National University of Computer and Emerging Sciences, Lahore Campus

Course:	**Programming Fundamentals**	**Course Code:**	
Program:	**BS (DS)**	**Semester:**	**Fall 2025**
Due Date	**18 September 4: am**	**Total Marks:**	**70**
Section:	**BDS-1B**	**Page(s):**	**6**
Type:	**Assignment 1**		

Important Instructions:

1. You have to upload only .cpp file of each question at classroom submission folder. For question 1, name your solution file with your roll number, i.e., Q1_22L_1111.cpp. Similarly, you can name other questions.
2. You are not allowed to **copy solutions from other students.** We will check your code for plagiarism using plagiarism checkers. If any sort of cheating is found, negative marks will be-given to all students involved.
3. For each passing day after deadline, 0.5% of the marks from each question will be deducted
4. Write your logic in comments so its easy to explain while evaluation
5. **Indentation,logic,explanatory variable names** maybe given marks in final assessment
6. While running code is important,but at the **evaluation time**,in case code does not work 5% marks of code total marks would be deducted only so for this assignment focus on logic building more.
7. You are **NOT** allowed to use any loops or arrays in any of the questions below.

Question 1: **[Marks: 20]**

This is main question .Every requirement must be fulfilled

You have to develop a restaurant order payment application. For Example, your restaurant is offering-the following meals.

Code	Meal	Per kg Price in Pakistani rupees
1	Chicken Handi	1800
2	Chicken Karahi	2000
3	Chicken Tikka	2200
4	Chicken Haleem	500
5	Creamy Chicken	2500

Your program should print the name of dishes along with their corresponding codes so that a user can select one of the dishes by using its code. For example, if the user selects code 1, then it means Chicken Handi, 2 means Chicken Karahi, so on and so forth. If the user has entered an invalid code, your program will print some error message and terminate.

After the user has been asked the dish that he wants to buy, your program will ask the user to enter the quantity of the dish that he wants to buy in kilograms. The quantity will be greater than 0. If the user has entered an invalid quantity, then print some error message and terminate the program. After that, the

program should ask from the user about currency in which he/she wants to give payment. For this assignment, you are required to use three currencies. One is Pakistani rupee, second is dollar and the last one is euro. Use 1 for Pakistani rupee, 2 for euro, and 3 for dollar. If the user has entered an invalid option, then your program will print some error message and terminate.

After that, your program will calculate the meal price, sales tax on the meal price and total price of the meal (calculated after adding meal price and sales tax).

For calculating sales tax, you can use meal price in rupees which is hard coded in this case, and calculate sales tax on it using the table given below.

Meal Price	Sales Tax applicable
Less than or equal to 1000	No sales Tax on it.
Greater than 1000 and less than or equal to 3000	2% of meal price.
Greater than 3000	5% of meal price.

After calculating the sales tax, the program will calculate the total amount or price payable by using the following formula:

Total _Amount = Meal_Price + Sales_Tax

Hint: You can calculate everything in Pakistani rupees, and then convert them into the desired currency.

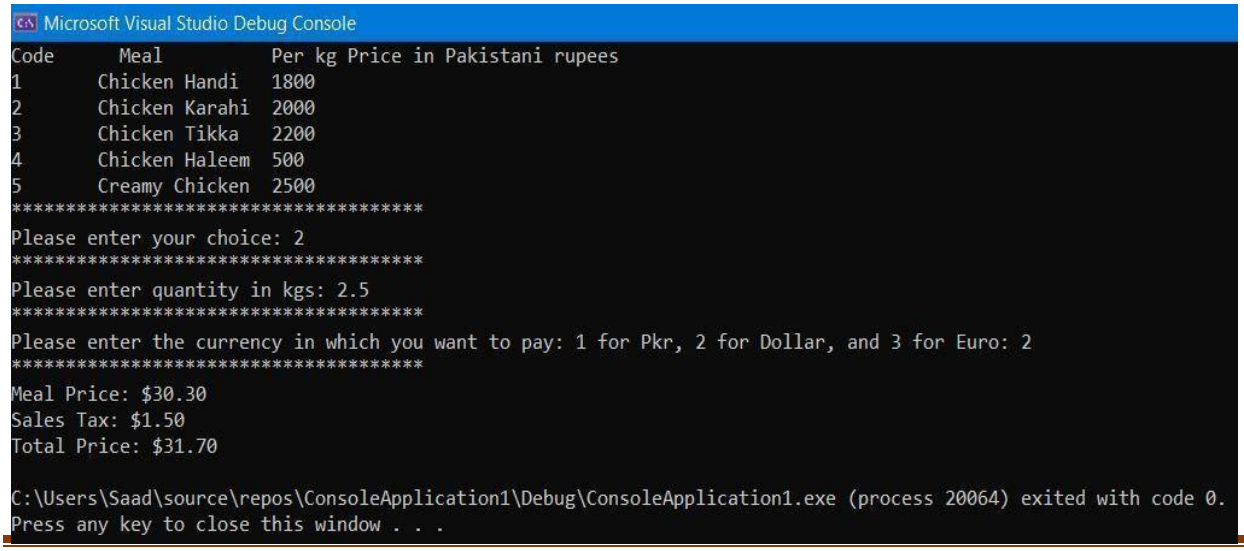
After calculating the total amount in rupees, you are required to convert the amount into the desired currency (based on the user's choice). For example, if the user selected rupees then simply display final price, i.e., (Total Amount = Meal_Price + Sales_Tax) in rupees but if the user selected dollar or euro, then simply convert the final meal price that you calculated earlier (in rupees) into dollar or euro according to the currency exchange rate. Also display the amount of sales tax and the meal price excluding sales tax. Do this without using loops or arrays, assuming there is only a single user.

