude I/O from timing The timing starts before the scatter and ends after the gather Graphs: demonstrate that the performance of the code improves as you increase

the number of processes. processes Input variety: performance change input(problem) size and see how it scales Speedup of strong scaling: performance metrics speed up vs ideal (linear) speedup average time per iteration

5 Conclusion

In conclusion the decision about scheduling selection and number of threads that need to be deployed is not an obvious choice. It always depends on the problem and how the work load is distributed between iterations. Analysis and measurements using different configuration options will guide the developer on what is the best approach of solving a problem effiently.