Snr Java Developer Assignment

Pre-requisites

To save everyone time, we use take-home to prequalify candidates. This allows us to be objective during interviews, focusing on the candidate's ability to solve complex problems and defend their ability.

Instructions

The purpose of this assessment is to complete a simple coding assignment. You are required to:

- Produce working, tested source code to solve the problem.
- You are expected to work on this task on your own, without help or advice from others. If you need clarification on any aspect of the assessment.

Task

Thousands of users make requests to one of our public services. To help manage the sheer volume of these requests, we decide to place limits on the number of requests that can be made. These limits will help us provide reliable and scalable API.

The maximum number of requests that are allowed is based on a time interval, some specified period or window of time.

To prototype a solution, we decided to stream user access logs into a file, users_access.txt. And you're to help write a Java program that reads this file, loads it to a database (MySQL/PostgreSQL), and then checks if a specific IP address makes more than a certain number of requests for a specified period or window of time.

Functional requirements

- Create a database (MySQL/PostgreSQL) called **REQ_LIMIT** with two tables: **USER_ACCESS_LOG** & **BLOCKED_IP_TABLE**
- Write a Java program that reads the users_access.txt file, & loads it to a database's **USER_ACCESS_LOG** table
- The delimiter of the users_access.txt file is a pipe character, "|"
- Use a rate limit of 200 requests per hour, and 500 requests per day as limits
- Execute the Java program from the command line as JAR, with the following command-line arguments:
    - **start** is of "yyyy-MM-dd.HH:mm:ss" format,
    - **duration** can take only "hourly", "daily" as inputs and
    - **limit** can be an integer.
- **users_access.txt** file format
    - Date, IP, Request, Status, User Agent (pipe delimited)
    - Date format is "yyyy-MM-dd HH:mm:ss.SSS"

Download Access log file

Here is the link to download **users_access.txt.**

Examples:

```
1. java -cp java-program.jar com.dot.FileReader
   --accessFile=/path/to/file
   --start=2022-01-01.13:00:00
   --duration=hourly —limit=100
2. java -cp java-program.jar com.dot.FileReader
   --accessFile=/path/to/file
   --start=2022-01-01.13:00:00
   --duration=daily —limit=250
```

Ex. 1 should run through the saved db records and find any IPs that made more than 100 requests starting from 2022-01-01.13:00:00 to 2022-01-01.14:00:00 (one hour) and print them to console, and add the records: **IP**, **REQUEST_NUMBER** and **COMMENT** on why it's blocked to the **BLOCKED_IP_TABLE** table.

Ex. 2 should do the same as above but with 250 requests & a daily duration.

Be prepared to talk about:

- What you did, how you did it, and how long it took
- Talk about the tech stack and any libraries used in your project and why you chose them

Your design and code should meet these requirements and be sufficiently flexible to allow for future extensibility. The code should be well structured and suitably commented.