

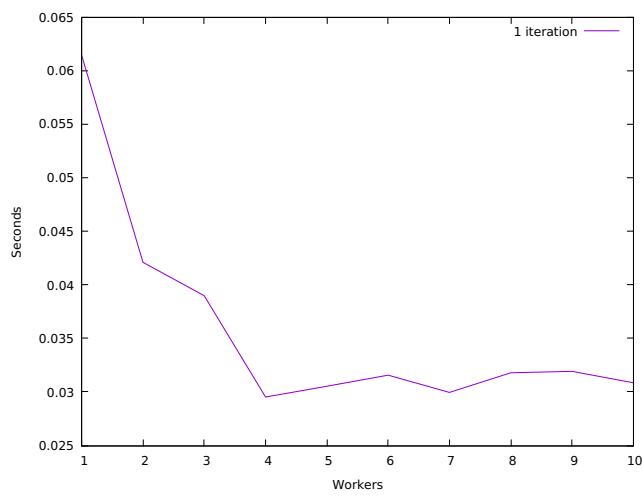
Homework 1

Critical Sections, Locks, Barriers and Conditional Variables

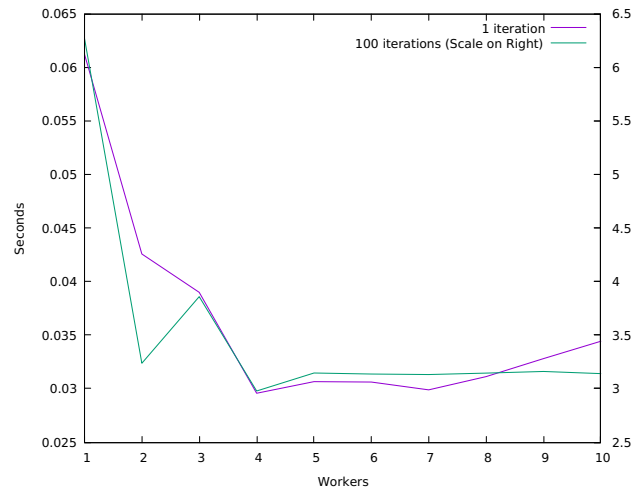
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IN this homework we study performance of different approaches to concurrent computation. It focuses on matrix operations (sum, min and max) as well as approximation for PL.

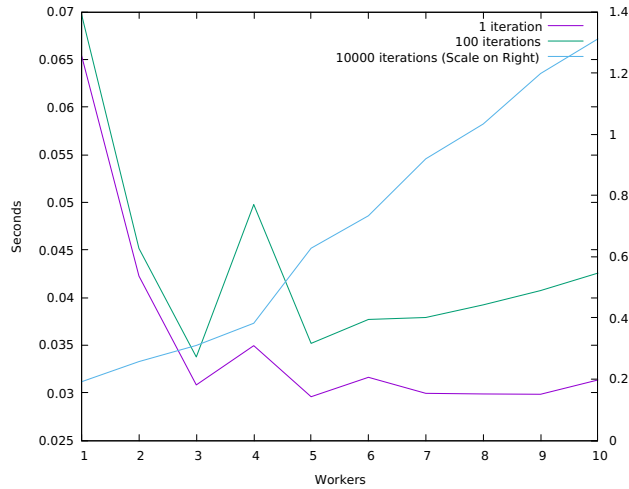
I. COMPARISON FOR MATRIX OPERATIONS



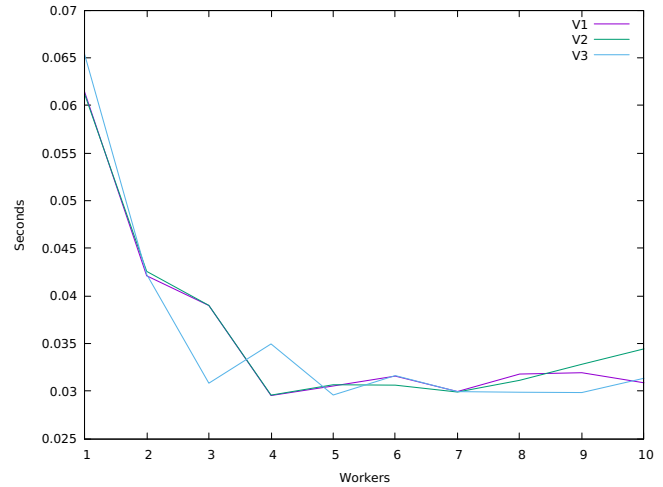
(a) Version 1: Divide the area in slices. The first thread awaits all others and calculates the total after.



(b) Version 2: Same approach as a) but total is calculated in main thread. Results are passed as return values and captured by using `pthread_join`.



(c) Version 3: Using workers to calculate matrix operations per row. Main thread calculates result when calculations are complete.



(d) Comparison between the different versions

Fig. 1: Comparison between the different parallel matrix operations for matrix size of 10 000 x 10 000

II. APPROXIMATING PI

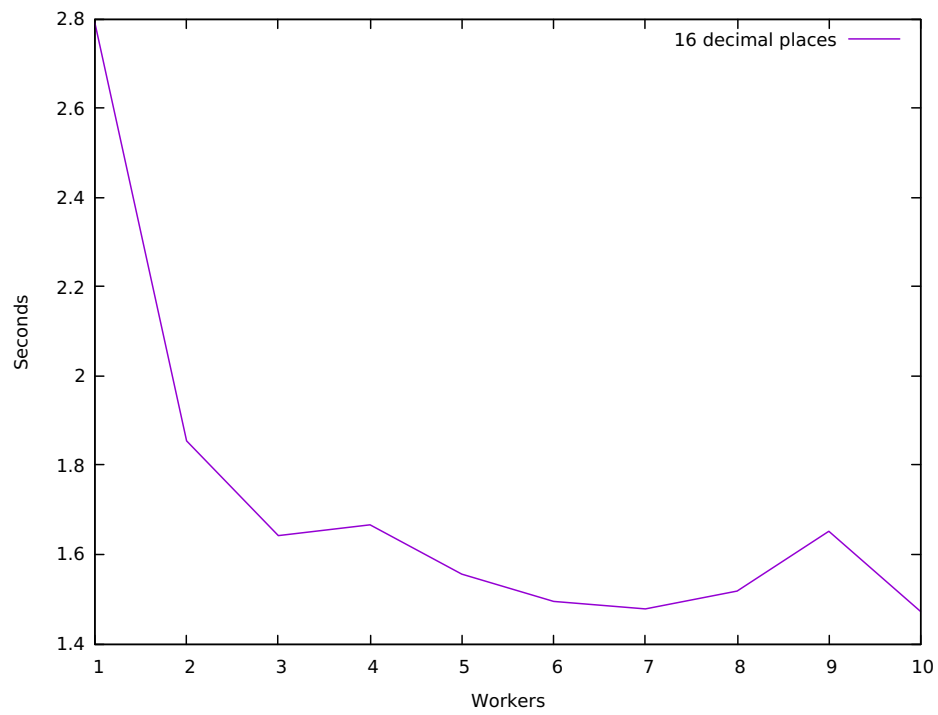


Fig. 2: Performance when calculating pi to 16 decimal places.