Test

Basic Arithmetic Calculator Design a Java program that performs basic arithmetic operations on input numbers based on user-selected operations and implements the Function functional interface using lambda expressions. The program should prompt users to input two numbers and specify the operation they want to perform. Your program should follow these specifications: Input: Prompt the user to enter two numbers. Prompt the user to select an operation: Option 1: Addition Option 2: Subtraction Option 3: Multiplication Processing: Define lambda expressions for each arithmetic operation using the Function interface. Apply the selected lambda expression to perform the arithmetic operation on the input numbers. Output: Print the result of the selected arithmetic operation. Example: -------------- Enter the first number: 10 Enter the second number: 5 Select an operation: 1. Addition 2. Subtraction 3. Multiplication Enter your choice: 3 Result of multiplication: 50

 Unique ID Generator

Develop a Java program that generates unique IDs for users and implements the Supplier functional interface using lambda expressions. The program should generate IDs based on a combination of user-specific information and random characters.

Your program should follow these specifications:

Input:

Prompt the user to enter their first name and last name.

Processing:

Define a lambda expression to generate a unique ID for the user using the Supplier interface.

Combine the user's first name, last name, and random characters to create a unique ID.

Ensure that the generated ID is unique for each user.

Output:

Print the unique ID generated for the user.

 Discount Calculation for Online Store

You're tasked with developing a Java program for an online store that calculates the total cost of a customer's order with a dynamic discount system. The discount calculation is influenced by the customer's purchase history and the current promotions available. Your goal is to design a flexible solution using functional interfaces and lambda expressions to handle the discount calculation process effectively.

Your program should include the following components:

Functional Interfaces:

Define a functional interface named DiscountPolicy with a method double applyDiscount(double totalAmount, boolean hasPromo) that encapsulates the logic for applying discounts based on the current policy. The hasPromo parameter indicates whether the current promotion is available.

Functional Interface for Customer Purchase History:

Define another functional interface named CustomerPurchaseHistory with a method boolean hasMultiplePurchases(int numPurchases) that checks if the customer has made multiple purchases, influencing the discount calculation.

Main Program:

Prompt the user to enter the total order amount in rupees.

Prompt the user to specify if the current promotion is available (yes/no).

Prompt the user to enter the number of purchases made by the customer.

Apply the lambda expressions representing the discount policy and customer purchase history to calculate the discounted amount based on the provided inputs.

Calculate and print the total cost of the order after applying the discount in rupees.

Discount Policy Logic:

Initially, the discount policy offers a 10% discount for orders above ₹1000 and an additional 5% discount if the current promotion is available. An additional 2% discount is applied if the customer has made multiple purchases. The discount policy can be modified in the future to accommodate different thresholds and percentages.

Sample Input and Output:

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Welcome to the Online Store!

Enter the total order amount in rupees: 1200

Is the current promotion available? (yes/no): yes

Enter the number of purchases made by the customer: 5

Total cost after discount: 1080.00

Home Automation System with Inner Classes You are tasked with developing a Java program for managing a home automation system. The program should allow users to control various smart devices within their home, such as lights, thermostats, and security cameras. Additionally, the program should provide functionality to monitor the status of these devices and adjust their settings as needed. Your objective is to design a flexible solution using inner classes to encapsulate related functionalities within the home automation system. Your program should include the following components: Home Class: Create a class named Home to represent the home automation system. It should have the following attributes: Home Class: Attributes: homeName (String): The name of the home. location (String): The location of the home. Methods: Implement appropriate constructors and accessor methods to set and retrieve the values of these attributes. Inner Class for Lights: Attributes: isOn (boolean): Indicates whether the lights are turned on or off. brightness (int): The brightness level of the lights (0-100). Methods: turnOn(): Turns on the lights. turnOff(): Turns off the lights. setBrightness(int brightness): Adjusts the brightness level of the lights. isOn(): Checks if the lights are currently on. getBrightness(): Retrieves the current brightness level of the lights. peaker Inner Class: Attributes: speakerName (String): The name or identifier of the speaker. volume (int): The volume level of the speaker (0-100). isPlaying (boolean): Indicates whether the speaker is currently playing music (true) or not (false). Methods: playMusic(): Plays music through the speaker. stopMusic(): Stops the music playback. adjustVolume(int volume): Adjusts the volume level of the speaker. getSpeakerName(): Retrieves the name of the speaker. getVolume(): Retrieves the current volume level of the speaker. isPlaying(): Checks if the speaker is currently playing music. Main Program: Create an instance of the Home class to represent the home automation system. Allow users to interact with the smart devices by performing operations such as turning lights on/off, adjusting speaker volume and all the behaviour of light and speaker. Sample Output : ------------------ Living Room Light turned on. Living Room Light brightness adjusted to 75. Music playing through Living Room Speaker. Living Room Speaker volume adjusted to 80.