Midwestern State University

GPU Programming – ICA 04/08/2020

Spring 2020

**TO BE SOLVED ONLY IN the GTX GPU AT MAVERICK**

This is an Individual open book, open notes task.

You are free to use your book, slides, to solve this problem.

**You are not allowed to use the web**.

Given info:

* You have access to two arrays. Array A, and Array B.
* Both Arrays have the same length of 10240 integer locations.
* Array A is full of 2’s, and array B is full of 20’s
* You will solve this problem using two blocks, 1024 threads each

Your CUDA code must compute array C, which is the product between array A and B. **However**, such computation must be done in Shared Memory (NOT Global Memory). Although the size of shared memory per block is larger than 1024\*3 integers (3 because 3 arrays, a, b, c), you will bring from Global Memory into shared memory only1024 integers at a time per array (1024 for asm & 1024 for bsm). Be aware than an extra 1024 are taken for csm.

asm, bsm, csm mean (array at sm{shared memory})

(**In simple words we are going to assume that 1024\*3 integers is the maximum # of elements that you can have in Shared Memory at a given time**)

Once the solution is computed, and C is in Main Memory, your host must compute the addition of all C elements and report the results as follows:

The summation of all C elements is = value here

(No scientific notation, give me the full number)

A grade of zero will be assigned if:

1. The assignment is solved using only Global Memory (GM). GM was already studied and the lecture about Shared memory was given one week ago, in addition to a Q&A session during which you were given the option of asking questions about SM. Students are expected to read and keep up with the material.
2. Your code is exactly the same as other person’s code.
3. No code is delivered before the dropbox closes. No late file will be accepted.
4. Turing is used to solve this assignment
5. I cannot run your code because it does not compile
6. I cannot run your code because you did not submit the corresponding script
7. You do not use the GPU that it is mentioned above.