

ASSIGNMENT 3

Due February 26, 2004 (before start of class)

Problem 3

Let N be a large integer, at least around 1,000,000.

1. Write a MATLAB program to add up N numbers with another N numbers. Make sure that you use a loop to carry out the above computation in order that one can make a clearer interpretation of the results. Use the MATLAB functions, `tic toc`, or `etime` to time the operation. Use the "help" within MATLAB to find out how to use these functions. MATLAB's timing mechanism is only accurate to a tiny fraction of a second. That is why one has to carry out these operations on a large number of elements in order to obtain reliable timing.
2. You should try operating on integers and floating points to see if it makes any difference.
3. Repeat the computation using the other operations: subtraction, multiplication, and division (make sure you don't divide by zero). Are there any significant differences in the speeds of these four operations in MATLAB?
4. Now if one has to divide a very long vector by a scalar, like for example π , can you think of a quicker way to do that? Does your trick work if one is dividing the elements of a vector with the corresponding elements of another general vector?

Submit a hardcopy of all your programs and outputs. Make sure you comment on the results.