**Assignment 2 Multiprocessing**

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The aim of the assignment is to examine speedup derived using multiple CPU cores through the multiprocessing facility in Python. Multiprocessing is the use of at least two (often more) Central processing units within a single computing system. The Python Module multiprocessing was used as it allows us to bypass the Global Interpreter Lock (GIL) by utilising subprocesses instead of threads. The GIL mechanism is a type of mutex lock which protects shared resources thus making it difficult to implement multiprocessing.

My computer’s specification is an Intel(R) Core(TM) i3-7100U CPU @ 2.40GHz, 2400 Mhz, 2 Core(s), 4 logical processors. As mentioned in notebook my computer has 4 logical cores and only 2 physical cores. The reason it has more logical cores than physical cores because it implements hyperthreading. For each physical core the operating system addresses two virtual cores and shares the workload between them. For the notebook, I went as far as 4 cores even though the difference in theory should only be seen after changing from 1 to 2 cores as python cannot execute threading correctly to see the difference with hyperthreading.

When we look at the result.

Chart, line chart

Description automatically generated