Courses Aalto 2023 Spring Nuance Log out Help

### **Aalto 2023**

Index	ndex Contest		Su	Submissions					Pre	0		СР	1	2a	<b>2</b> b	2c	3a	3b	4	5	9a	9c	[]	S	4	6a	6b	9a	
MF	1	2 9a		SO	4	5	6		P	9a)		x	0a	0b	9a	9b													

#### **CP2a:** instruction-level parallelism ★

Please note that you can still submit, but as the course is already closed, your submissions will not be graded.

To get started with the development, download the code templates, unzip the file, edit cp.cc, and run ./grading test or ./grading benchmark to try it out — see the instructions for more details!

Upload your solution as a file here	
Opioau your solution as a me nere	
Please upload here the file cp.cc that contains your solution to task CP2a.	
Choose File No file chosen	
or copy-paste your code here	
	li
Submit	

#### Your submissions

Your submissions to CP2a will appear here; you can simply reload this page to see the latest updates.

### What you will need to do in this task

Please read the **general instructions for this exercise** first. Here are the additional instructions specific to this task:

Parallelize your solution to CP1 by exploiting **instruction-level parallelism**. Make sure that the performance-critical operations are pipelined efficiently. Do not use any other form of parallelism yet in this exercise. Please do all arithmetic with **double-precision** floating point numbers.

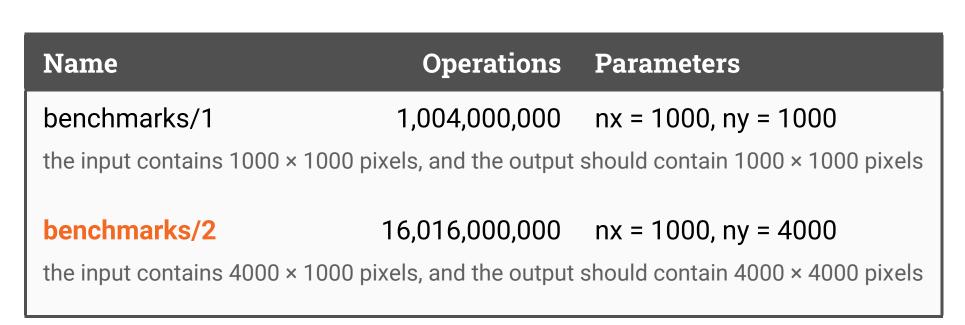
For this technical exercise, we have disabled auto-vectorization.

### What I will try to do with your code

I will first run all kinds of tests to see that your code works correctly. You can try it out locally by running ./grading test, but please note that your code has to compile and work correctly not only on your own computer but also on our machines.

If all is fine, I will run the benchmarks. You can try it out on your own computer by running ./grading benchmark, but of course the precise running time on your own computer might be different from the performance on our grading hardware.

# Benchmarks

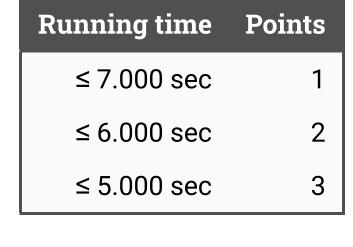


Here "operations" is our rough estimate of how many useful arithmetic operations you will **at least** need to perform in this benchmark, but of course this will depend on exactly what kind of an algorithm you are using.

# Grading

In this task your submission will be graded using benchmarks/2: the input contains  $4000 \times 1000$  pixels, and the output should contain  $4000 \times 4000$  pixels.

The point thresholds are as follows. If you submit your solution no later than on **Sunday, 07 May 2023, at 23:59:59 (Helsinki)**, your score will be:



If you submit your solution after the deadline, but before the course ends on **Sunday, 04 June 2023, at 23:59:59** (**Helsinki**), your score will be:

