CSCD 439

HW4

Michael Peterson

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Input Size | 1048576 | 16777216 | 67108864 | 143217728 |
| Block Dimensions | 1 X 1024 | 1 X 1024 | 1 X 1024 | 1 X 1024 |
| T1: time cost for reduce2 (ms) | 0.000583 | 0.007765 | 0.000115 | 0.000136 |
| T2: time cost for reduce3 (ms) | 0.000424 | 0.004985 | 0.000092 | 0.00011 |
| Speedup = T1 / T2 | 1.375 | 1.557673019 | 1.25 | 1.236363636 |

4, Do you identify any advantage of reduce3() over reduce2() kernel? Or vice versus? And why ? ( hint: in terms of performance, such as bank conflicts or condition divergence )

**Reduce2 will cause more bank conflicts then reduce3 because the threads are not reading in contiguous locations from shared or global memory.**

5, What are disadvantage(s) of reduce2()? And any disadvantages for reduce3()? And Why? ( hint: in terms of performance, such as bank conflicts or condition divergence )

**reduce 2 will cause divergence at the first if statement within the loop because the condition will split the warps into separate execution paths.**