(CL1002) Programming Fundamentals Lab

Lab 14

- Before doing the task, I recommend you all to go through the lab manual. It will make it easy for you all to understand this.
- Copied task will be awarded **zero** marks.
- Upload only a MS word and PDF file including all tasks source code and its output (screen shot).
- You have to copy the source code in your word file. Don't take the screen shot of source code.
- Use the following format for naming the word file Rollno_name (21P-1234_zain).
- Comment your code properly

1. Write a C++ program that takes a real number and check whether an n-digit integer is an Armstrong number or not.
   Armstrong number is *a number that is equal to the sum of cubes of its digits*. For example 0, 1, 153, 370 are the
   Armstrong numbers.
   153 = 1*1*1 + 5*5*5 + 3*3*3
      = 1+ 125 + 27 = 153
   120 is not an Armstrong number.
   1*1*1 + 2*2*2 + 0*0*0 = 9

2. Write a C++ program takes a number and checks whether it is a palindrome or not.
   A palindrome number is a number that remains the same when digits are reversed. For example, the
   number **12321** is a palindrome number, but **1451** is not a palindrome number.

3. Write a C++ program to create the multiplication table (from 1 to 10) of a number.
   Expected Output:

```
Enter a no 5
5 * 1 = 5
5 * 2 = 10
5 * 3 = 15
5 * 4 = 20
5 * 5 = 25
5 * 6 = 30
5 * 7 = 35
5 * 8 = 40
5 * 9 = 45
5 * 10 = 50
```

4. Write a C++ program that performs a survey tally on beverages. The program should prompt for the next person until a sentinel value of –1 is entered to terminate the program. Each person participating in the survey should choose their favorite beverage from the following list:

1. Coffee	2. Tea	3. Coke	4. Orange Juice

Sample Output:

```
Choose your favorite beverage from the following list
1.Coffee   2.Tea   3.Coke   4.Orange Juice
Please input the favorite beverage of person #1  Choose 1,2,3,or 4 from the above menu or -1 to exit the program
4
Please input the favorite beverage of person #2  Choose 1,2,3,or 4 from the above menu or -1 to exit the program
4
Please input the favorite beverage of person #3  Choose 1,2,3,or 4 from the above menu or -1 to exit the program
1
Please input the favorite beverage of person #4  Choose 1,2,3,or 4 from the above menu or -1 to exit the program
1
Please input the favorite beverage of person #5  Choose 1,2,3,or 4 from the above menu or -1 to exit the program
4
Please input the favorite beverage of person #6  Choose 1,2,3,or 4 from the above menu or -1 to exit the program
2
Please input the favorite beverage of person #7  Choose 1,2,3,or 4 from the above menu or -1 to exit the program
-1
Beverage          Number of Votes
**********************************
Coffee            2
Tea               1
Coke              0
Juice             3
```

5. Build a GPA calculator that inputs grades of N number of different subjects along with the credit hours from the user and displays the user's GPA. The input grades and their corresponding grading points are given below.

Grade	Points
A	4.0
A-	3.67
B+	3.33
B	3.0
B-	2.67
C+	2.33
C	2.0
C-	1.67
D+	1.33
D	1.0
F	0

The formula is

GPA = (GP1 * CH1 + GP2 * CH2 +……+ GPN * CHN)/ (CH1 + CH2 +…….+ CHN)

Where GP1 is Points of Subject 1 and CH1 show credit hours of subject 1.

Sample Output

```
Enter the number of subjects
4
Enter the grade for subject (1)A-
Enter the Credit Hour for subject (1)3
Enter the grade for subject (2)B+
Enter the Credit Hour for subject (2)2
Enter the grade for subject (3)C-
Enter the Credit Hour for subject (3)3
Enter the grade for subject (4)B-
Enter the Credit Hour for subject (4)1
The grade is 2.81667


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Process exited after 35.6 seconds with return value 0
Press any key to continue . . .
```