

گام ۱:

همانطور که مشاهده می کنید یک کارت گرافیک ساپورت کننده کودا در سیستم وجود دارد که

اطلاعات درون آن به شرح زیر است:

```
→ Lab5 ./a.out
There is 1 device supporting CUDA

Device 0: "NVIDIA GeForce MX450"
Major revision number: 7
Minor revision number: 5
Total amount of global memory: 1969815552 bytes
Number of multiprocessors: 14
Number of cores: 112
Total amount of constant memory: 65536 bytes
Total amount of shared memory per block: 49152 bytes
Total number of registers available per block: 65536
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: 2147483647 x 65535 x 65535
Maximum memory pitch: 2147483647 bytes
Texture alignment: 512 bytes
Clock rate: 1.58 GHz
Concurrent copy and execution: Yes

TEST PASSED
→ Lab5
```

گام ۲:

کد سریال پیاده سازی شده و در ضمیمه موجود است، زمان اجرایی برای ۶۵۵۳۶ عضو، کد موازی شده در 0.000016 ثانیه عملیات جمع را انجام داده اما کد سریال در 0.000218 ثانیه انجام می شود.

گام ۳:

کد انجام چند عملیات در هر کرنل موجود است، چون GPU مناسب اعمال CPU نیست و انجام چند عملیات شامل زیاد کردن شمارنده ی حلقه و دسترسی به RAM به صورت زیاد برای هر نخ انجام

می‌شود، این عملیات بسیار کند بوده و برای ۶۵۵۳۶ عضو این عملیات 0.000243 ثانیه در حالت

چند عملیات برای هر نخ طول می‌کشد که زمان بسیار غیر مناسبی است (حتی بیشتر از سریال).

گام ۴:

خروجی وضعیت هر نخ و مکانی که در حال اجرا می‌باشد:

```
Calculated Thread: 80 - Block: 1 - Warp: 0 - Thread 16
Calculated Thread: 81 - Block: 1 - Warp: 0 - Thread 17
Calculated Thread: 82 - Block: 1 - Warp: 0 - Thread 18
Calculated Thread: 83 - Block: 1 - Warp: 0 - Thread 19
Calculated Thread: 84 - Block: 1 - Warp: 0 - Thread 20
Calculated Thread: 85 - Block: 1 - Warp: 0 - Thread 21
Calculated Thread: 86 - Block: 1 - Warp: 0 - Thread 22
Calculated Thread: 87 - Block: 1 - Warp: 0 - Thread 23
Calculated Thread: 88 - Block: 1 - Warp: 0 - Thread 24
Calculated Thread: 89 - Block: 1 - Warp: 0 - Thread 25
Calculated Thread: 90 - Block: 1 - Warp: 0 - Thread 26
Calculated Thread: 91 - Block: 1 - Warp: 0 - Thread 27
Calculated Thread: 92 - Block: 1 - Warp: 0 - Thread 28
Calculated Thread: 93 - Block: 1 - Warp: 0 - Thread 29
Calculated Thread: 94 - Block: 1 - Warp: 0 - Thread 30
Calculated Thread: 95 - Block: 1 - Warp: 0 - Thread 31
Calculated Thread: 96 - Block: 1 - Warp: 1 - Thread 32
Calculated Thread: 97 - Block: 1 - Warp: 1 - Thread 33
Calculated Thread: 98 - Block: 1 - Warp: 1 - Thread 34
Calculated Thread: 99 - Block: 1 - Warp: 1 - Thread 35
Calculated Thread: 100 - Block: 1 - Warp: 1 - Thread 36
Calculated Thread: 101 - Block: 1 - Warp: 1 - Thread 37
Calculated Thread: 102 - Block: 1 - Warp: 1 - Thread 38
Calculated Thread: 103 - Block: 1 - Warp: 1 - Thread 39
Calculated Thread: 104 - Block: 1 - Warp: 1 - Thread 40
Calculated Thread: 105 - Block: 1 - Warp: 1 - Thread 41
Calculated Thread: 106 - Block: 1 - Warp: 1 - Thread 42
Calculated Thread: 107 - Block: 1 - Warp: 1 - Thread 43
Calculated Thread: 108 - Block: 1 - Warp: 1 - Thread 44
Calculated Thread: 109 - Block: 1 - Warp: 1 - Thread 45
Calculated Thread: 110 - Block: 1 - Warp: 1 - Thread 46
Calculated Thread: 111 - Block: 1 - Warp: 1 - Thread 47
Calculated Thread: 112 - Block: 1 - Warp: 1 - Thread 48
Calculated Thread: 113 - Block: 1 - Warp: 1 - Thread 49
Calculated Thread: 114 - Block: 1 - Warp: 1 - Thread 50
Calculated Thread: 115 - Block: 1 - Warp: 1 - Thread 51
Calculated Thread: 116 - Block: 1 - Warp: 1 - Thread 52
Calculated Thread: 117 - Block: 1 - Warp: 1 - Thread 53
Calculated Thread: 118 - Block: 1 - Warp: 1 - Thread 54
Calculated Thread: 119 - Block: 1 - Warp: 1 - Thread 55
Calculated Thread: 120 - Block: 1 - Warp: 1 - Thread 56
Calculated Thread: 121 - Block: 1 - Warp: 1 - Thread 57
Calculated Thread: 122 - Block: 1 - Warp: 1 - Thread 58
Calculated Thread: 123 - Block: 1 - Warp: 1 - Thread 59
Calculated Thread: 124 - Block: 1 - Warp: 1 - Thread 60
Calculated Thread: 125 - Block: 1 - Warp: 1 - Thread 61
```