

University of Nevada, Reno

CS 791v: Topics: Parallel Computing Fall 2011

Programming Assignment 3 Thrust: Scan

Assigned Date 9/20/2011

Due Date 9/27/2011

Overview

For this project you are going to write a Thrust program to do the same scan with several different implementations. The scan will be on a vector of random symbols that you generate.

- Method 1: Using a host C++ function that does the scan serially
- Method 2: Using a Thrust scan that uses a binary operator implemented with a lookup table. (It is possible to put a static const array member inside the binary operator class.)
- Method 3: Using a Thrust scan that uses a binary operator implemented with if-statements or C++'s ?: operator.

You will verify that all three methods produce identical results.

The operator is the one described in class:

| \oplus_1 | Ι | L | Η |
|------------|---|---|---|
| Ι | Ι | L | Η |
| L | L | L | Η |
| Η | Η | L | Η |

Project Requirements

- A script or program in the language of your choice that verifies that the operator is associative, that is, a ⊕ (b ⊕ c) = (a ⊕ b) ⊕ c for all a, b, c.
- A compiled and running Thrust program which times each method and prints out the times so they can be compared.
- A writeup with discussion, table, and graph showing runtimes for comparison.

Recommendations

- The largest vector size should be 10 million or larger
- Do not include the time to transfer data from the host to the GPU in the Thrust timings.

Deliverables

- Bring code and output to class for discussion.
- Have a pdf of your writeup and a zip of your source code emailed to: Fred Harris and Lee Barford. Don't send binaries.
 - Firstname dot Lastname at (Fred is cse, Lee is gmail)