

Assignment 4

SPM course a.a. 23/24

May 13, 2024

Consider the sequential code provided *nkeys.cpp*. It implements a numerical computation on a set of keywords. The number of keywords is an input parameter of the program (*nkeys*), and so is the number of keyword pairs it generates (*length*).

Carefully examine the data dependencies in the sequential code given and implement an MPI-based parallel version of the same code.

Measure the scalability of your parallel MPI version on the spmcluster cluster (using only the internal nodes) considering the following two cases at least:

- *nkeys*=2 *length*=1000000
- *nkeys*=100 *length*=1000000

Once you have the parallel code, **email it to the teachers along with a brief document** (PDF format, max 4 pages) describing how to compile and execute the code, the performance figures obtained, comments, problems faced, solutions adopted, etc. Please provide also the SLURM scripts used to launch the tests.

Deadline: Two weeks. However, no later than end of May 2024.