Programming Assignment #3

Matrix Multiplication using Shared Memory
NVidia Visual Profiler
Min array Element using Reduction

Date:___/__/2015 ***Due***:___/__/2015
Grade: 100 points ***Hard Deadline***: / /2015

1. Write a CUDA program that implements the dense matrix multiplication routine sing shared memory. Make sure you handle the non-regular dimensional inputs (not square or multiples of 2) of rows and columns.

Testing:

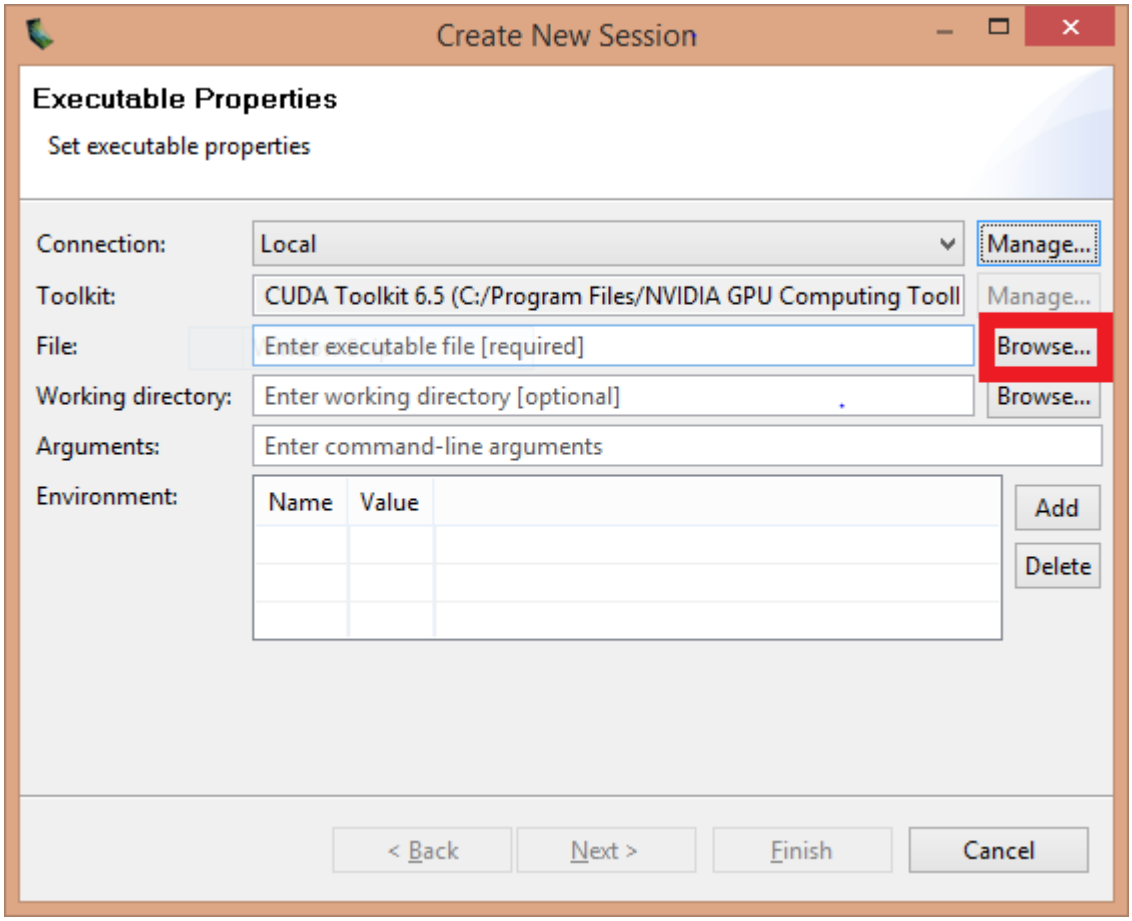
- Allocate the required memory for three matrices (two input matrices and one output) on the CPU and GPU sides.
- Fill the input matrices with initial data and assign valid dimensions to them, that is, if we have two matrices A and B, the number of rows in A must equals the number of columns in B.
- Write a sequential CPU version and test the matric multiplication and see if results are correct.
- Write the basic parallel GPU version and test its output with the CPU counterpart.
- Report the improvements in speed-up after using the shared memory.

Submission Instructions:

- Submit your program to CSE327_CUDA@gmail.com before deadline. Answers submitted due the hard deadline will get only %80 of the grade.
- Subject of message must be { **CU_PA3** }
- You must use the given templates while writing you programs.
- Attach your code files only; don't include any documents or pictures.
- Any violations to previous Instructions will cause your assignment to be rejected.

2. Measure execution time of "***Basic Matrix multiplication***" with "**Matrix Multiplication using Shared memory**" using **NVIDIA VISUAL PROFILER**.

- Start Nvidia Visiual Profiler
- From file menu choose → **New Session**.
- Browse for the *.**exe** file of your project , and load it to the **File** section



- Select → Next → Finish → ….continue until it finishes.

3. Modify the Reduce code in the slides so that it calculate the ***Minimum element*** in an array (in the slides it calculate the sum of array elemnts).