

OpenMPI Report

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1 Introduction

In this report we will cover the results obtained while solving the exercises relative to the OpenMPI section of the course of Parallel Programming

2 Exercise 1 - Approximating Pi using OpenMPI

We were asked to compute an approximation of Pi using the same MonteCarlo method that we've been using in the OpenMP section of our course. In the table below we can see the results obtained with a fixed N equal to 1000000000.

| Threads | Time |
|---------|-----------|
| 2 | 0.990891 |
| 4 | 0.51107 |
| 8 | 0.271011 |
| 16 | 0.143265 |
| 20 | 0.11295 |
| 24 | 0.0893546 |
| 28 | 0.08378 |
| 36 | 0.06856 |
| 40 | 0.063421 |

As we can see from the table the results obtained are the same up to a number of threads equal to 20 (which the maximum number of threads that we can use with OpenMP in our machine if we want to stick of the logic one thread per core). We can see how to execution time keeps decreasing. In particular we can see that doubling our computational resources almost halved our execution time.