

Lab and Homework #8

Introduction to Operating Systems CS-UY 3224 | CS-UY 3224G

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Due date for the Homework problems : October 30th, 2023 by 5 PM, Paris time

Please hand in through the *Assignments* option on *Brightspace*.

Question 1: *Revision and improvement.*

Look through the comments on your Homework 6 - Consumers and Producers- and improve the code, not only following the comments but also following your own ideas of what could be improved. For those who got everything right the first time, complicate the setup and add new capabilities of your program.

Write a README file explaining what improvements you made.

To do at home and hand in: Your C program and the README .

Question 2: *Matrix Multiplication.*

Start by writing a simple C code, with no parallelism, to multiply two matrices.

Then write another program that improves the performance of the above matrix multiplication algorithm by using threads. That is, break down the matrix multiplication into smaller tasks that can be distributed among multiple threads, and use synchronization to control the process and access the results.

Do some testing between the performance of this algorithm on some large examples and note your results in terms of a graphics (for example as a function of time of execution versus the size of a matrix). How does the number of threads influence the result?

Estimate the complexity of each of the algorithms involved.

To do at home and hand in: All the work for this question, including a summary in a README file.