



IC150P Computation for Engineers Lab

Odd Semester, 2017

Assignment sheet no. 09, Batch – Wednesday

Topic: File handling

OBJECTIVES:

- To read/write records from/into a data file
- To implement standard dynamic memory allocation functions

ASSIGNMENT PROBLEMS:

Task-1: The file *depth.txt* contains a set of n sounding values y_i (in m) taken at an interval of h (in m) across a river-section. Write a C program to read n , h and y_i values from *depth.txt*, and store the soundings in a dynamically created 1D-array. Write a function to calculate the area of river cross section using trapezoidal rule: $Area = (h/2) * [(y_0 + y_{n-1}) + 2 * (y_1 + y_2 + \dots + y_{n-2})]$. Can you produce the output on screen using `fprintf()`?

Task-2: Use a text editor to create the data file (*poem.txt*) containing the following lines:

Hot cross buns! Hot cross buns!
One a penny, two a penny,
Hot cross buns!
If you have no daughters,
give them to your sons.
One a penny two a penny,
Hot cross buns!

Create separate functions to, (i) count the number of words contained in *poem.txt*; (ii) count the number of instances of any user specified word (case-insensitive) contained in *poem.txt*; (iii) appropriately append the output of functions (i) and (ii) in *poem.txt*.

Task-3: Each record in the data file *grades.txt* comprises of a comma-separated sequence of student name, roll no. and letter grade. Write a C program to read the first n (user specified) records into a dynamically defined array of structures and create separate files to record student name and roll number corresponding to each grade.

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