Lab 0: Package Download and Environment Setup

ECE5355 - Parallel Algorithmic Techniques

Due: see Moodle

1 Objective

The purpose of this lab is to check your environment settings and to make sure you can compile and run CUDA programs on the environment you will be using throughout the course. In this lab, you will:

- Obtain a sample assignment package and walk through the directory structure
- Set up the environment for executing the assignments
- Test the environment with a simple program that just queries the GPU device

2 Preliminary Work

Step 1: Use an SSH program to log in to one of the GPU machines. After login, you will be in your home directory.

Step 2: Make a project directory in your home directory for this class, and transfer the tarfile for lab0 (lab0.tgz) to this new directory (e.g., using sftp).

Step 3: Enter your new project directory and extract the tarfile.

```
cd <directory_name>
tar -zxvf lab0.tgz
```

You are now ready to begin the lab.

3 Compile and execute the CUDA program

Step 1: Change into the lab0 directory and compile.

```
cd lab0
make
```

Step 2: Execute the binary that was generated.

```
./device-query
```

You should expect see something like the following message:

```
There are 2 devices supporting CUDA

Device 0: "GeForce GTX 480"
  Major revision number:                         2
  Minor revision number:                         0
  Total amount of global memory:                 1610285056 bytes
  Number of multiprocessors:                     15
  Number of cores:                               120
  Total amount of constant memory:               65536 bytes
  Total amount of shared memory per block:       49152 bytes
  Total number of registers available per block: 32768
  Warp size:                                     32
  Maximum number of threads per block:           1024
  Maximum sizes of each dimension of a block:    1024 x 1024 x 64
  Maximum sizes of each dimension of a grid:     65535 x 65535 x 65535
  Maximum memory pitch:                          2147483647 bytes
  Texture alignment:                             512 bytes
  Clock rate:                                    1.40 GHz
  Concurrent copy and execution:                 Yes

Device 1: "Quadro 2000"
  Major revision number:                         2
  Minor revision number:                         1
  Total amount of global memory:                 1072889856 bytes
  Number of multiprocessors:                     4
  Number of cores:                               32
  Total amount of constant memory:               65536 bytes
  Total amount of shared memory per block:       49152 bytes
  Total number of registers available per block: 32768
  Warp size:                                     32
  Maximum number of threads per block:           1024
  Maximum sizes of each dimension of a block:    1024 x 1024 x 64
  Maximum sizes of each dimension of a grid:     65535 x 65535 x 65535
  Maximum memory pitch:                          2147483647 bytes
  Texture alignment:                             512 bytes
  Clock rate:                                    1.25 GHz
  Concurrent copy and execution:                 Yes

TEST PASSED
```

4 Grading

This lab is meant solely to help you get started with the programming environment and will not be graded.