Assignment-II

Write your name, roll number, PC number and assignment number in the header of the program file as comments. You may give your program file name as <asgn><no_><RollNo>.c. For example, a student with roll number 21CS1001 should name the program file for assignment number 2(a), as asgn2a_21CS1001.c.

Submit all the programs separately against each assignment (i.e. asgn2a, asgn2b, and asgn2c) in the Moodle System.

All the results for each assignment should be submitted together in a separate file (named result.txt). Provide the result in a separate output file (named, result_<assgn><no>.txt). Use standard output redirection feature to generate the output file.

Hints. Suppose you would like to redirect your output to a file 'result.txt'. If you run the program with the following command

./a.out >result.txt

Output of your program (generated by printf(.) function) will be written in file result.txt. You need to provide input from your input, by remembering the sequence of inputs to be given.

If you execute the program multiple times, you may concatenate the outputs in a single file by using the following redirection command:

./a.out >>result.txt

Input redirection (optional):

You may also store your input (the ordering as per requirement of the program should be preserved) in an input file in.txt, and execute the program as follows:

./a.out <in.txt >result.txt

2(a) Write a C-program which evaluates the value of the following function as given below for an input real number x (to be read):

$$f(x)= x^4-36x^3+4x-3$$

The program also computes the sign of the derivative of the function (f'(x)). If the derivative is positive, it prints '1'. If it is negative, prints '-1'. Otherwise, it prints '0'. Run your program to provide results for the following input numbers.

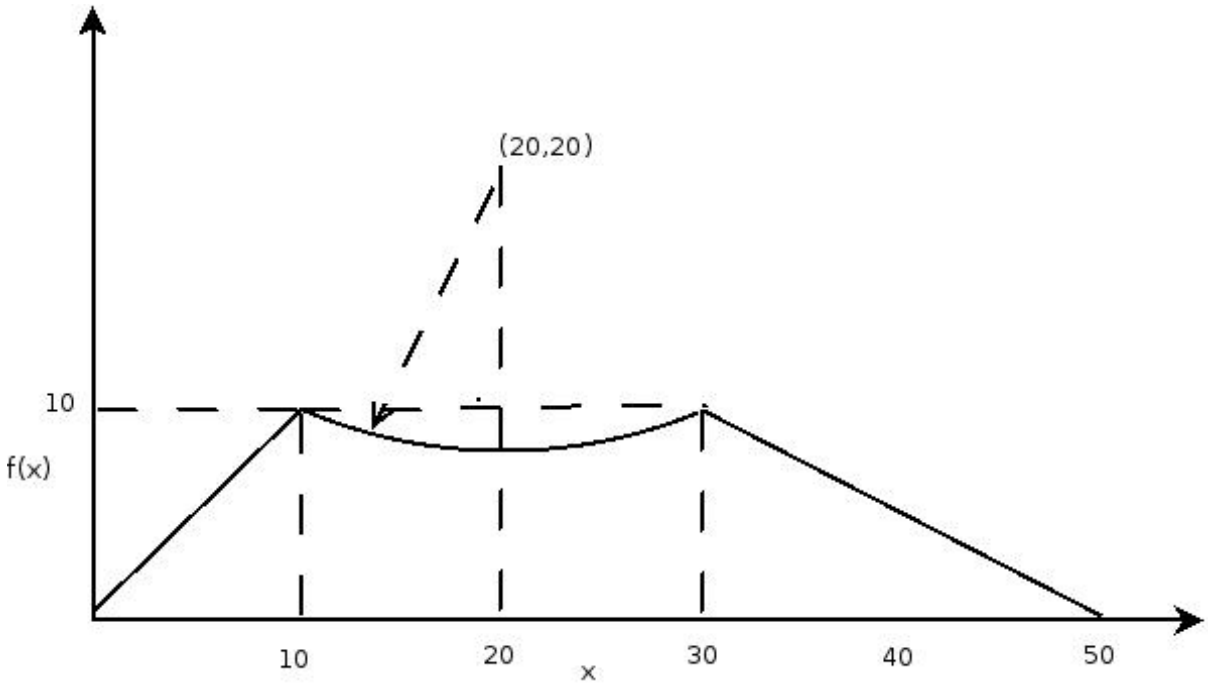
-5.4, 2.4, 3.0, 5.0, and 38.

2(b) Write a C-program which takes three distinct points (in 2-D coordinates) as inputs and checks whether they form a triangle or straight line. If they form a triangle, it prints "Formed triangle" and prints its area. If they form a straight line, it prints "Formed Straight Line" and prints the length between two end points. If any pair of points are non-distinct, it prints coordinates of that point, and notifies "Non-distinct input point" and prints the length between two distinct points, if any.

Provide results for the following coordinate points:

(2,3), (4,5), (10,23)
(1,2), (4,8), (9,18)
(0,0), (1,3), (1,3)

2(c). Write a C-program and implement the function given in the following diagram.



Provide functional values at the following values of x

x= 5, 15, 25, 40, and 60.

N.B. All your programs may be tested by other input values.