Home Assignment Backend Engineer

Overview

The purpose of the assignment is to assess object oriented analysis and modelling skills, Java coding skills, code structuring and and API design. Take your time on the task, but don’t get too carried away. If you submit a solution that is in any way incomplete, the parts that you decided to focus on are relevant.
Keeping the objective in mind, you are free to use whatever tools, libraries, frameworks at your disposal. Please include a README in any format about decisions you made along the way, what you focused on, what you didn't focus on and why, as well as how to run and use the program.

⏲ Time limit

One week

It starts when the candidate acknowledges reception of the email with the test details or 1 day after the email was sent and no acknowledgment from the candidate was received.

Online bookstore

For an online bookstore we want to create a system for managing the inventory and purchase process. We want to have three primary functions:

1. Inventory of books
2. Purchase and book pricing
3. Keeping track of customer loyalty points

Inventory

The inventory is where we keep all our books. We should have the option to add new books in the inventory, modify the details for the existing ones as well as remove the older books which have been sitting here for too long.

How Pricing works

The price of the books is their **base price** and final purchasing price is modified according to:

1. Book type
2. Purchase size
3. Loyalty points

THE BOOKS ARE GROUPED IN THREE TYPES:
New Releases - Price is always 100% of the price.
Regular - Price is 100% of the price, but can be deducted by 10% if bought in a bundle of 3 books and more.
Old editions - Price is discounted by 20%, can be additionally deducted by 5% if bought in a bundle of 3 books and more.

In the future the application might expand to handle other book types.

Loyalty Points

1 loyalty point is awarded on every purchased book. When 10 loyalty points are accumulated the customer can get one regular or old edition book for free. Once the discount has been applied the loyalty points go back to 0.

Requirements

Your task is to write a backend application that will expose a REST HTTP API. The API should expose operations for:

- Returning the books available for purchase.
- Buying one or several books and calculating the price.
- Returning the loyalty points for a customer.

There are no further defined requirements for the API, it is up to you to design and implement the necessary code in order for the API to support the mentioned operations above. This refers to the entire flow starting from the API, down to the persistence layer.

Including unit tests to verify the correctness of the implementation would be considered a bonus.

Delivery of the solution

- The solution needs to be 100% executable
- Provide a link to the GitHub repository in which you'll have your solution committed
  - Please make sure it's not private or restricted
- Provide a README file (documentation) with the following aspects covered:
  - How to run and use the solution
  - Explanation of the decisions made along the way