CS518A: Parallel EDA

Homework #1

Please write two computer programs which perform the following matrix multiplication operation:



where



**Requirements**:

1. One program is a sequential program, and the other is a shared-memory parallel program.
2. Both programs must allow users to type/choose values of *l*, *m*, and *n* before performing the multiplication .
3. The sequential program must be implemented in C/C++, while the shared-memory parallel program must be implemented in C/C++ with OpenMP. (Please use gcc or g++ to compile both programs.)
4. Please verify the correctness of the two programs by printing matrices *A*, *B*, and *C* on the screen. You may wish to give arbitrary values of *l*, *m*, and *n*, and then verify the multiplication results.
5. Please write a report (2~4 pages) which contains the followings:
   * Explanations of your algorithm(s) and/or source code (How do you parallelize the matrix multiplication operation?)
   * A chart which shows the relationship between the parallel program’s execution time and the number of threads used. You may wish to suppress the program’s functionality of printing matrices *A*, *B*, and *C* on the screen.
   * Comparisons of the performance between the sequential program and the parallel program. You may wish to suppress the programs’ functionality of printing matrices *A*, *B*, and *C* on the screen.

**Deadline**: Tuesday, October 6th, 2009