מחשוב מקבילי ומבוזר

תרגיל #6

The purpose of this exercise is to have experience with heterogeneous environment MPI + OpenMP + CUDA

1. Run two processes **P0** and **P1**.
2. Process **P0** creates an array **A** of **N** random integers
3. The purpose of the application is to calculate for how many members of **A** the value **f(A[i])** is positive.

```c
#define HEAVY 10000
double f(int i) {
    int j;
    double value;
    double result = 0;

    for (j = 1; j < HEAVY; j++) {
        value = (i+1)*(j%10);
        result += cos(value);
    }
    return cos(result);
```

4. Perform following:

   a) Process **P0** sends half of the array **A** to process **P1**
   b) Both processes work on their parts of **A** concurrently, using **OpenMP** for the first portion of its part and **CUDA** for the second
   c) Process **P1** sends the result for its part to the process **P0**
   d) Process **P0** combines and displays result of all computations
   e) Compare the result with sequential computation to verify your solution.

Restriction:

- Each CUDA thread may calculate only one value of f(x).
- Define the value of N bigger than 100000 but less than 500000

בהצלחה