Homework 3
CS 5220

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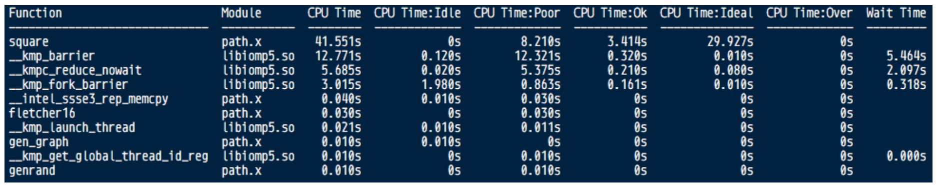
1 Introduction

2 Base OpenMP Code

2.1 Profiling

A look into performance of the code was conducted by using Intel's VTUNE on Totient. Due to some technical issues with the cluster, we ran the "hotspots" option for our analysis rather than the "advanced-hotspots" one.



```
Function                        Module        CPU Time  CPU Time:Idle  CPU Time:Poor  CPU Time:Ok  CPU Time:Ideal  CPU Time:Over  Wait Time
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square                          path.x         41.551s             0s         8.210s       3.414s         29.927s             0s
__kmp_barrier                   libiomp5.so    12.771s         0.120s        12.321s       0.320s          0.010s             0s     5.464s
__kmpc_reduce_nowait            libiomp5.so     5.685s         0.020s         5.375s       0.210s          0.080s             0s     2.097s
__kmp_fork_barrier              libiomp5.so     3.015s         1.980s         0.863s       0.161s          0.010s             0s     0.318s
__intel_ssse3_rep_memcpy        path.x          0.040s         0.010s         0.030s           0s              0s             0s
fletcher16                      path.x          0.030s             0s         0.030s           0s              0s             0s
__kmp_launch_thread             libiomp5.so     0.021s         0.010s         0.011s           0s              0s             0s
gen_graph                       path.x          0.010s         0.010s             0s           0s              0s             0s
__kmp_get_global_thread_id_reg  libiomp5.so     0.010s             0s         0.010s           0s              0s             0s     0.000s
genrand                         path.x          0.010s             0s         0.010s           0s              0s             0s
```

Figure 1: Most time consuming functions in the base code.

2.2 Scaling

3 OpenMPI

3.1 Profiling

3.2 Scaling

4 Processor Offloading

5 Additional Changes

Future, probably also want to test compiler flags, blocking (?)

6 Overview

References