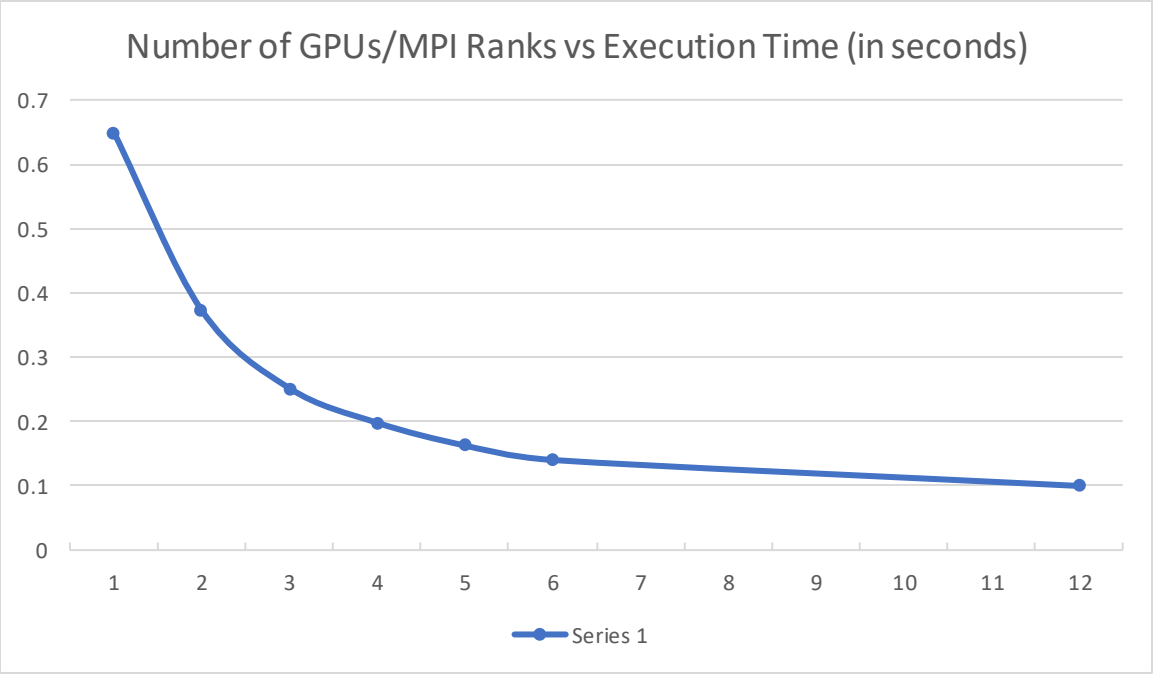
Highlife Assignment 3

**Usage: ./highlife-exe <pattern> <grid_size> <num_iter> <block_size> <output?: 0 or 1>**




**All 7 Simulations Ordered by Cell Updates per Second**

| Grid Size | Iterations | MPI Ranks | Execution Time | Cell Updates / sec | Cell Updates / sec / rank |
|---|---|---|---|---|---|
| 16384 | 128 | 1 | 0.649696 | 52885870265 | 52885870265 |
| 16384 | 128 | 2 | 0.373271 | 92050382612 | 46025191306 |
| 16384 | 128 | 3 | 0.251789 | 1.36462E+11 | 45487476112 |
| 16384 | 128 | 4 | 0.198079 | 1.73465E+11 | 43366205363 |
| 16384 | 128 | 5 | 0.162736 | 2.11138E+11 | 42227581319 |
| 16384 | 128 | 6 | 0.140133 | 2.45194E+11 | 40865628091 |
| 16384 | 128 | 12 | 0.099794 | 3.44307E+11 | 28692221283 |

The table above lists all 7 simulations ordered by the total cell updates per second. The fastest simulation was the one with the most GPUs used, as the computation was split among more processors. Also, in the table is the number of cell updates per second per GPU. This data shows how the overhead of the MPI messaging slows down each individual processor. Because of this overhead, the simulation with 12 GPUs ran about 6.5 times faster than the one with only 1 GPU, rather than the theoretical max of 12 times if the was no additional overhead.