[MI3.04a] Advanced Programming for HPC

Report Get to know your GPU

Labwork 2

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1 Screenshot

```
(base) namhv@ictserver2:/storage/namhv/advancedhpc2020/labwork$ ./labwork 2
USTH ICT Master 2018, Advanced Programming for HPC.
Warming up...
Starting labwork 2
Number total of GPU : 2

GPU info
  Name:                    Tesla K40c
  Clock rate:              745000
  CUDA cores:              2880
  Multiprocessors:         15
  Warp size:               32
  Memory Clock rate (KHz): 3004000
  Memory Bus width (bits): 384
GPU info
  Name:                    GeForce GTX TITAN Black
  Clock rate:              980000
  CUDA cores:              2880
  Multiprocessors:         15
  Warp size:               32
  Memory Clock rate (KHz): 3500000
  Memory Bus width (bits): 384
labwork 2 ellapsed 0.8ms
```

(a) Original Image

2 Bash output

```
./labwork 2
USTH ICT Master 2018, Advanced Programming for HPC.
Warming up...
Starting labwork 2
Number total of GPU : 2

GPU info
  Name:                     Tesla K40c
  Clock rate:               745000
  CUDA cores:               2880
  Multiprocessors:          15
  Warp size:                32
  Memory Clock rate (KHz): 3004000
  Memory Bus width (bits): 384
GPU info
  Name:                     GeForce GTX TITAN Black
  Clock rate:               980000
  CUDA cores:               2880
  Multiprocessors:          15
  Warp size:                32
  Memory Clock rate (KHz): 3500000
  Memory Bus width (bits): 384
labwork 2 ellapsed 0.8ms
```

3 Implementation

```
void Labwork::labwork2_GPU() {
    int nDevices = 0;
    // get all devices
    cudaGetDeviceCount(&nDevices);
    printf("Number total of GPU : %d\n\n", nDevices);
    for (int i = 0; i < nDevices; i++){
        // get informations from individual device
        cudaDeviceProp prop;
        cudaGetDeviceProperties(&prop, i);
        // something more here
        printf("GPU info\n");
        printf("  Name:                     %s\n", prop.name);
        printf("  Clock rate:               %d\n", prop.clockRate);
        printf("  CUDA cores:               %d\n", getSPcores(prop));
        printf("  Multiprocessors:          %d\n", prop.multiProcessorCount);
        printf("  Warp size:                %d\n", prop.warpSize);
        printf("  Memory Clock rate (KHz): %d\n", prop.memoryClockRate);
        printf("  Memory Bus width (bits): %d\n", prop.memoryBusWidth);
    }

}
```