Faculty of Computers and Information
Cairo University
Spring-2021

HPC / Parallel Processing- 2021

Assignment 3 – OpenMP

Matrix puzzle

Write a parallel C program using OpenMP such that :
Given a matrix where every element is either ‘O’ or ‘X’, replace ‘O’ with ‘X’ if surrounded by ‘X’. A ‘O’ (or a set of ‘O’) is considered to be surrounded by ‘X’ if there are ‘X’ at locations just left and just right of it.
O’s at the edges will not be replaced
You should handle invalid input.

Sample input :

6 5

X	O	X	X	X
X	O	X	O	X
O	X	O	O	X
X	X	X	X	X
X	O	O	X	X
O	X	O	X	O

Sample output :

X	X	X	X	X
X	X	X	X	X
O	X	O	O	X
X	X	X	X	X
X	O	O	X	X
O	X	X	X	O

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Deadline & Submission:

1. The assignment is in groups of maximum 2.
2. Code must be in C and openMP & you must run it before sending.
3. Cheating could lead to serious consequences.
4. Late submission is not allowed.
5. Deadline: Wed 2/6/2021 11:59 PM

Grading Criteria :

Your code should be compiled without any errors or you will lose 50% of assignment grade, also the output of the run should be correct or you will lose 25% of assignment grade

item	points
Dynamic allocation of Matrix	2
Problem Logic	2
Parallelization	6