
Solution for Project 5Due date: 30.11.2022, 23:59

HPC 2022 — Submission Instructions
(Please, notice that following instructions are mandatory:
submissions that don't comply with, won't be considered)

- Assignments must be submitted to iCorsi (i.e. in electronic format).
- Provide both executable package and sources (e.g. C/C++ files, Matlab). If you are using libraries, please add them in the file. Sources must be organized in directories called:
Project_number_lastname_firstname
and the file must be called:
project_number_lastname_firstname.zip
project_number_lastname_firstname.pdf
- The TAs will grade your project by reviewing your project write-up, and looking at the implementation you attempted, and benchmarking your code's performance.
- You are allowed to discuss all questions with anyone you like; however: (i) your submission must list anyone you discussed problems with and (ii) you must write up your submission independently.

This project will introduce you a parallel space solution of a nonlinear PDE using MPI.

- 1. Task 1 - Initialize and finalize MPI [5 Points]**
- 2. Task 2 - Create a Cartesian topology [10 Points]**
- 3. Task 3 - Change linear algebra functions [5 Points]**
- 4. Task 4 - Exchange ghost cells [45 Points]**
- 5. Task 5 - Testing [20 Points]**
- 6. Task 6 - Quality of the Report [15 Points]**

Additional notes and submission details

Submit the source code files (together with your used `Makefile`) in an archive file (tar, zip, etc.) and summarize your results and the observations for all exercises by writing an extended Latex report. Use the Latex template from the webpage and upload the Latex summary as a PDF to iCorsi.

- Your submission should be a gzipped tar archive, formatted like `project_number_lastname_firstname.zip` or `project_number_lastname_firstname.tgz`. It should contain:
 - all the source codes of your MPI solutions.
 - your write-up with your name `project_number_lastname_firstname.pdf`,
- Submit your `.tgz` through Icorsi.