1   Parallel processing of vectors and matrices

Restructure the implementation of exercises 1,3,4,5 of PL4 (working with vectors and matrices) with Rust threads and concurrency mechanisms in the standard (or parking_lot) libraries.

Keep the same interface to reuse the code in main to test the functions.

2   Area of Mandelbrot Set (1)

Implement the parallel function to calculate the area of the Mandelbrot Set with tasks and the Threadpool library.

3   Working with parallel iterators and closures

Restructure the implementation of exercise 7 of PL4, with parallel iterators, using Rayon.

4   Area of Mandelbrot Set (2)   (Group Evaluation #2)

a.   Implement the parallel function to calculate the area of the Mandelbrot Set, with Rayon libraries.

b.   Using Instant and Duration from the std::time module, compare the elapsed time of the implementation (also with the Threadpool implementation of exercise 2 and the sequential implementation of PL4). What can you conclude?

Extra Lab (Students may advance further outside of lab)

a.   Parallelize the Cholesky decomposition of PL4 with Rayon.

b.   Using Instant and Duration from the std::time module, compare the elapsed time of the with the sequential implementation of PL4. What can you conclude?

Credits:

- Version 1.0, Luis Miguel Pinho, with inputs from:
    - The Rust Programming Language, by Steve Klabnik and Carol Nichols, with contributions from the Rust Community, https://doc.rust-lang.org/stable/book/title-page.html
    - Rust by Example, https://doc.rust-lang.org/stable/rust-by-example/index.html
    - Learning Rust, https://learning-rust.github.io/
    - Rust Cookbook, https://rust-lang-nursery.github.io/rust-cookbook/
    - Code examples for the book Programming Rust, https://github.com/ProgrammingRust