

CMPS 224/324: GPU COMPUTING
ASSIGNMENT 2

In this assignment, you will implement a simple matrix-matrix multiplication kernel. The kernel takes a matrix A of size $M \times K$ and a matrix B of size $K \times N$, and produces a matrix C . Do not perform any memory optimizations. You will do this in the next assignment.

Instructions

1. Place the files provided with this assignment in a single directory. The files are:
 - `main.cu`: contains setup and sequential code
 - `kernel.cu`: where you will implement your code (you should only modify this file)
 - `common.h`: for shared declarations across `main.cu` and `kernel.cu`
 - `timer.h`: to assist with timing
 - `Makefile`: used for compilation
2. Edit `kernel.cu` where TODO is indicated to implement the following:
 - Allocate device memory
 - Copy data from the host to the device
 - Configure and invoke the CUDA kernel
 - Copy the results from the device to the host
 - Free device memory
 - Perform the computation in the kernel
3. Compile your code by running: `make`
4. Test your code by running: `./mm`
 - If you are using the HPC cluster, do not forget to use the submission system. Do not run on the head node!
 - For testing on different matrix sizes, you can provide your own values for matrix dimensions as follows: `./mm <M> <N> <K>` (example: `./mm 256 512 128`)

Submission

Submit your modified `kernel.cu` file via Moodle by the due date. Do not submit any other files or compressed folders.