Programming Assignment

Language: Node.js (optional use of Typescript)
Environment: AWS
Duration: around 2 hours

Problem description

In January 1st 2017 the company started a loyalty program that enabled customers to save loyalty points with each purchase. A customer can use these points for discounts on future purchases.

The program has become so successful that the company had to introduce a new rule. As of January 1st, 2022 points saved (and not used) more than a year ago (in this case before Jan 1st 2021) will be removed from the customers balance. In addition, loyalty points will be deducted from the balance in a FIFO (first in, first out) manner.

You need to submit the newly calculated Loyalty Points balance to the RESTful API offered by the third-party supplier. Unfortunately, the API performance isn't consistent, and responses vary between 700ms and 5000ms. In addition, at times, the API isn't able the process the request, and it will return an 'internal server error' which means the order isn't processed. As the Loyalty Program contains millions of customers and the change needs to be completed in a service-window, it is essential to think about performance.

Example

March 12th	2020	+ 40 points
December 1st	2020	- 15 points
June 25th	2021	- 10 points
December 15th	2021	+ 40 points

January 1st 2022 Balance: 40 points

40 - 15 = 25 (2020 Balance)
25 (2020 Balance) – 10 + 40 (2021 Spend) = 55 (2021 Balance)

Jan 1st 2022 Balance: 40 (55 – 15)

Assignment
Develop a Node.js application that

- **Calculates the correct balance each customer should have on January 1st 2022**
- **Call the to the third-party endpoint API endpoint (details below) to set the new balance.**

Make sure your solution considers technical principles such as resilience, scalability & performance.

Use comments within your code on how you would approach the problem for parts of the code you couldn't complete (or are not working 100%) within the given time, which is very likely and certainly not a disqualifier.

Information

Attached you'll find a simplified transaction file (transactions.csv) which will be the input for Loyalty API, of which you can also find the OAS (Open API Specification) 3.0.1 attached.

x-api-key: CxgXMDsnKWatBHe31ygxU6pJbDmH6yup7YlGwDpP
endpoint: https://0vncp50tbg.execute-api.eu-central-1.amazonaws.com/prod

Example CURL

```
curl --location --request PUT ' {endpoint}/loyalty/{customerid}' \ --
header 'x-api-key: {x-api-key}' \
--header 'Content-Type: application/json' \
--data-raw '{
    "CustomerId": "{customerid}",
```

```
    "Balance": {balance},
    "Date": "{date}"
}'
```