

Matrix Multiplication with POP

Performance analysis of a distributed matrix multiplication program

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Abstract

The objective of this lab is to execute and to analyse the performances of a parallel square matrices multiplication program written in POP-C++ and in POP-Java. As for the MPI/OpenMP lab, these programs computes square matrices multiplication, i.e. the product $A \times B = R$ where A , B and R are $N \times N$ matrices (square matrix).

The program uses a « Master/Worker » approach. The master prepares the matrices, creates the workers (POP-C++ or POP-Java parallel objects), sends the work to do to each workers, waits for the partial result of each worker and finally reconstructs the R matrix.

The algorithm behaves similarly to the one of the MPI/OpenMP lab by dividing the matrix A in several bloc of lines and the matrix B in several blocs of columns.

Chapter 1

Computation of sequential references times

The sequential reference time is the time used to do the computation using only one worker and one core.

Chapter 2

Computation of parallel times

Each group will have to compute for five different sizes of the matrix (N), the time for five different numbers of workers (W).

Matrix sizes:

Matrix sizes (N)
1080
2160
3240
4620
6240

Workers distribution:

Workers (W)	$= LxC$
2	$= 1x2$
4	$= 2x2$
6	$= 2x3$
9	$= 3x3$
10	$= 5x2$

Abstract

Les sources du projet sont disponibles sur GitHub à l'adresse suivante :
<https://github.com/Alshweiki/ProgAlg-Lab2>