IC150P Computation for Engineers Lab

Odd Semester, 2017

Assignment sheet no. 04, Batch – Wednesday Topic: Arrays-1

OBJECTIVES:

- To get started with I/O, initialization and arithmetic operations involving arrays
- To learn passing of arrays to functions

ASSIGNMENT PROBLEMS:

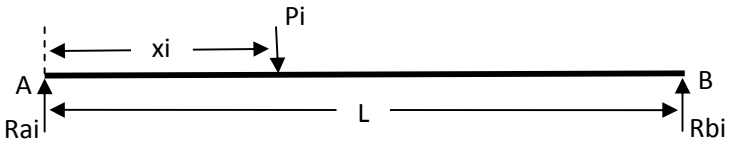
Task-1: Declare a set as a global array and create separate functions for (i) the input of *n* (<=100) elements of the array through keyboard, (ii) calculating the geometric mean of entered numbers, and (iii) echoing the position indices, addresses and magnitudes of the array elements smaller than the geometric mean in a 3-column format with appropriate headings.

Task-2: Write a C-program to input a one dimensional local array with *n* (user specified) elements through keyboard. Define another local one dimensional array with the same number of elements, such that, an element with integer position index *i* equals $(2i^3)^{0.5}$. Create separate functions (i) to add the two arrays, and (ii) sort the elements of the resulting array in a descending order.

Task-3: A beam is a structural element which is often used to carry loads acting perpendicular to its length. The following illustration outlines the procedure for computing support reactions in a simply supported beam subjected to a single point load. For a system of *n* point loads, the reactions can be determined by cumulating the individual cases.

Inputs: (i) L = Span of the beam (m); Pi = Magnitude of the ith point load (N); xi = Distance of the ith point load from support A (m)

Calculations: (i) Rbi = Reaction at support B under Pi (N) = Pi * xi /L; (ii) Rai = Reaction at support A under Pi (N) = Pi – Rbi



Write a C program, implementing local arrays for **Pi** and **xi** passed to a function to calculate the support reactions in a simply supported beam subjected to a system of n point loads.

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/TAsfor 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