

Problem

Have a function that computes a single element of the resulting matrix.

Have a second function whose each call will constitute a parallel task (that is, this function will be called on several threads in parallel). This function will call the above one several times consecutively to compute several elements of the resulting matrix. Consider the following ways of splitting the work between tasks (for the examples, consider the final matrix being 9×9 and the work split into 4 tasks):

Each task computes consecutive elements, going row after row. So, task 0 computes rows 0 and 1, plus elements 0-1 of row 2 (20 elements in total); task 1 computes the remainder of row 2, row 3, and elements 0-3 of row 4 (20 elements); task 2 computes the remainder of row 4, row 5, and elements 0-5 of row 6 (20 elements); finally, task 3 computes the remaining elements (21 elements).

Hardware

CPU: Intel Core i7-8750H CPU @ 2.20GHz, 2201 Mhz, 6 Core(s), 12 Logical Processor(s)

RAM: 16 GB

Tests

Size	Threads/Tasks	Pool (Yes/No)	Time (ms)
9×9	3	Yes	10
9×9	3	No	8
81×81	3	Yes	17
81×81	3	No	17
243×243	3	Yes	211
243×243	3	No	253
9×9	9	Yes	10
9×9	9	No	9
81×81	9	Yes	16
81×81	9	No	15
243×243	9	Yes	123
243×243	9	No	128

