McMaster University

Principles of Programming Assignments

Assignment 4 COMPCS 2S03

Assignment Submission Guidelines:

Individually submit through dropbox on avenue.

1. Submit programs for all problems as separate files in a zip folder.
2. ~~Submit research and discussion part as a single file~~
3. Code should contain proper COMMENTS. First comment must include your authorship.
   //Author: Full Name ID

Problem 1- (***Unique elements***) You have learned sorting and searching arrays in class. For this exercise write a program in C to print all unique elements in an array. You can start with initializing an array of any size or get the array as input from user. **(Marks 2.5)**

Problem 2- (***Upper Triangular***) Write a program in C to find the sum of upper triangular elements of a matrix use the example below as a multi-dimensional array. **(Marks 2.5)**

1	2	4
3	4	6
3	8	8

Example: Sum of upper triangular matrix elements is: 2+4+6=12

Problem 3. **(Random Permutation**) A random permutation is a random ordering of a set of elements or numbers. The use of random permutations is often central to fields that use randomized algorithms. A good example of a random permutation is the shuffling of a deck of cards. Write a program in C to generate a random permutation of array elements. You can start with initializing an array of any size or get the array as input from user. **(Marks 2.5)**

Problem 4. (***Arrays and Recursion***) You have learned to create recursive functions in a number of problems. Recursion and arrays make an excellent team. Write a program in C to get the largest element of an array using recursion. You can start with initializing an array of any size or get the array as input from user. **(Marks 2.5)**