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## Solution for Project 2

Due date: 26.03.2021 (midnight)

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**HPC Lab for CSE 2021 — 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.

- 1. Parallel reduction operations using OpenMP [10 points]**
- 2. The Mandelbrot set using OpenMP [30 points]**
- 3. Bug hunt [15 points]**
- 4. Parallel histogram calculation using OpenMP [15 points]**
- 5. Parallel loop dependencies with OpenMP [15 points]**
- 6. Task: 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 Moodle.

- 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 OpenMP solutions.
  - your write-up with your name `project_number_lastname_firstname.pdf`,
- Submit your `.tgz` through Moodle.