Note:

Use current exchange rate for this assignment as given below:

1 dollar	**165 rupees**
1 euro	**193 rupees**

Sample Output:



Question # 2: **[Marks: 5]**

Write a program that takes an integer as input.

Write a program that takes an integer as input. If the number is even, use nested if–else to check whether it is divisible by 4. If the number is odd, use nested if–else to check whether it is divisible by 3. You are not allowed to use the logical operators && or ||.

Sample Run 1:

Enter a number: 12
The number is even.
It is divisible by 4.

Sample Run 2:

Enter a number: 25
The number is odd.
It is not divisible by 3.

Question # 3: **[Marks:15]**

Write a program that takes two integers and a character representing an operation.

- If the character is +, perform addition.
- If -, perform subtraction.
- If *, perform multiplication.
- If /, perform division (if the second number is not zero).
- If %, perform modulus (if the second number is not zero).
- If the character is > , check whether the first number is greater than the second.
- If <, check whether the first number is less than the second.
- If =, check whether the two numbers are equal.
- If &, check whether both numbers are even.
- If |, check whether at least one number is odd.

You must use a **switch statement only** for all cases.
Do not use any if–else statements in your program.

Sample Runs

Input:
Enter two numbers: 10 4
Enter operation: +
Output:
Result: 14

Input:
Enter two numbers: 7 3
Enter operation: >
Output:
7 is greater than 3

Input:
Enter two numbers: 9 9
Enter operation: =
Output:
Both numbers are equal

Input:
Enter two numbers: 20 6
Enter operation: %
Output:
Result: 2

Input:
Enter two numbers: 5 0
Enter operation: /
Output:
Result: Division by zero not allowed

Input:
Enter two numbers: 5 8
Enter operation: <
Output:
5 is less than 8

Question # 4: **[Marks: 10]**

Write a program that takes two integers **(x, y)** as coordinates of a point.

- First, use **if–else statements** to check if the point lies on the x-axis, y-axis, or at the origin.
- If the point is not on any axis, then use **switch statements** to determine in which **quadrant** the point lies.
- **Note:** You are **not allowed** to use logical operators (&&, ||). Use only simple comparisons inside your conditions.

Sample Run 1:
Enter x coordinate: 5
Enter y coordinate: 7
The point (5,7) lies in Quadrant I.
Sample Run 2:
Enter x coordinate: 0
Enter y coordinate: -6
The point lies on the negative Y-axis.

Write pseudo-code for this code [5 marks]

After that : **[Bonuspart :15 marks]**
Write a program which takes as input 3 points and tell whether these points are the coordinates of isosceles or equilateral or right angled or scalene triangle. Also write its pseudocode **if want to gain full marks**

Sample Input:

P1	0	0
P2	**1**	**0**

P3	**1**	**1**

Output: Right Angle Triangle

Question # 5: **[Marks: 10]**

Write a program that:

1. Takes the user's date of birth (day, month, year).
2. Takes the current date (day, month, year).
3. Calculates the exact age in years.
   - o If the birth month/day hasn't come yet in the current year, reduce age by 1.
4. You can use switch statements, if-else, nested if-else and operators according to the requirements

Write pseudo-code for this code **[5 marks]**

Test Cases

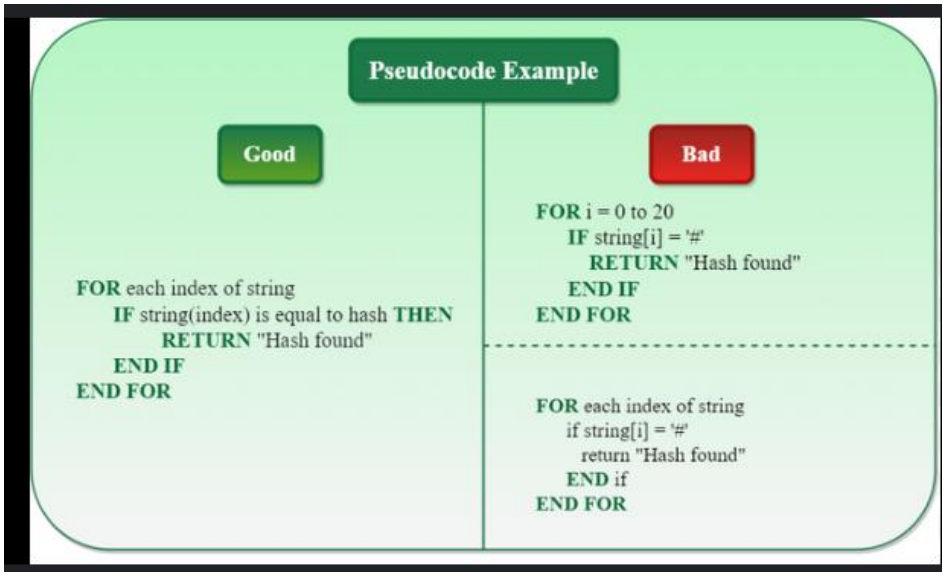
Sample Run 1:
Enter birth date (dd mm yyyy): 10 05 2010
Enter current date (dd mm yyyy): 07 09 2025
Your age is 15 years, 3 months, and 28 days.

Sample Run 2:
Enter birth date (dd mm yyyy): 07 03 1995
Enter current date (dd mm yyyy): 07 09 2025
Your age is 30 years, 6 months, and 0 days.

Sample Run 3:
Enter birth date (dd mm yyyy): 20 11 1960
Enter current date (dd mm yyyy): 07 09 2025
Your age is 64 years, 9 months, and 18 days

For **pseudo-code** **see this:**

https://www.geeksforgeeks.org/dsa/what-is-pseudocode-a-complete-tutorial



BEST OF LUCK!

In case you find some test case to be wrong feel free to messag