

Homework 2 (20%)

1. Your task is to implement a matrix-matrix multiplication $C = A \cdot B$, where A , B , and C are square matrices.
2. Feel free to use every known algorithm and programming technique to decrease the single-core runtime of your program as long as you adhere to the following guidelines. All three matrices are
 - a) represented as a linearized one-dimensional array with adjacent elements.
 - b) passed to your multiplication routine in a row-major format. Meaning: it is not allowed to store one of the input matrices in a transposed layout. However, the computation of the transpose is allowed to be a part of the multiplication routine itself such that the matrix is transposed after the start of the time measurement.
 - c) Make sure you use double precision floating-point operations for your multiplication. The use of threads is prohibited.
3. Measure run times for matrix sizes of 1000×1000 , 1500×1500 , 2000×2000 , 3000×3000 , 4000×4000 , 5000×5000 ,
4. Compare your run times with that of a highly optimized professional routine (eg. `dgemm` from BLAS level 3)
5. Summarize your findings on p pages with $p \leq 2$
 1. due date Feb 16, 2015.
 2. submit as pdf file by e-mail to ulrich.ruede@fau.de