

Section 14

PDS Lab

Assignment - 2

15.12.2021

Instructions:

- Give sufficient comment against each statement in your program.
- You should save each program with the file name (e.g., Lab2_1.c for the program of Problem 1 in this assignment).
- There is a partial credit even if your program does not run successfully for all the test cases as mentioned.
- There are FIVE problems and you have to solve in 150 minutes. A tentative time against each problem is given and can be considered for your guidance.
- You should upload each program (only .c file) against the problem. There is no need to submit any .zip file at the end of your lab.

1. Read any three numbers from the keyboard. Print the largest number you have entered.

Run your program with the following test cases:

Case#1: 100 56 -69
Case#2: a 56 65
Case#3: 4.3142 2.34e23 -123.456789
Case#4: 55 4.3123 234.56789

[Time: 15 Minutes]

$[(3+2)+4 \times 2.5 = 15]$

2. Read the symbol of a binary arithmetic operator (such as +, -, *, /) and its two operands from the keyboard and perform the operation on those two operands depending upon the operator entered by the user.

Print your results on the screen.

Run your program with the following test cases:

Case#1: + 15 -51
Case#2: % 15 5
Case#3: * 2.34e23 -123.456789
Case#4: / 4.3123 234.56789
Case#5: / a b

[Time: 20 Minutes]

$[(3+2)+5 \times 2 = 15]$

3. Read any three points: (x_1, y_1) , (x_2, y_2) and (x_3, y_3) from the keyboard. Check if they can be the vertices of a triangle. Decide the triangle as scalene, isosceles or right-angled, if it is valid.

Print your results on the screen.

Run your program with the following test cases:

Case#1: -3, 0 0, 3 3, 0
Case#2: 5, 9.5 5, 0 5, 12.3
Case#3: 1.2345, 5.679 -1.2345, -5.678 1.2345, - 5.67
Case#4: -4.56, 0 0, 4.56 4.56, 0
Case#5: a, b c, d x, y

[Time: 25 Minutes]

$[(5+5)+5 \times 2 = 20]$

4. Write a program to compute and print the taxi fare based on the following chart. Total number of kilometers traveled will be input by the user as a floating point number.

First 12 KM:	Rs. 100/-
Next 4 KM:	Rs. 8 per KM each
Next 4 KM:	Rs. 6 per KM each
Above 20 KM:	Rs. 5 per KM each

Run your program with the following test cases:

Case#1: 0 KM
Case#2: 212 KM
Case#3: 5.5 KM
Case#4: -23.5 KM
Case#5: 12 KM

[Time: 30 Minutes]

$[(5+5)+5 \times 2 = 20]$

5. There is a course with two components: Theory and Lab. There are 70% and 30% weightage in the theory and lab evaluation, respectively. A grade has to be prepared based on the total marks, say X (in percentage), which is the total marks obtained in theory and lab tests with the following break up.

EX:	$X \geq 90\%$
A:	$80\% \leq X < 90\%$
B:	$70\% \leq X < 80\%$
C:	$60\% \leq X < 70\%$
D:	$50\% \leq X < 60\%$
P:	$40\% \leq X < 50\%$
F:	$X < 40\%$

Further, it is decided to award grace marks to students based on their attendance, say Y in the theory and lab classes, which is as follows.

If $Y \geq 85\%$ and marks in theory is $\leq 70\%$, then add 15% of the obtained theory marks to theory evaluation.

If $85\% > Y \geq 75\%$ and marks in theory is $\leq 60\%$, then add 10% of the obtained theory marks to theory evaluation.

If $75\% > Y \geq 60\%$ and marks in theory is $\leq 50\%$, then add 5% of the obtained theory marks to theory evaluation.

There are together 60 classes were held for theory and lab classes. There are tests on theory with total 400 marks and lab with 100 marks.

Read the marks of a students in theory (say out of 400) and lab evaluation (out of 100), and attendance count of the student.
Decide the grade that the student should be awraded.

Run your program with the following test cases:

Case#1:	380	95	50
Case#2:	210	50	35
Case#3:	215.5	105.5	60
Case#4:	400	100	55
Case#5:	100	20	0

[Time: 60 Minutes]

$[(10+5)+5 \times 3 = 30]$

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