



Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

High-Performance Computing Lab for CSE

2024

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Discussed with: FULL NAME

Solution for Project 2

Due date: 25 March 2024, 23:59

HPC Lab for CSE 2024 — Submission Instructions
(Please, notice that following instructions are mandatory:
submissions that don't comply with, won't be considered)

- Assignments must be submitted to Moodle (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.

1. Computing π with OpenMP [20 points]

Strong Scaling Analysis:

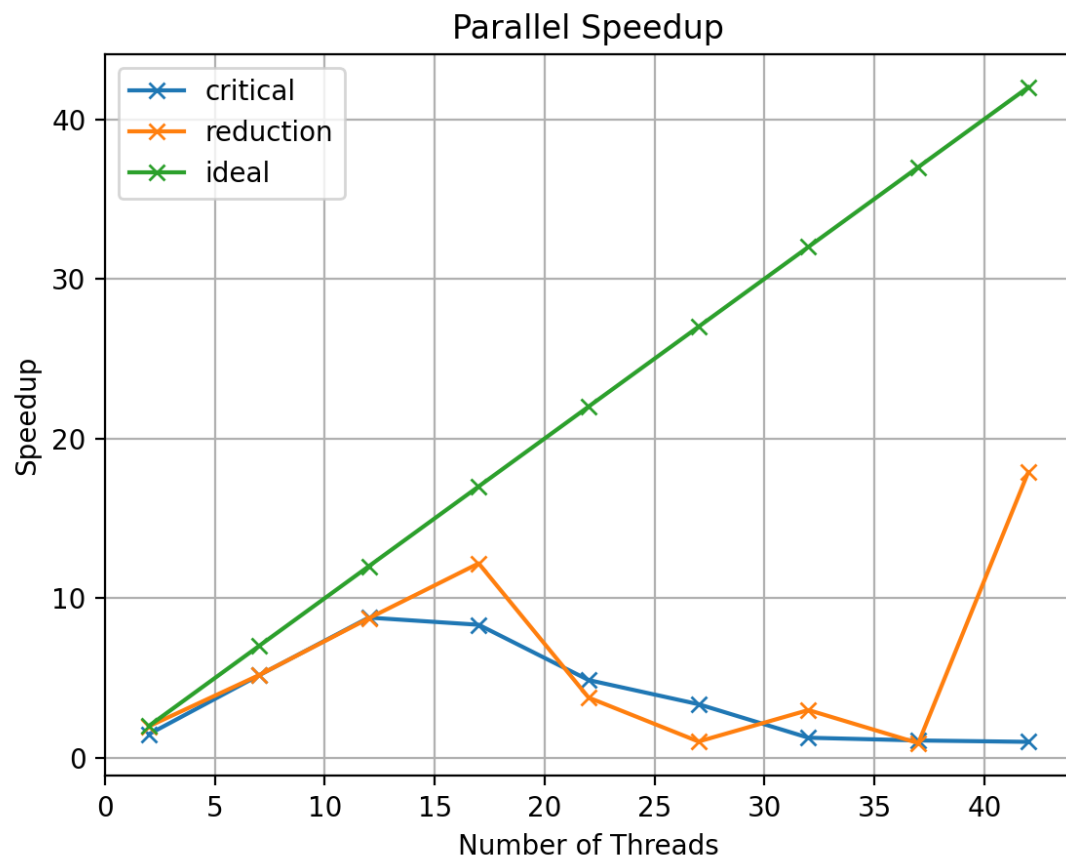


Figure 1: Parallel Speedup

Weak Scaling Analysis:

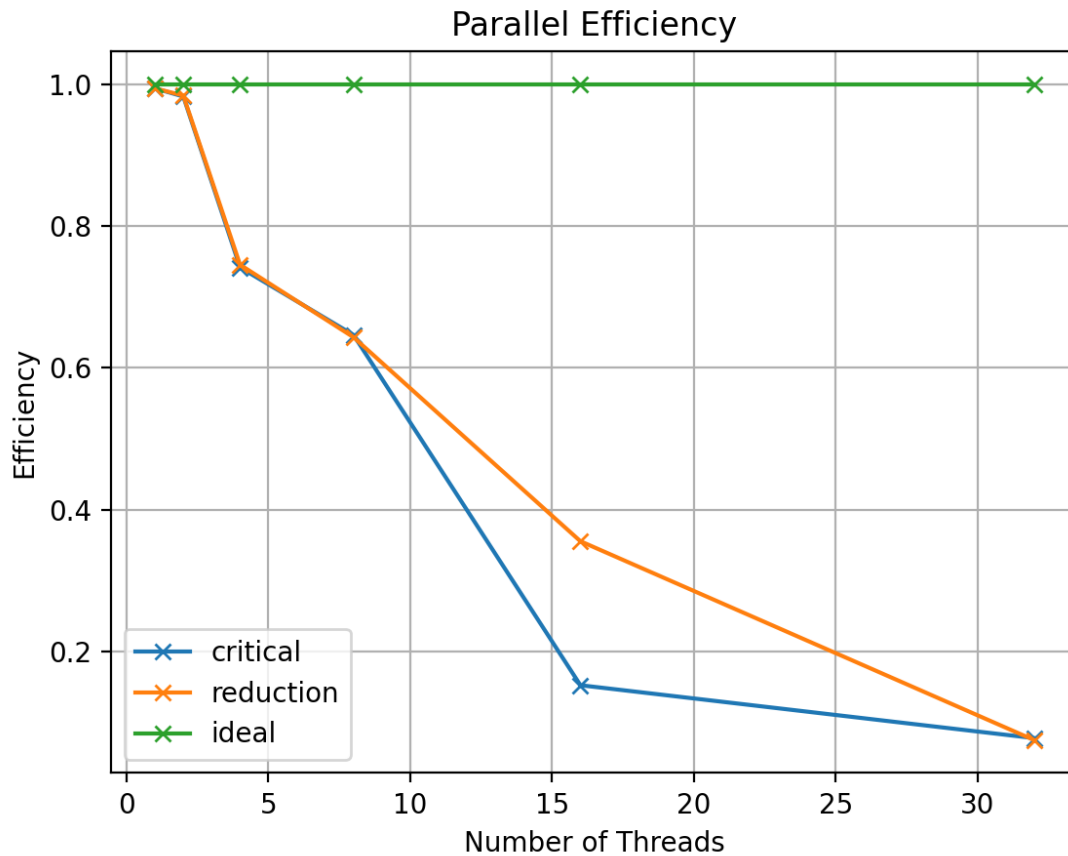


Figure 2: Parallel Efficiency

2. The Mandelbrot set using OpenMP [20 points]
3. Bug hunt [10 points]
4. Parallel histogram calculation using OpenMP [15 points]
5. Parallel loop dependencies with OpenMP [15 points]
6. Quicksort using OpenMP tasks [20 points]