CS 4370 - Parallel Programming

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Class: CS 4370 - Parallel Programming for Many-core Gpus

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Project 4: Histogram

Report

For this lab, we were able to get our code fully functional and working. We executed the code using the following commands:

```
nvcc Brickler-Ivery-Paxson_Project4_Task1.cu -o Project4_Task1 -arch=sm_30 &&
./Project4_Task1
```

```
nvcc Brickler-Ivery-Paxson_Project4_Task2.cu -o Project4_Task2 -arch=sm_30 &&
./Project4_Task12
```

Task 1 Runtime Table

Time	131072	1048576
CPU Comp Time (s)	0.000376	0.002996
GPU Comp Time (s)	0.0117376	0.0894304
Speedup	-97%	-97%

Execution Results - Task 1

Array size 131072 with block size of 1024:

```
[w059rmp@smgpu01 ~]$ ./p4task1_131072
Array size: 131072

CLOCKS_PER_SEC:1000000
Number of clock ticks:376
CPU execution time in seconds:0.000376
Array:
[ 18 136 154 60 214 138 225 198 193 137 ]

CPU Output:
[ 512 512 512 512 512 512 512 512 512 512 ]

Number of thread blocks: 1
Thread block size: 1024
GPU Execution Time in seconds: 0.0117376
GPU Output:
[ 512 512 512 512 512 512 512 512 512 512 ]

TEST PASSED
```

Array size 1048576 with block size of 1024:

```
[w059rmp@smgpu01 ~]$ ./p4task1_1048576
Array size: 1048576

CLOCKS_PER_SEC:1000000
Number of clock ticks:2996
CPU execution time in seconds:0.002996
Array:
[ 18 136 154 60 214 138 225 198 193 137 ]

CPU Output:
[ 4096 4096 4096 4096 4096 4096 4096 4096 4096 4096 ]

Number of thread blocks: 1
Thread block size: 1024
GPU Execution Time in seconds: 0.0894304
GPU Output:
[ 4096 4096 4096 4096 4096 4096 4096 4096 4096 4096 ]

TEST PASSED
[w059rmp@smgpu01 ~]$ 
```

Task 2 Runtime Table

Time	131072	1048576
CPU Comp Time (s)	0.000372	0.002982
GPU Comp Time (s)	0.00397547	0.0251077
Speedup	-91%	-88%

Execution Results – Task 2

Array size 131072 with block size of 1024:

```
[w059rmp@smgpu01 ~]$ ./p4task2_131072
Array size: 131072

CLOCKS_PER_SEC:1000000
Number of clock ticks:372
CPU execution time in seconds:0.000372
Array:
[ 18 136 154 60 214 138 225 198 193 137 ]

CPU Output:
[ 512 512 512 512 512 512 512 512 512 512 ]

Number of thread blocks: 1
Thread block size: 1024
GPU Execution Time in seconds: 0.00397547
GPU Output:
[ 512 512 512 512 512 512 512 512 512 512 ]

TEST PASSED
[w059rmp@smgpu01 ~]$
```

Array size 1048576 with block size of 1024:

```
[w059rmp@smgpu01 ~]$ ./p4task2_1048576
Array size: 1048576

CLOCKS_PER_SEC:1000000
Number of clock ticks:2982
CPU execution time in seconds:0.002982
Array:
[ 18 136 154 60 214 138 225 198 193 137 ]

CPU Output:
[ 4096 4096 4096 4096 4096 4096 4096 4096 4096 4096 ]

Number of thread blocks: 1
Thread block size: 1024
GPU Execution Time in seconds: 0.0251077
GPU Output:
[ 4096 4096 4096 4096 4096 4096 4096 4096 4096 4096 ]

TEST PASSED
[w059rmp@smgpu01 ~]$
```