Introductory skills challenge

Target: check knowledge and skills in the development of solutions by using programming languages and current paradigms of computing.

Requirements:

- C/C++ compiler
- Computer with less than 10-year CPU.

- Develop C/C++ programs to compute the Dot Product of Two Vectors with 10,000 single-precision floating-point elements each stored in text files. The output results must be also stored in a new text file.
  1. Use any available library or function.
  2. Take advantage of Pthreads.
  3. Take advantage of only SSE (CPU Streaming SIMD Extensions) and include them in your program.

Explain in detail the steps and algorithms used to implement your solution and compare the execution times and the error precision of your three solutions.

- Develop C/C++ programs to compute the Matrix Multiplication of two single-precision floating-point input matrices with sizes 500x500. With each matrix stored in text files. The output results must be also stored in a new text file.
  1. Use any available library or function.
  2. Take advantage of Pthreads.
  3. Take advantage of only AVX (CPU Advanced Vector Extensions) and include them in your program.

Explain in detail the steps and algorithms used to implement your solution and compare the execution times and the error precision of your three solutions.