Homework 01, due on 05/02.

Problem 1. If a problem of size W has a serial component W_s**,** show that W/W_s is an upper bound on speedup, no matter how many processes are used.

Problem 2. A parallel program executes in 242 seconds on 16 processors. Analysis shows that 9 seconds are spent executing initialization and cleanup on one processor, and all 16 processors are active during the remaining 233 seconds. What is the scaled speedup?

Problem 3. Assume that a hypercube interconnection network is used (Table 4.1 in "Introduction to Parallel Computing" lists all communication times). Analyze the parallel run time for the matrix-vector multiplication algorithm using 1D column-wise decomposition. Also perform the scalability analysis and find the isoefficiency of the algorithm.