Instruction

Please choose one of the following problems and publish collateral for the “Ask” section of the problem to a repository on GitHub (and bring the link to share with us).

Please do NOT publish the text of the problem itself or any reference to PROS as the solution should not be easily found online by others.

Please come prepared to present your solution during the interview.

Problem 1: Currency Conversion

Introduction

Currency conversion is the process to convert from one currency (source currency) to another currency (target currency). The currency exchange rate is defined as:

- Source Currency
- Target Currency
- Effective Start Date
- Exchange Rate

Business Rules

- Currency exchange rates may be obtained as a feed from a subscription service or a direct customer data load.
- Exchange rates need not always be loaded as a complete set.
- If an exchange rate is missing for a date, then the currency exchange resolution logic should go back in time trying to find the exchange rate with the closest effective start date.
- If no exchange rates exist with the source and target currency pair, then the currency exchange resolution logic should look for a triangular conversion. For example, if there are no direct conversion rates from currency A to currency B, but there are existing conversion rates from A to C, and C to B, then the rate may be determined by converting from A to C to B.

Application

We need to provide an API for client applications or users to retrieve an exchange rate for a source currency, a target currency, and a specific date.

Ask

Assume we have the REST API for:

- Adding a new Currency Exchange Rate
- Updating an existing Currency Exchange Rate
- Deleting an existing Currency Exchange Rate
- Retrieving the Currency Exchange Rate for a source currency, a target currency, and a specific date.

Outline the test cases you would expect to execute for each of the above APIs.
Write an automated test script for one test case you identified for the API that retrieves a currency exchange rate.

Problem 2: Beverage Pricing

Introduction

A vendor sells 4 products (A, B, C, and D) to 5 customers (1, 2, 3, 4, 5).

Business Rules

A unit price for a product may be calculated by adding a product's target markup to the unit cost and then applying any current product promotions.

Product	Unit Cost (EUR)	Markup	Product Promotion
A	0.52	80%	none
B	0.38	120%	30% off
C	0.41	0.9 EUR/unit	none
D	0.60	1 EUR/unit	20% off

A customer may qualify for two additional discounts: a Basic Customer Discount and an Additional Bulk Discount. The Basic Customer Discount applies on the entire customer order total. The Additional Bulk Discount similarly applies on the entire customer order total, but it is calculated and applied after all other discounts have been applied (on top of the Basic Customer Discount).

		Additional Bulk Discount	
Customer ID	**Basic Customer Discount**	**Above EUR 10000**	**Above EUR 30000**
1	5%	0%	2%
2	4%	1%	2%
3	3%	1%	3%
4	2%	3 %	5%
5	0%	5%	7%

Application

We need to provide an application that calculates order details for customers of this beverage vendor.

Input

The application will receive input containing 5 arguments (in order):

1. customer ID (a number from 1 to 5)
2. order quantity for product A
3. order quantity for product B
4. order quantity for product C
5. order quantity for product D

Output

The application should calculate and return the order total amount (price) (EUR) and output an order summary containing:

1. A line for each product ordered including:
    a. quantity ordered (units)
    b. base unit price
    c. line total (EUR)
2. A line for the total amount (EUR) before customer discounts
3. A line for the total amount (EUR) after customer discounts

Example
An input with arguments
5 10000 0 20000 0
means that customer 5 is making an order for 10000 units of Product A and 20000 units of Product C.

Ask

Assume we have REST APIs for a sales manager for managing customers with basic and bulk discounts:

- Adding a customer
- Updating an existing customer
- Retrieving an existing customer
- Deleting a customer

and a REST API for submitting an order with the request as described in the input and getting the response as described in the output.

Outline the test cases you would expect to execute for each of the above APIs.
Write an automated test script for one test case you identified for the API that submits an order.

Problem 3: Flight-Ready Quality Engineering

Introduction

United Airlines, one of the world's largest and most respected airlines, operates a comprehensive online platform for travelers to book flights and access essential travel information. Within this digital ecosystem, the "Flights from Chicago" section plays a crucial role, serving as a gateway for passengers looking to depart from the vibrant city of Chicago. In an era where user experience and functionality are paramount, ensuring the seamless operation of this web portal is imperative. Quality Engineering practices are pivotal components in this endeavor. This assignment challenges candidates to devise robust testing strategies, addressing a myriad of use cases and scenarios, to guarantee that the website performs optimally, provides accurate information, and adheres to stringent security standards.

Application

The functionality of the “Flights from Chicago” page includes:

A. Search
B. Daily Fares for flights to San Francisco from Chicago
C. Information Panel (airport information for example, ad-placements, weather etc.)
D. Table of other popular deals on flights from Chicago to San Francisco

Ask

Outline a testing strategy for all the functionality on the “flights from Chicago” page.
Pick one of the 4 areas from the functionality above and write working testcases. For example, if you have selected “Search”, then write testcases which can be run to validate the functionality of the Search box on the page.