CL1002 – Programming Fundamentals Lab
Assignment # 03

Note:

- First think about problem statement and then write/draw your logic on paper.
- After designing the logic on paper, code the problem statement on any editor (VS Code, Gedit, etc).

- Copied tasks will be awarded **zero** marks without any investigation.
- Comments you code properly.
- Note that these assignment marks could be graded through a viva (quiz) in the lab.
- Submit a pdf file containing all of your C code with all possible screenshots of every task output on Google Classroom.

- Please submit your   file   with   this   naming   convention   (ROLLNO-NAME)   i.e (22P-8743-Zain.pdf)

Problem: 1 | Union of sets

Implement a function that finds union of two sets. You can assume that the sets

are stored using arrays. So, if array1 = {1,2,3,4,5,6,3,2} and array2 is {1,3,5,7}, then

array3 should be {1,2,3,4,5,6,7}. Note array3 should not have any duplicate elements. You

have to:

think of all the functions that are required for this problem. Each function should perform

its dedicated task. So, plan them out before implementing them.

Main should only have a set of function calls.

Problem: 2 | Matrix Multiplication.

Write a C Program to Perform Matrix Multiplication.

1. The program takes two matrices and multiplies them

2. If number of columns of matrix A is not equal to number of rows of matrix B, then

matrices cannot be added.

3. The program is exited.

4. Else they are multiplied and the result is printed.

5. Exit.

Problem: 3 | GPA Calculator

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
Please enter your grade in Subject (1):A-
Please enter the Credit Hours of Subject (1):3
Please enter your grade in Subject (2):B+
Please enter the Credit Hours of Subject (2):2
Please enter your grade in Subject (3):C-
Please enter the Credit Hours of Subject (3):3
Please enter your grade in Subject (4):B-
Please enter the Credit Hours of Subject (4):1
Your GPA is  2.82
```

Problem: 4 | Restaurant Menu

Write a C program that display the menu of restaurant. Ask the user to choose the item from the menu list i-e Espresso, over Ice , fusion etc. let's assume user have selected over ice option show the menu along with the prices for regular as well as small. Ask for the item name, size, and quantity. After that your program should ask again choose the item from the menu list 1-e Espresso, over Ice, fusion etc.

and keep choosing until user press N or enter no. Once user done with the menu display the total bill that includes the total price and tax along with service charge.

Menu is given below.

Good Luck