

ICS-E4020 Programming Parallel Computers - Assignment 3

Darshan M S (465687)
`darshan.mallenahallishankaralingappa@aalto.fi`

May 3, 2015

1 Task 1

In the first task, we had to find the best way to partition the given figure in two parts: a monochromatic rectangle and a monochromatic background. The objective was to minimise the sum of squared errors. We had to use the knowledge of vector operations and cache blocking from the previous exercises in this assignment. The timings can be found in the image below. The image also contains a plot with times on Y axis and the no of threads on X axis. The plot contains the timings for executing the program for the image size 400x400.

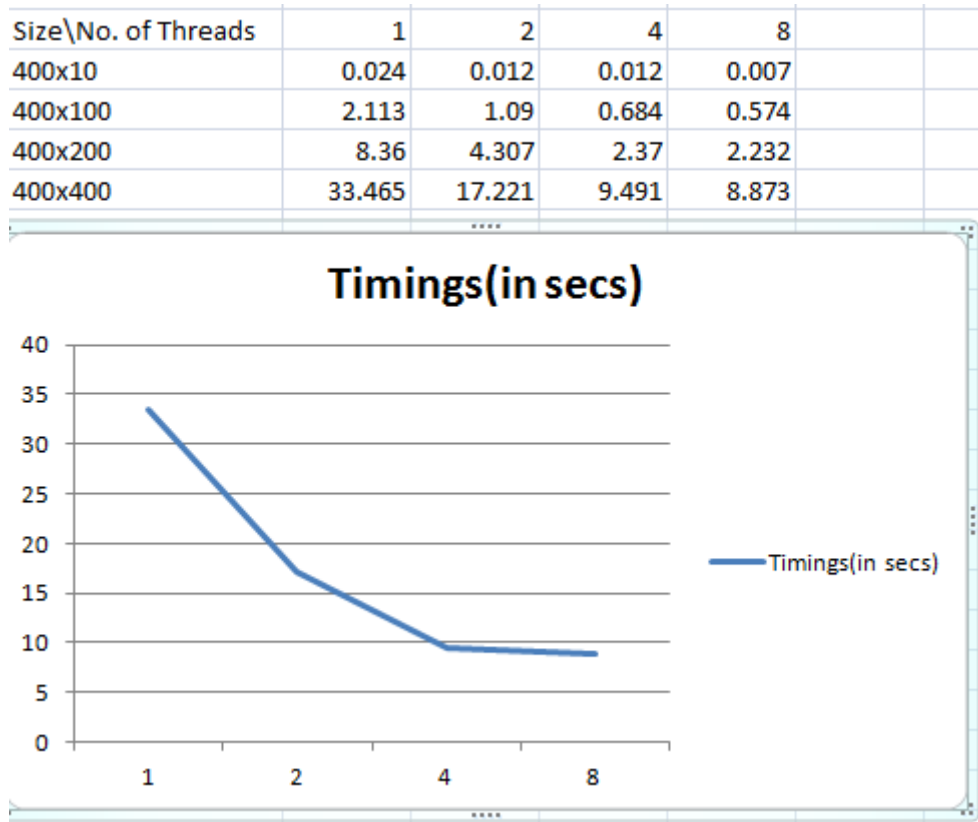


Figure 1: Table and Timings for the execution of IS1

We can see that increase in the number of threads decreases the time for execution by a factor of the number of threads. But when the number of threads is increased from 4 to 8 the times do not decrease by a factor of 2. This might be due to the fact that time is wasted on scheduling.

2 Task 2

In this task we had to implement the sorting technique in parallel. To implement this we divide the array elements to be sorted on different threads and then finally we use the merging technique of the merge sort algorithm to merge the sorted elements on different threads.

The table and the plot is displayed in the image below. The plot contains the timings vs no of threads for input size 100000000 and input data 0.

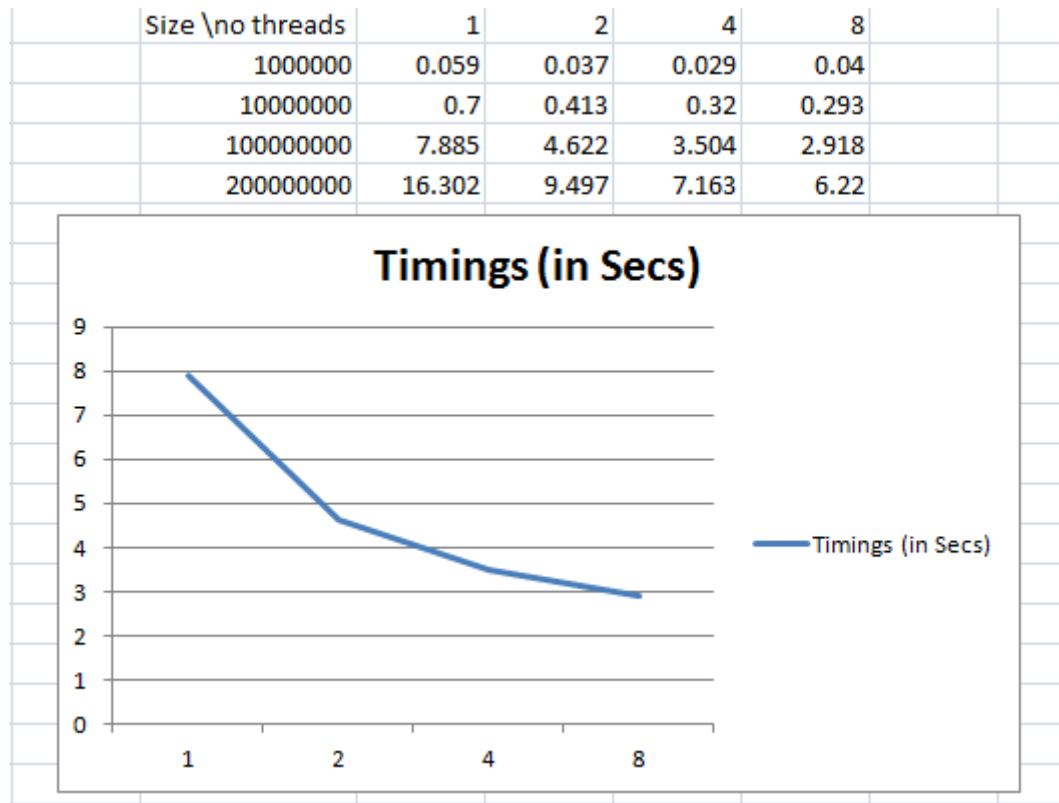


Figure 2: Table and Timings for the execution of SO1

Again we see that, when the number of threads is increased from 4 to 8 the times do not decrease by a factor of 2. This might be due to the fact that time is wasted on scheduling.