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EECE.6540 – Lab 1 – Matrix Multiplication and Addition

**Description of lab:**

The goal of this lab is to compute the results of the following equation D = A \* B + C while executing the computation in only one kernel. Variables A, B, C and D are all matrices with the following sizes and initialization values: A is 2x4 with all elements filled with value 1, B is 4x6 with all elements filled with value 2, C is 2x6 with all elements filled with value 3, and D is 2x6. The MatrixMultiply exercise provides all the basics calls needed to get the lab up and running. Using that exercise and adding modifications will get the lab accomplished.

**Summary of the outcome:**

The lab was executed successfully and returned the following results for matrix D:

11.0 11.0 11.0 11.0 11.0 11.0

11.0 11.0 11.0 11.0 11.0 11.0

Summary of the modifications made to the MatrixMultiply exercise to execute the lab, include: adding matrix C to the static variable; creating the memory object for the matrix D buffer; setting the buffer D kernel argument; adding matrix C to the sum of matrices A and B; displaying matrix D after the results are returned; freeing up matrix D’s resource.

**Main hurdles and difficulties:**

Biggest hurdle faced when performing this lab was executing the code in the wrong directory. The execution was being performed in the main directory while the compiled aocx file was being stored in the /bin directory. Updating the Makefile to move the main executable to the /bin directory and then executing the /bin directory solved this issue.

**Things learned:**

Using GitHub – setting up repo, cloning to personal directory, and then to UML linux computer

Understanding the flow of the OpenCL structure – get platforms, get devices, create context, create command queue, create memory objects, create a program, create a kernel, set the kernel arguments, execute the kernel, copy data back and display results, free up resources

Understanding the SetKernelArg function more as the error returned from executing in the wrong directory was pointing to the argument index being too large

**Suggestions:**

Redirecting the main executable from the Makefile to the /bin directory. The echo string states to move to the /bin directory, but the executable is not there to be executed.

**GitHub link location:**

https://github.com/ianpic612/EECE6540\_Fall2017/tree/master/Labs/Lab1