

Problems 1 and 2 in Chapter 4 of Prof. Stewart's draft text. (15 points each)

3. (This problem is worth 60 points.)

Implement in the language of your choice (C or Fortran 9-X) the three loop orderings shown in class for the matrix-matrix product. Measure the performance of each ordering on multiplication of $N \times N$ random matrices versus N . The matrices should be defined outside the multiplications loops. Implement also a blocked version of the product, with varying block sizes (4,8,16,24,32) and varying N .

Compare the timings achieved in each case.

Provide details of the machine you ran your code on. Find out information on the processor, the cache and register sizes, and any other information you can find. Discuss your results in the light of these and the language you are programming in.

We will compare the results you achieve with those on a vendor supplied routine later in the course.