



Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich

## High-Performance Computing Lab for CSE

2024

Student: Benedict Armstrong

Discussed with: FULL NAME

---

## Solution for Project 02

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  $\pi$  with OpenMP [20 points]**
- 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]**