IC150P Computation for Engineers Lab

Odd Semester, 2017

Assignment sheet no. 07, Batch –Wednesday, Topic: Arrays-2

OBJECTIVES:

- To do I/O, initialization and arithmetic operations involving multidimensional arrays
- To learn passing of multidimensional arrays to functions

ASSIGNMENT PROBLEMS:

Task-1: Write separate C-functions to take input of elements of a matrix from user, and determine whether it is a sparse matrix or not. A sparse matrix is matrix which has more zero elements than non-zero elements and satisfies the condition, number of zeros > 0.5*(number of rows * number of columns). Also print the number of zeros in the matrix, positional indices and memory addressees of these elements.

Task-2: Write separate C-functions to (i) search for a string key in a set of strings in a two dimensional array and prints the index where key is found. If the string is not found it should print "key not found". (ii) sort a set of strings alphabetically in a two dimensional array and print the unsorted and the sorted set of strings.

Task-3: Write separate C-functions to perform the following operations on two dimensional matrix: (i) take input of elements of a n × n (< =100) square matrix from user, (ii) obtain the lower triangular matrix from the entered matrix and find sum of matrix elements (iii) print the elements of matrix in proper row and column format. Using these functions write a C-program which takes matrix A from user, prints the lower triangular matrix L.

NOTE:

- Each task carries 2 marks.
- You are required to bring pseudo codes (and not full programs) for each of the tasks written in a notebook to the lab session and present them to the Instructors/TAs for evaluation.
- The codes need to be created from scratch while you are in lab.

REMEMBER:

- To use spaces and indentation to improve the readability of your code.
- To add a comment block at the top of your code file stating your name, roll no., assignment and task no.
- To provide comments at appropriate places to aid lucid comprehension of modules.