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Case Study

Goal of the Assessment

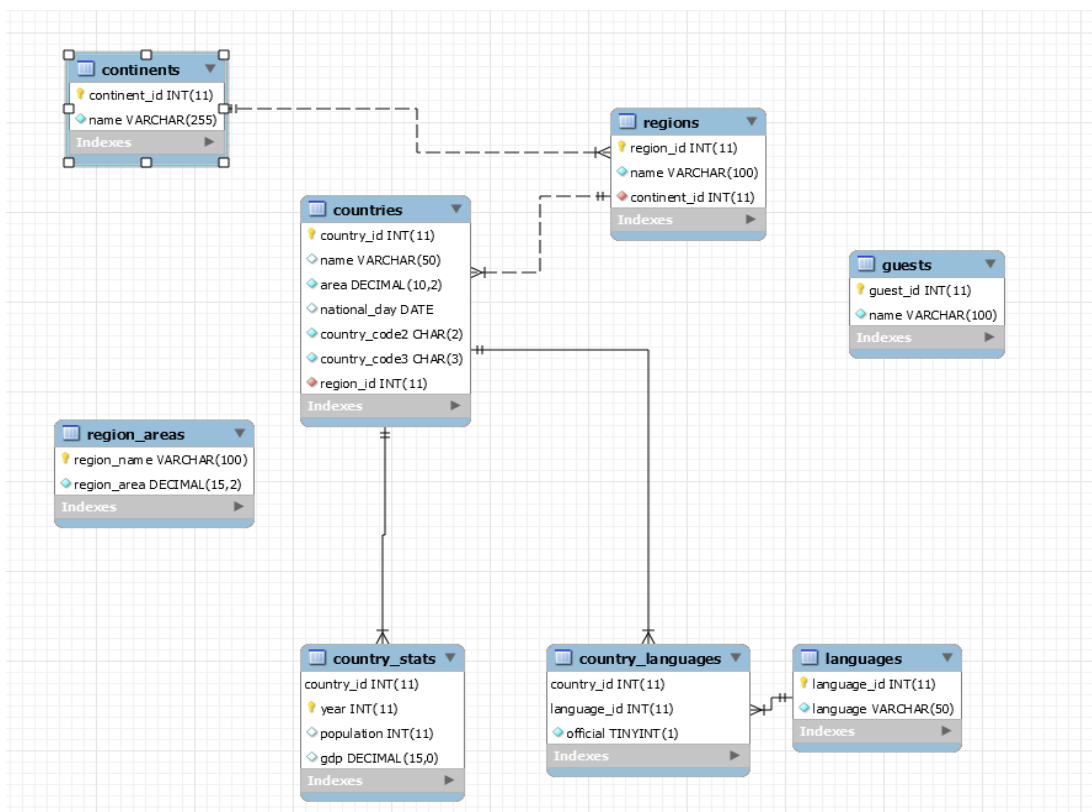
This assessment is designed to give you a picture of everyday problems that you will face as member of the Qualco Software Team and particularly, as a Full Stack Engineer.

The goal is twofold:

- You get a glimpse on the tasks and projects that you will be dealing with, and the issues that you will be encountering
- We get a better view on your standing and experience against this kind of problems

Challenge

Our core system has generated some data from different tools and procedures. One of our clients needs to see these data in an interactive and intuitive way to get informed and take preliminary actions. The idea is that these data are stored in the clients' database and needs to be served in our application for users to see. Consider a scenario where we have the following schema in database:



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To simulate the aforementioned schema in a database you will need to set up your own local database. We suggest using MariaDB since there is no license for using it. Our company uses primarily Oracle DBs but for this simple scenario there is no need for that.

Setting up a MariaDB in your computer is very simple. Just click on the following link <https://mariadb.org/download/>

Select your operating system and latest version of Maria DB and download the file. If in Windows, then is a straightforward procedure that prompts you to set up also the credentials for the root user. After completing the set up then you can use any client tool (MySQL Workbench, DBeaver etc.) to connect to the database. Using the nations.sql file, included in the project, you can create and populate the schema mentioned above.

So far So good. Moving along?...

Our application architecture uses Java (Spring) API Services to expose data from the DB layer to an Angular (Typescript) application that handles all the UI. Simulating that needs a fresh creation of Spring Boot project that connects with the Maria DB and exposes certain endpoints to deliver JSON data to the Angular App. You can use <https://start.spring.io/> to help you initialize a java Spring Project based in latest Spring version and Java 8. Utilizing any dependencies, you find necessary. We suggest using MyBatis as SQL dependency but any other will be no problem.

Warmed Up? Nice!

Now it is time for the Angular App. You need to set up a new Angular Application. Following link can be helpful <https://angular.io/guide/setup-local>.

Now that you have all components let's proceed to coding.

Goals

1. Create a connection between DB and Spring Application
2. Use this connection and define the right architecture of your spring project. By doing that, results from these queries need to be served in a RESTful way.
3. Consume the results coming from the endpoints and visualize them in the Angular App.

Tasks

Following the above goals:

Build a home Page in Angular with a redirection menu that holds one menu item for every task that follows below

1. Create a new screen to:
 - a. Fetch the name, area, country_code2 of all countries and display them in ordered list.
 - b. When clicking on one of the countries, it should redirect the user to another page that displays all spoken languages in this country.
2. Create a new screen with a table in Angular with the following columns:
 - a. name,
 - b. country_code3,

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- c. year,
- d. population and
- e. gdp

for all the countries and their country stats where the record shown for each country is the maximum gdp per population ratio along the years.

3. Create a new screen that shows a table with columns name from continents table, name from regions table, name from country table, year, population and gdp from country stats table. On top of the table is a search filter area containing, a dropdown selection with all regions as well as date From and date to filters for the year of country stats. User can filter out the results of the table by using these filters.

Optional: Pagination of results will have a positive impact.

If the above questions did not allow you to show the real you, feel free to add any small feature that will!

Submitting

You can submit your Java and Angular application by sharing a link to an SCM of your choice (GitHub, Bitbucket etc.)

Good Luck!