HW4: Matrix Matrix Multiplication with Open SHMEM

Deadline: October 28 2016 11:59PM ET

- Starting from the Homework 3, implement a matrix-matrix multiplication using Open SHMEM primitives (instead of MPI).
  - Assume square matrices (each one being N x N elements)
  - Assume square process grid (PxP processes)
  - The matrices (A, B and C) are initially stored in row-major format in files, loaded by PE 0 and distributed among participants.
- Difference with Homework 3: For each matrix (A, B and C) a 2D block of NB elements on each dimension is owned by each PE.
  - Extra credit will be provided for solutions trying to minimize the additional memory requirements (i.e. do not store each matrix on each PE).
  - Extra credits will be provided for solutions trying to minimize the number of calls to OpenSHMEM
  - For performance reasons minimizing the amount of data transferred is critical. Extra credit will be provided for solutions that are optimal in number of messages (and amount of data transferred).
    - The Makefile should provide a static library libgemm.a that contains a function with the following prototype
      int dgemm_(integer N, double alpha, char* A_filename, char* B_filename, double beta, char*C_filename)
    - This function is collective, i.e. all processes in the *current* OpenSHMEM context must call it, and upon return the C_filename will contain the updated C matrix.