Description :

I followed the step to Create a Parallel Program.

1. I started by writing the code in sequential
2. Identify the part of the program that can be executed concurrently

I identified three different parts than could be executed concurrently, 2 nested loops and 1 loop.

In the two nested loop I also had to identify which variable needed to be put in private for the code to work.

For the first nested, the loop with variable 'j' will run in parallel. Variable 'i' will be private for every thread. The other variable will be shared.

Same thing for the second nested loop, but there is also the need for the variable 'total' to be private. Because it must be unique for every thread, otherwise threads would overwrite each other.

For the simple loop there is no need of a private variables because the loop variable 'I' is unique for every thread.

I tried to parallelize the best I could and tried different techniques, but the execution time of the parallel code is longer than the sequential.

Result of the execution time

Number Core(s)	2	3	4
Execution time	0.160274	0.866154	0.212565

Calculation

1. Speedup

S= Tseq/Tn with Tseq the Time to execute the program in sequential
Tseq=0.117349 with Tn the time take in parallel

Number Core(s)	2	3	4
Speedup	0.732177	0.13548	0.55206

2. Efficiency

E=S/N with S the speedup and N the number of processors

Number Core(s)	2	3	4
Efficiency	0.3660	0.0451	0.1380