

Assignment on High Performance Fortran

1. Explain the following related to high performance Fortran :
 - Processor Arrangements,
 - Data Distribution,
 - Data Alignment,
 - FORALL Statement,
 - INDEPENDENT loops, and
 - Intrinsic Functions.
2. Write an HPF program to multiply two matrices A and B of size $N \times N$. (Do not use the MATMUL intrinsic!) Estimate the communication costs associated with this program if A and B are distributed blockwise in a single dimension or blockwise in two dimensions.
3. Compare the performance of your matrix multiplication program with that of the MATMUL intrinsic. Explain any differences.
4. Develop a performance model for the HPF Gaussian elimination program, assuming a one-dimensional cyclic decomposition of the array A.
5. Develop a performance model for the HPF Gaussian elimination program, assuming a two-dimensional cyclic decomposition of the array A.