

Lab 2
Due Date: 10/08/2014
New Beginnings
Professor York

Reminder: For each algorithm that you code, fill out an algorithm summary sheet and include it in your portfolio along with a printout of your code.

1. Write a C program to compute the product of two $n \times n$ matrices and print the result. Your program should read data from a file named "data4.txt". The first element in the file is a positive integer denoting the "n" the order of the matrices, followed by a blank line, followed by n rows of n integers, followed by a blank line, followed by n rows of n integers. The integers in each row are separated by blanks.

Questions:

- a. Does it matter if the elements of the matrices are positive or negative?
 - b. How is the matrix product related to the dot product?
 - c. How would your program have to be modified if the matrix values were separated by commas instead of blanks?
2. Write a C program to compute the number of binary digits in the representation of "n", a positive decimal integer that will be entered at an input prompt of your program. Your program should print the number of binary digits.
 3. Write a C program to sort an array of n positive integers in ascending order using selection sort and print them out. Your program should read its input from a file named "data1.txt". The first element in the file is a positive integer denoting "n", the number of elements in the list to be sorted, followed by a blank line, and followed by a list of n positive integers separated by blanks.
 4. Write a C program to sort an array of n positive integers in ascending order using bubble sort and print them out. Your program should read its input from a file named "data1.txt". The first element in the file is a positive integer denoting "n", the number of elements in the list to be sorted, followed by a blank line, followed by a list of n positive integers separated by blanks.

Questions:

1. Time the two sorts and determine which one runs faster.