



IC150P Computation for Engineers Lab

Odd Semester, 2017

Assignment sheet no. 01, Batch – Wednesday

Topic: I/O

OBJECTIVES:

- To perform interactive input through keyboard and produce formatted output on screen
- To get started with the use of loops, relational and logical operators
- To implement standard math functions, learn about the ASCII character codes and about triggering EOF

ASSIGNMENT PROBLEMS:

Task-1: Given that the velocity v (m/s) of a freely falling object of mass m (kg) is, $v = \frac{mg}{c}(1 - e^{-ct/m})$, where, $c = 12.5$ kg/s is the drag coefficient and $g = 9.81$ m/s² is the acceleration due to gravity. Write a C-program taking m as an input through keyboard to calculate the values of v for the time interval, $t = 0$ to 10s in increments of 1s. Present the values of t & v with 4 places after the decimal point in a two column format on screen.

Task-2: Write a C-program to get a character input through keyboard and determine if it is an alphabet and subsequently classify it as a vowel or consonant. The logic adopted should work for both, upper and lower case letters. The program should loop until an EOF is triggered through the keyboard.

Task-3: Write a C-program to determine the area (A) of a triangle using Heron's formula and the included angles in degrees using the Side-Angle-Side (SAS) formula.

Heron's formula: $A = \sqrt{s(s-a)(s-b)(s-c)}$ where, $s = (a+b+c)/2$

SAS formula: $A = 0.5 * side1 * \sin(included\ angle) * side2$

The sides a , b and c should be taken as inputs through keyboard. The code should echo all the inputs on screen while presenting the results.

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