Report 2

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1 Introduction

This analysis aims to implement an algorithm that computes the approximation of π in a parallel fashion making use of the MPI interface. Moreover, a comparison with the openMP implementation discusses in the previous exercises can be found.

2 Assignment 3

The algorithm was run from 1 to 40 processes on two nodes in MPI case, while in OMP case just from 1 to 24. The running time was measured and plotted in Figure 1 and Figure 2. It is clear how the processes need more overhead to be launched and coordinated on two nodes in the MPI case instead of the simpler openMP case. However, as the number of processes increases, the MPI behaviour gets closer to the openMP one, this is probably due to the fact that the overhead associated with the processes is mainly given by setting the environment and remains constant with the number of processes. This means that the ratio overhead/processes decreases and the running time tends to the openMP one.

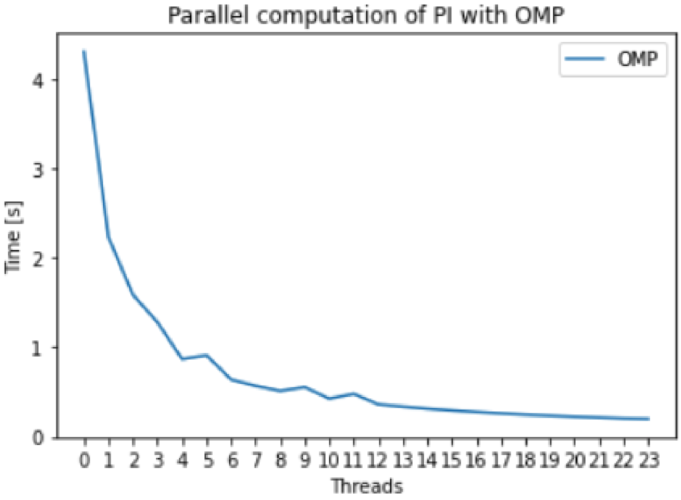

Figure 1: OMP scaling: 24 threads

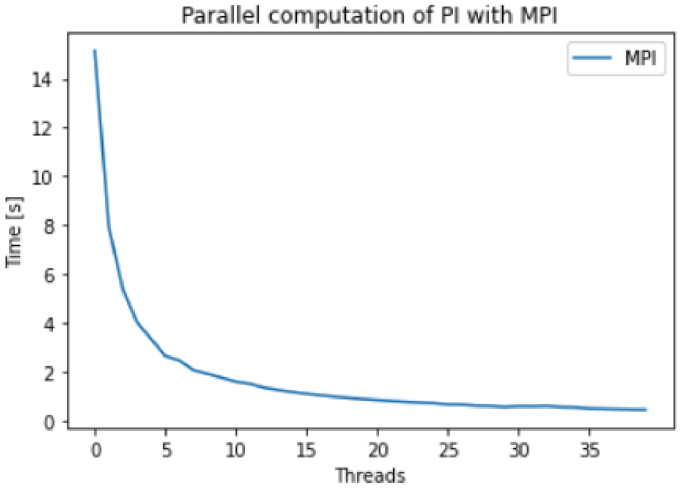

Figure 2: MPI scaling: 40 threads