

Module 3.2 Homework Exercises

Problem 1: Unroll the following pseudocode loop 4. Assume that array y has 16 elements.

Array y is an array of integers

FOR x = 1 to n

$y[x] = y[x] * 7$

END FOR

Problem 2: Estimate the performance improvement of running the unrolled loop on a vector architecture compared to the original (unrolled loop) code. Assume that each array update instruction takes time A and that 1 check and update of the loop conditions requires time 2A.

Problem 3: Apply Foster's methodology to the solar system modeling problem for a solar system with 9 planets. Make sure to identify one or more types of processing elements in Flynn's taxonomy would be appropriate for your algorithm to run on and justify your selection(s).