May 02, 2017

HW-2

Serial Matrix-Matrix Multiplication

Consider a matrix-matrix multiplication (BLAS3 operation) for various dense matrix sizes. Write a serial algorithm (written in C, C++ or Fortran) based on indexing system (i,j,k) measuring the effects of ordering of indexing for different matrix sizes.

Follow the instructions below:

1. Considering your matrix-matrix implementation in HW-1, Implement serial code optimization techniques (such as loop fusion, loop unrolling, loop blocking, loop fission, array padding, inlining, de-vectorization etc.) to show potential improvements in your algorithm. (Discuss and show the possibilities)
2. Test matrix sizes ranging from 500 to 5000 with the increment 500.
3. Test matrix sizes ranging from 5000 to 10000 with the increment 1000.
4. Plot a graph showing wall clock time vs matrix sizes for all the possibilities of indexing.
5. Specify and consider the architecture where application running on.
6. Discuss the results obtained.
7. Submit your soft copies.

DUE DATE: May 9, 2017

Dr. H. Hakan GÜREL