Microservices

Spring Cloud

Summary: now you will master the skills of creating microservice applications using Spring framework

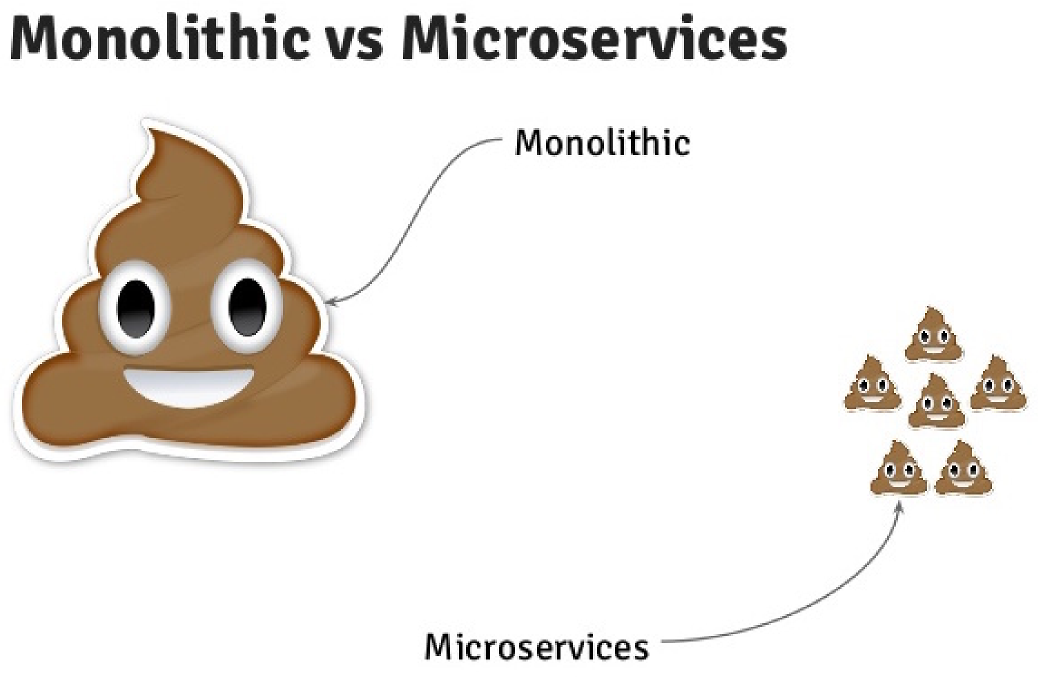
Contents

Chapter I

Preamble

Two important components of Spring Cloud infrastructure are:

- Service Discovery—a service that registers all other modules of the system. In Spring Cloud, this is implemented using Netflix Eureka. Each microservice in the system is an Eureka client and knows its location. Thus, regardless of the total number and location of service instances, each of them can access the other through Eureka.
- Api Gateway is a service that provides a single entry point to the functionality of all other applications in the system. One implementation in Spring Cloud is Netflix Zuul.



Chapter II

Instructions

- Use this page as the only reference. Do not listen to any rumors and speculations about how to prepare your solution.
- Now there is only one Java version for you, 1.8. Make sure that compiler and interpreter of this version are installed on your machine.
- You can use IDE to write and debug the source code.
- The code is read more often than written. Read carefully the document where code formatting rules are given. When performing each task, make sure you follow the generally accepted Oracle standards:
- Comments are not allowed in the source code of your solution. They make it difficult to read the code.
- Pay attention to the permissions of your files and directories.
- To be assessed, your solution must be in your GIT repository.
- Your solutions will be evaluated by your piscine mates.
- You should not leave in your directory any other file than those explicitly specified by the exercise instructions. It is recommended that you modify your .gitignore to avoid accidents.
- When you need to get precise output in your programs, it is forbidden to display a precalculated output instead of performing the exercise correctly.
- Have a question? Ask your neighbor on the right. Otherwise, try with your neighbor on the left.
- Your reference manual: mates / Internet / Google. And one more thing. There's an answer to any question you may have on Stackoverflow. Learn how to ask questions correctly.
- Read the examples carefully. They may require things that are not otherwise specified in the subject.
- Use "System.out" for output.

- And may the Force be with you!
- Never leave that till tomorrow which you can do today ;)

Chapter III

Rules of the project

- The solution for each exercise is a standalone Maven project implemented on the basis of Spring Boot.
- Project structure is at a developer's discretion.
- Each project shall contain a data.sql file with a set of test data.

