
Introduction to CUDA Parallel Programming

Homework Assignment 5

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1 README

This file is `report.pdf`. `src/` folder contains the source code. `result/` folder contains the result.

In `src/` folder, executing `make` to compile the program.

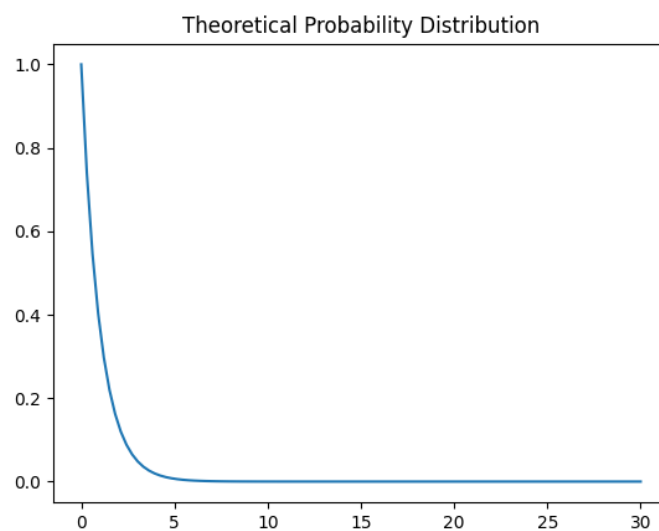
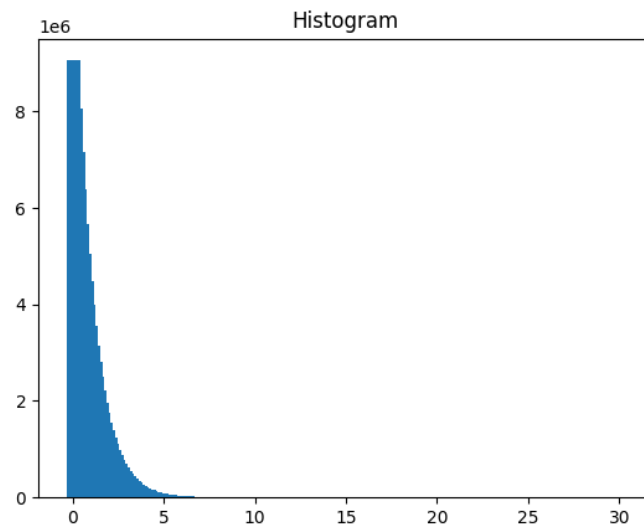
To execute the program, run `./hist_1gpu_gmeme` or `./hist_1gpu_shmem` and follow the instructions to enter the corresponding parameters.

2 Result

The optimal block size is 256 and the optimal grid size is 4096.

The histogram output for CPU, GPU with global memory, and GPU with shared memory are the same. The speed of GPU with global memory is about 1.65 times of the speed of CPU. The speed of GPU with shared memory is about 2.6 times of the speed of CPU.

Below are histogram and the curve of the theoretical probability distribution.



3 Discussion

GPU with global memory and GPU with shared memory are both faster than CPU. GPU with shared memory is fastest among the three. The shape of the histogram is roughly the same as the shape of the theretical probability distribution.