Lab 5 Work

You always create a separate C++ file for each program you write in the lab.

1. Write a C++ program that does the following:
   a. Create a C++ file with the name **problem1.cpp**.
   b. Prompt the user to enter a numeric score.
   c. Print the letter grade that corresponds to the score entered by the user.

   Above or equal to 90: A
   From 80 (inclusive) to below 90: B
   From 70 (inclusive) to below 80: C
   From 60 (inclusive) to below 70: D
   Below 60: F

   Sample run of the program:

   ```
   Enter a numeric score: 97
   A
   ```

2. Write a C++ program that does the following:
   a. Create a C++ file with the name **problem2.cpp**.
   b. Prompt the user to enter three angle values in degrees.
   c. Checks and prints whether the three given angles form a triangle. If the three angles add up to 180, then they form a triangle.
   d. If the three given angles form a triangle, then the program determines and prints whether the triangle is equilateral, right, or neither.
   e. An equilateral triangle has three 60-degree angles.
   f. A right triangle has one 90-degree angle.

   Sample run of the program:

   ```
   Enter an angle in degrees: 45
   Enter an angle in degrees: 45
   Enter an angle in degrees: 90
   Can form a triangle from these angles.
   The triangle is a right triangle.
   ```

   Sample run of the program:

   ```
   Enter an angle in degrees: 50
   Enter an angle in degrees: 70
   Enter an angle in degrees: 60
   Can form a triangle from these angles.
   The triangle is neither equilateral nor right.
   ```

   Sample run of the program:

   ```
   Enter an angle in degrees: 10
   Enter an angle in degrees: 20
   Enter an angle in degrees: 30
   Cannot form a triangle from these angles.
   ```

3. Write a C++ program that does the following:
   a. Create a C++ file with the name **problem3.cpp**.
   b. Prompt the user for two integers.
   c. If the sum of the numbers is greater than or equal to 100, then print **True**, else print **False**.

   Sample run of the program:

   Enter two numbers: 45 55
   True

   Sample run of the program:

   Enter two numbers: 102 –3
   False

4. Write a C++ program that does the following:
   a. Create a C++ file with the name **problem4.cpp**.
   b. Implement the following program: A company sells items and applies the following discounts based on the quantity of the items bought:

Quantity	Discount (%)
1-9	0
10-19	10
20-49	20
50-99	30
100+	40
Exactly 200	50

Your program should do the following:

- Ask the user how many items were purchased (an integer in the range 1-200). Give an error message such as "Invalid quantity entered! Terminating the program…" and terminate the program if the quantity is out of this range.
- Ask the user the price of each item (double)
- Determine what % discount should be applied based on the table above
- Calculate the costs before and after discount is applied
- Print the information in a nicely formatted table

Sample run of the program:

How many items are bought? 250
Invalid quantity entered! Terminating the program...

Sample run of the program:

How many items are bought? 65
Enter the price of the item: 12.6

```
+---------------+------------+
| Quantity      |         65 |
| Price         | $    12.60 |
| Order Total   | $   819.00 |
| Discount %    |        30% |
| Discount      | $   245.70 |
| Amount Due    | $   573.30 |
+---------------+------------+
```

Sample run of the program:

How many items are bought? 18

Enter the price of the item: 9.6

```
+---------------+------------+
| Quantity      |         18 |
| Price         | $     9.60 |
| Order Total   | $   172.80 |
| Discount %    |        10% |
| Discount      | $    17.28 |
| Amount Due    | $   155.52 |
+---------------+------------+
```

Lab Work Submission:

- You can continue to work on this lab after our lab class, on your own, at home.
- Submit your lab work via Blackboard on or before: **Sunday, March 16, 2025**.
- This is the only accepted submission method!
- Once you submit your assignment you will not be able to resubmit it!
- Make absolutely sure the C++ files you want to submit are the C++ files you want graded.
- You will not be able to submit your lab work under any circumstances once **Lab 5 Work** disappears at **12:00 a.m.** on **Monday, March 17, 2025**.
- There will be **NO** exceptions to these rules!
- To submit your lab work, upload the 4 C++ files you did for this lab (**with .cpp extension**) to the **Lab 5 Work** assignment in the **Lab Work** tab on Blackboard.
- Then, make sure you click the **Submit** button to submit your lab work.

The lab work is worth a total of **8** points based only on grading one of the problems (**a randomly chosen one**). Grading steps for the chosen problem are as follows:

1. If your program does NOT compile successfully, then the grade for the lab is zero.
2. If your program produces runtime errors or does NOT produce the expected output, then the grade for the lab is zero.
3. If the program compiles, runs, and produces the expected output, then the grade is computed as follows:
   a. 7 points – the program compiles, runs, and produces the expected output
   b. 1 point – proper indentation and formatting of the code