Maha - Backend Engineer - Coding Challenge

Welcome to Maha's backend coding challenge! The following document is split into three main sections:

- Your task - This section outlines the problem we would like you to solve.
- Our expectations - Here we layout our expectations so it's clear where you should focus your time.
- How we review - We want to be open about how we're assessing our candidate's solutions, this helps us maintain consistency as well as provides you with further clarity about what we are looking for.

Your task

We would like you to build a simplified e-commerce API with a single endpoint that performs a checkout action. The single endpoint should take a list of watches and return the total cost.
In terms of programming language, we work with Kotlin and Java 8+, if you feel that you have the experience to build a solution in any of those languages then please do. Otherwise, we are happy for you to build a solution using a language and framework that you feel best showcases your ability.

Watch catalogue

Below is a catalogue of four watches and their associated prices:

Watch ID	Watch Name	Unit Price	Discount
001	Rolex	100	3 for 200
002	Michael Kors	80	2 for 120
003	Swatch	50	
004	Casio	30	

There are a few requirements worth noting here:

- The first two products have a possible discount. As an example, if the user attempts to checkout three or six Rolex watches then they will receive the discount price once or twice, respectively.
- There is no limit to the number of items or combinations of watches a user can checkout.
- There is no limit to the number of times a discount can be used.
- Similarly, a user can checkout a single item if they wish.

Endpoint reference

As a further guideline here's an endpoint definition that you can use to design your API endpoint.

Request

```
POST http://localhost:8080/checkout

# Headers
Accept: application/json
Content-Type: application/json

# Body
[
  "001",
  "002",
  "001",
  "004",
  "003"
]
```

Response

```
# Headers
Content-Type: application/json

# Body

{ "price": 360 }
```

Our expectations

We expect this task to take 2-4 hours but we purposefully don't specify a hard time-limit. This is because we don't want this task to take over your weekend, nor do we want to impose an unnecessarily stressful deadline.
How you approach the problem is more important to us than completing the challenge, therefore we expect you to include the following:

- A **README** that documents how to set up and run the application, how you approached it and what you would improve.
- Whether you are submitting your solution via GitHub or compressing the solution into one zip file we would appreciate it if you include the **Git commit history**. This provides us with a view on how you break down problems and how you work.
- **Automated testing** is an important part of how we work here on the Maha Engineering Team and we expect you to include some in your solution.

How we review

When reviewing your solution we try to make sure we're consistent in our evaluation by following five core themes:

- Correctness - We don't expect you to handle all the possible edge cases but we do expect the solution to adhere to the core requirements laid out in this document.
- Documentation - For us, this is more about including a clear and concise README and the commit history and less about covering the codebase in comments.
- Testing - We also evaluate your approach to automated testing and whether there's a reasonable mix of functional (or integration) tests and unit tests.
- Readability - Writing code in a team requires having empathy for how other team members will interpret that code. Here we look for things like duplication, method names, variable names and consistency.
- Application architecture - We look at whether the solution follows a conventional architecture based on the language and framework. We also expect to see some modularisation with a few separate components that have clear responsibilities.

Thank you for reading and thanks for taking part in our interview process. We look forward to receiving your solution!

- The Engineering Team at Maha