CS3210 Lab 6

Richard Willie (A0219710L)

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Exercise 4

Execution time of `SER` on i7-7700 = 3.68 sec
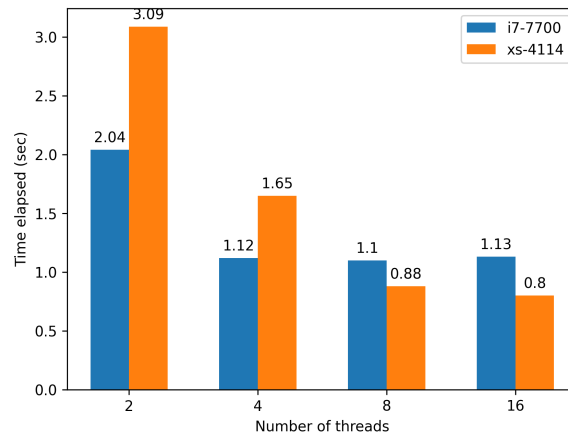Execution time of `SER` on xs-4114 = 5.63 sec

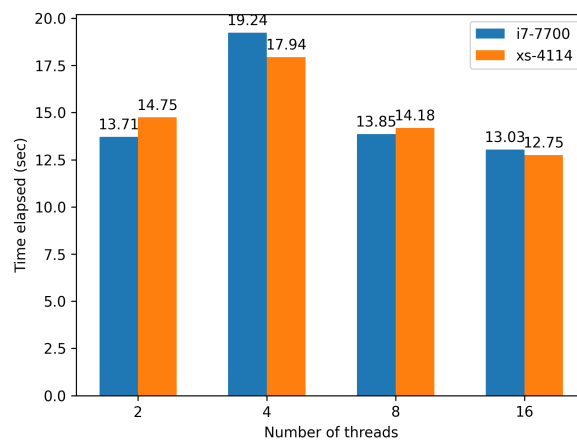Figure 1: Execution time of `OMP` with varying number of threads.

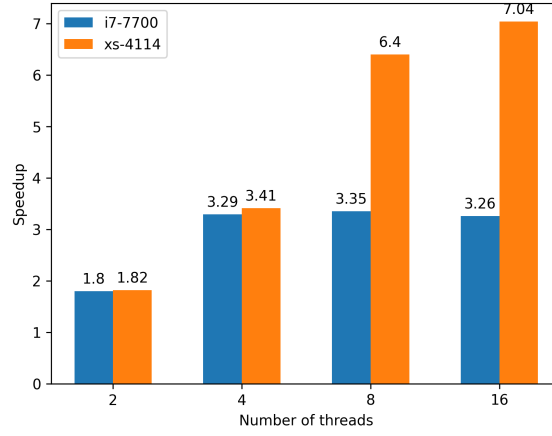Figure 2: Execution time of `MPI` with varying number of threads.

Figure 3: Speedup of `OMP` against `SER` with varying number of threads.
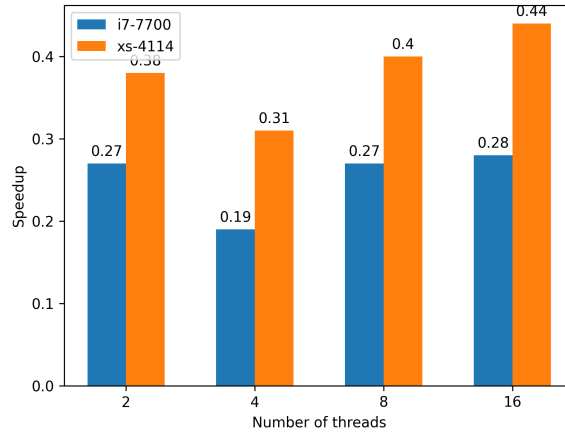

Figure 4: Speedup of `MPI` against `SER` with varying number of threads.

Observations:

- `OMP` speedup is significant, and it increases linearly. However, the performances quickly plateau when the number of threads exceeds the number of physical cores.

- MPI is much slower than SER, most likely due to high communication overheads.
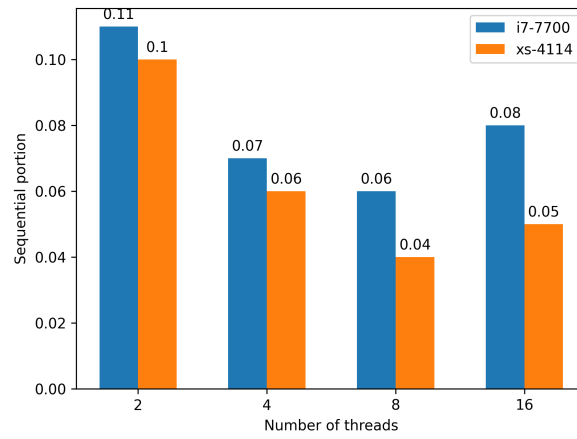
Exercise 5

Figure 5: Computed sequential portion (f) based on `OMP` measurements.

The computed sequential portion $f = 0.07125 \pm 0.02260 = 7.125\% \pm 2.260\%$. Hence, most of the code is parallelizable.