# Cuda speed test in C/C++

Oleksandr Hryshchuk

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# 1 Random generation of numbers for testing

Default random function `rand()` was used for generating array with random elements. For generating more clear random numbers you should use function `srand(time(NULL));`

Listing 1: Function for generating array of random numbers

```
vector<int> genRandomArray(int n){
        vector<int> resultv;
        for (int i=0; i<n; i++)
        {
                resultv.push_back(rand()%1000);
        }
        return resultv;
}
```

Program use two parameters: samples count, and step size. Sample count is integer number and represents count of arrays which will be generated by program. Another arguments it's a step between lengths of previous and next arrays. Also in code we have variable with name `step`, this variable contains length of array.

For compile and run this program compile file `random_generator.cpp`. For example:

```
$ g++ random_generator.cpp -o rand
$ ./rand 10000 12
```

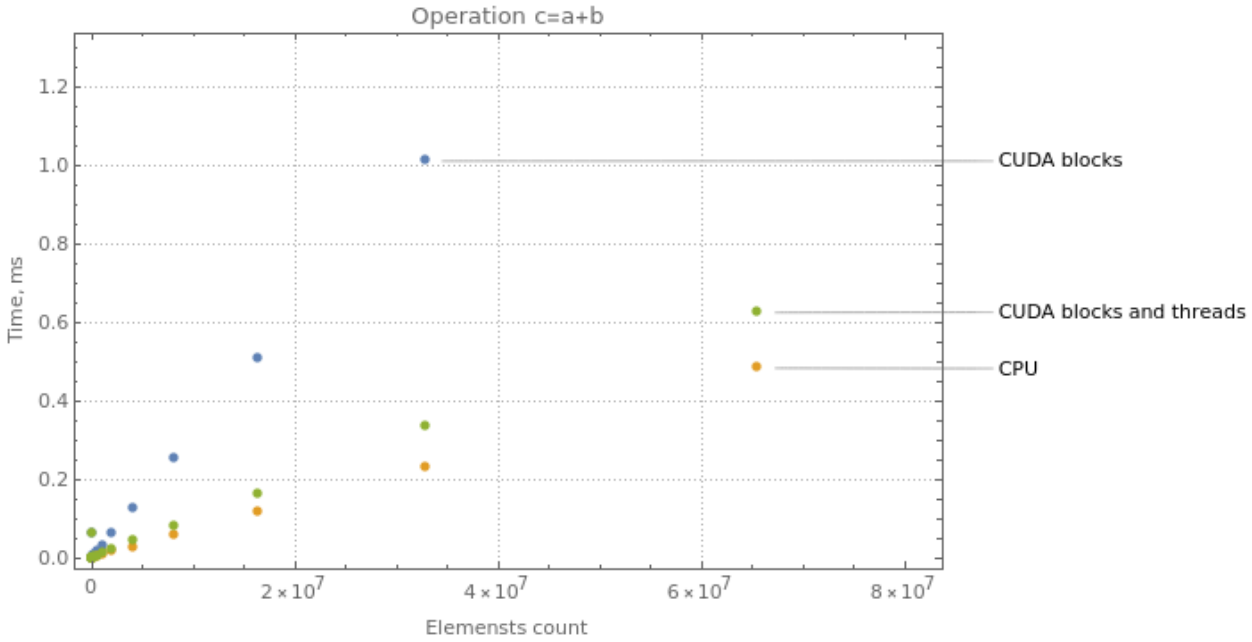
## 2 Code for speed test

### 2.1 Speed test in serial CPU

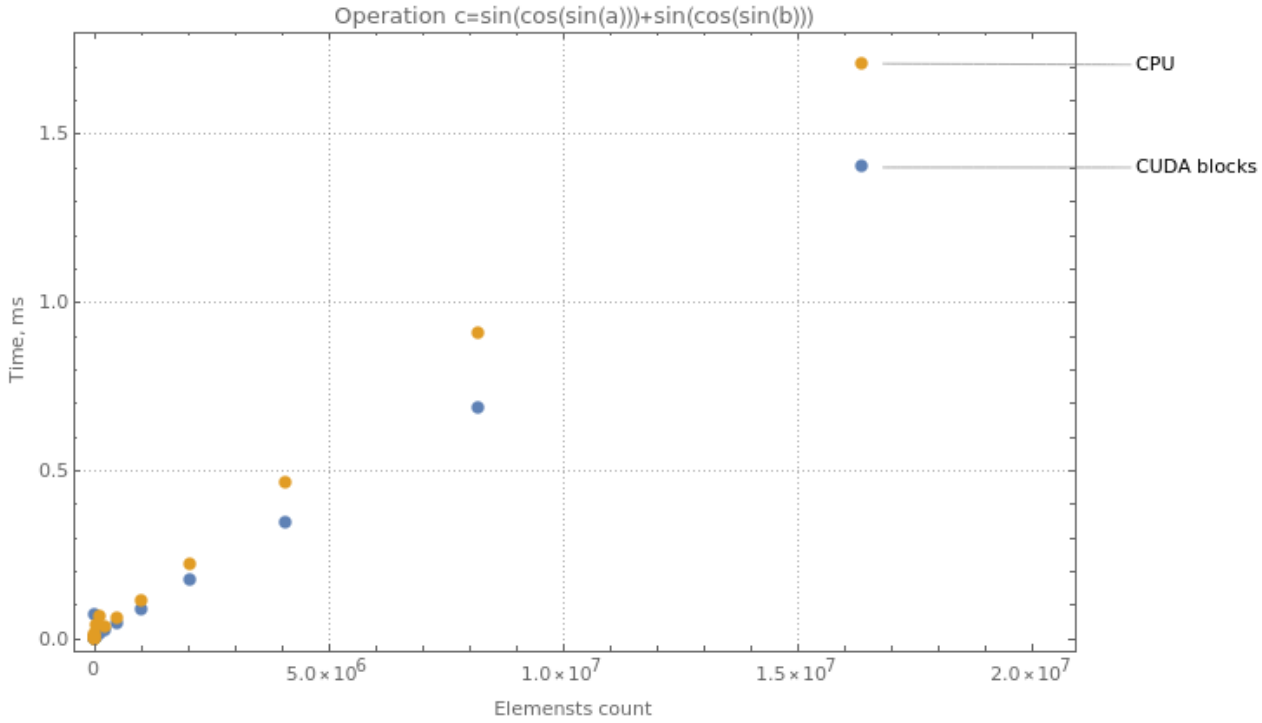
### 2.2 Speed test on GPU with blocks

### 2.3 Speed test on GPU with blocks and threads

# 3 Result




Result for more complicated function $c = sin(cos(sin(a))) + sin(cos(sin(b)))$



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# Listings