CSCD 439/539 GPU Computing Lab1

Finding Primes on GPU

**Lab Report**

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**The only combination that should be incorrect is the one were the blockSize is 64, this results in a gridSize of 78126, which is greater then 65536. There wasn’t a noticeable difference in performance compared to the other configurations, but I did notice during other testing that invalid sizes seemed to result in the gpu kernel not being ran at all.**

1. Please use N=10,000,000, and blockSize as a variable

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **blockSize(in number of threads)** | **64** | **128** | **256** | **512** | **1024** |
| **GPU Time Cost (sec)** | **0.477** | **0.480** | **0.499** | **0.431** | **0.423** |
| **Speedups (compared with sequential time cost)** | **9.20x** | **9.15x** | **9.67x** | **10.20x** | **10.25x** |
| **Sequential Time Cost on CPU (sec)** | **4.389** | **4.390** | **4.340** | **4.397** | **4.342** |

1. Please use blockSize = 1024, and vary input **N** to fill in the table below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **N** | **200,000** | **2,000,000** | **4,000,000** | **8,000,000** | **16,000,000** | **32,000,000** |
| **GPU Time Cost (sec)** | 0.236 | 0.262 | 0.307 | 0.400 | 0.691 | 1.446 |
| **CPU Time Cost (sec)** | 0.052 | 0.544 | 1.305 | 3.235 | 8.470 | 22.53 |
| **Speedups** | 0.22x | 2.08x | 4.245x | 8.08x | 12.24x | 15.58x |