Università della Svizzera italiana

Institute of Computational Science ICS

**High-Performance Computing Lab** **2020**

Student: FULL NAME Discussed with: FULL NAME

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## Solution for Project 2

Due date: 20.10.2020 (midnight)

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**HPC Lab 2020 — 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 to parallel programming using OpenMP.

## 1. Parallel reduction operations using OpenMP [10 points]

## 2. The Mandelbrot set using OpenMP [30 points]

## 3. Bug hunt [20 points]

## 4. Parallel histogram calculation using OpenMP [20 points]

## 5. Parallel loop dependencies with OpenMP [20 points]