University of Arkansas
Department of Computer Science & Computer Engineering
CSCE4643/5693 – GPU Programming

Programming Assignment 10: Streams

Due Date: November 29 (Wednesday) at 11:59 pm
Note: This programming assignment is required for all students.

1. Objective

The purpose of this programming assignment is to get you familiar with CUDA streams for overlapping communication and computation.

2. Procedure

Step 1: You can use either vector addition or matrix multiplication as the basis. The provided assignment code uses vector addition. If you choose matrix multiplication, please modify the code accordingly.

Step 2: Inside this assignment, you will have two versions of the implementations, one without streams and the other with streams.

- In `main.cu` insert the code for both implementations. Please insert the code inside two `for` loops.

Step 3: Compile and test your code.

```
make
./stream
```

- The executable will print out the following.
  - The overall execution times of both versions.
  - The speedup of using streams, i.e., Time without streams / Time with streams.
  - The verification of output results of both versions.

Step 4: Submit your assignment.

Compress the folder and name it after your last name like so:

```
tar -cvf p10_<your last name>.tar p10-streams
```

Submit the tar file in blackboard.

3. Grading:

Your submission will be graded based on the following criteria.

- Functionality: 100 points
  - Correct code and output results
  - Correct handling of boundary cases
  - Use shared memory for performance improvement if applicable
  - Check return values of all CUDA APIs
  - Correct use of streams