ETH zürich

High-Performance Computing Lab for CSE **2023**

Student: FULL NAME Discussed with: FULL NAME

Solution for Project 2

Due date: 20.03.2023 (midnight)

HPC Lab for CSE 2023 — 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.

This project will introduce you to parallel programming using OpenMP on Euler.

1. Shared memory π-calculation using OpenMP [20 points]

2. Quicksort using Task-Concept of OpenMP 3.1 [20 points]

3. The Mandelbrot set using OpenMP [20 points]

4. Bug hunt [10 points]

5. Parallel histogram calculation using OpenMP [15 points]

6. Parallel loop dependencies with OpenMP [15 points]