

Extra Credit: Matrix Multiplication

CSC 411

Due Monday, May 4 at noon

1. Using the C programming language, implement a matrix multiplication routine that takes a pointer to the matrix memory (stored as floats in row-major order). This version of multiplication should iterate in the “usual” order: three loops, first over i (rows of output), then over j (columns of output), and then over k (the “inner loop” variable).
2. Also in C, implement a version of matrix multiplication that has the same interface as your first function, but iterates in the order: ikj - first by rows, then by inner loop indices (which of course no longer correspond to the inner loop), then by columns.
3. In `main`, generate a random 2000×2000 matrix of floats between 0.0 and 1.0. Verify that both implementations compute the same product. Time each version of multiplication, using an average of 10 runs.
4. Deliverables are your code (you can put everything in one `.c` file) and a markdown file that has a table with the average times for the two versions of matrix multiplication. Note anything interesting.
5. Email your deliverables to Dr. Kelley in a single zip or tar file named with your last name by the deadline

The deadline is a hard deadline - anything submitted from 12:01PM onwards will not be accepted.