HMDS Code Assessment Explanation

Senior Application Developer – Record API

## Scope and Target Candidates

This assessment aims to evaluate the development skills and practices of a senior application developer working in a broad development stack. In the case of the current open position, the stack includes:

* Quadient Inspire
  + JavaScript
  + Development within the proprietary vendor tool
* Apache Kafka
  + Java
* Web Service / REST APIs
  + A range of programming languages, including Java, JavaScript, and Python

## Assessment Summary

*“Write a REST API in Java that fulfills the Swagger API definition in the corresponding Swagger YAML file. Write tests in Java to verify the API’s functionality.”*

## Intention

Given the intended scope and target candidates for the position, this assessment allows the candidate to demonstrate:

* The ability to interpret API specifications
* Skill in a widely used programming language
* A familiarity with web services and their development
* An understanding of automated testing and test development
* The ability to work with data structures such as JSON
* Familiarity with Object Oriented Programming

This assessment is intended to allow the hiring team to evaluate many aspects of the candidate’s skillset (such as the above) without bogging the candidate with too much development. Thus, a single application was chosen with a light set of requirements, allowing some technical freedom and not requiring a substantial set of additional tools and frameworks.

Beyond the explicit requirements of the assessment, there are some further qualities that should be evaluated:

* Code cleanliness, readability, and organization
* Documentation thoroughness and comprehension
* Repository usage (i.e. Were components developed incrementally?)
* Test comprehension
* Relevant insights on improving the solution (i.e. In a real scenario, what would they choose to implement differently?)
* Attention to user friendliness and maintainability
* Development practices and mindset: Did the candidate follow LEAN practices or build unnecessary features?

## Specifics

### Why Java?

Given the range of programming languages a senior application developer may use – especially for the current position – Java stands out as the best to evaluate technical ability. It is also the most interoperable within this technical stack, as it can be integrated into Quadient Inspire and is the language used for Kafka Streams applications.

Next to JavaScript and Python, Java is slightly lower-level language, requiring the developer to understand more of the inner workings of object-oriented programming. It is also one of the most widely used languages, and an understanding of Java translates relatively easily to learning other languages. Lastly, Java is a compiled language and thus must requires an approach for building applications as well as an understanding of debugging compiled languages.

### Why an API?

API development is an increasingly important skill in HMDS and is leveraged heavily within the Inspire platform. As HMDS continues to move toward a microservice architecture, API / REST service development is an essential aspect of the platform.

APIs built in Inspire Scaler expose Scaler functionality, and testers as well as design developers utilize APIs through Postman for testing.

APIs also have a high focus on usability, where API developers must consider how an API should interact with user requests and how functionality should be divided. This focus on usability and organization translates well to other types of development beyond APIs.

### Why Start with a Swagger Definition?

APIs rely on strong documentation, which acts as a “contract” between the end user and the application. Application developers should have a strong understanding of these sorts of definitions, as well as how to expand them as needed.

Definitions such as those in Swagger also help to indicate a candidate’s ability to interpret and follow requirements, which translates well to other types of development.

### Why “Records”?

The concept of a “record” is used throughout the HMDS platform and especially Quadient Inspire and Apache Kafka. In this assessment, record data is managed in JSON, which is a data structure also common to all areas of this position’s tech stack.

Requiring the candidate to write methods that retrieve records, create records, and delete records span most of the CRUD operations in relation to records.

### Why Require Automated Tests?

Test automation is an essential concept in DevOps and is one being explored by the team into which this Senior Application Developer is being hired. Test automation is also a fundamental part of Java development, so its inclusion was a natural inclusion with which a senior developer should be familiar.

### Why not Require a Database?

Databases or event streams are common in application development and seem natural to include with a REST API. However, this assessment should remain as light as possible in terms of additional tools needed so that more attention can be paid to the development and code organization.

Excluding a database requirement also gives the candidate freedom to choose their own implementation, which gives further insight on their development thought process.