Chapter IV

Exercice 00 : So many services

	Exercise 00
So many services	
Turn-in directory : *ex*00/	
Files to turn in : InformationServices- folder	
Allowed functions : n/a	

You need to create a few standalone microservices with the following functionality:

• CountriesApplication service that provides data about a country by its name. The information may include population, capital city, area code, etc. Corresponding URI:
/countries-management/countries/{country-name}

• CovidApplication service, which provides information on statistics on COVID-19 for any country. Corresponding URI:
/covid-management/countries/{country-name}

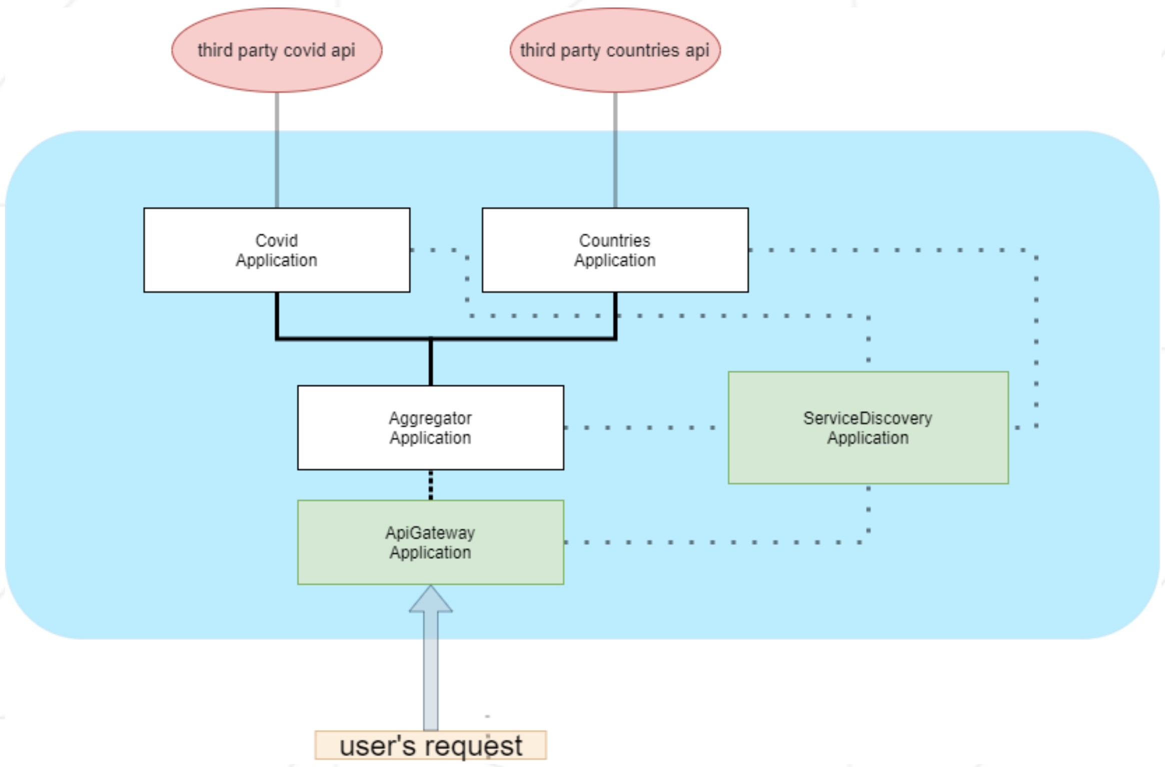
• AggregatorApplication service that provides complex information containing data obtained from CountriesApplication and CovidApplication. Corresponding URI:
/information-management/countries/{country-name}

To obtain data by both country and COVID-19 statistics, you need to use third-party resources, for example, https://about-corona.net/documentation и https://restcountries.eu/

Thus, to handle a user's GET request to the above URL, AggregatorApplication should request data from two other services. The latter, in turn, will receive data from third-party APIs and then provide information to AggregatorApplication.

To handle user requests, you need to implement ApiGatewayApplication providing a single URI from AggregatorApplication.

General architecture of the system is shown below:



Requirements:

- Running a suite of applications shall be possible inside Docker environment.
- There shall be a README file that contains instructions for running applications inside Docker, as well as documentation of third-party API methods used in the application.
- ApiGatewayApplication shall be deployed on port 80
- ServiceDiscoveryApplication shall be available on the standard port of Eureka
- All other applications shall be launched on random ports each time they start.
- Thus, AggregatorApplication shall not have direct links (hostname + port) to CovidApplication and CountriesApplication services. These services shall only be accessed by their names.
- None of the applications shall have their own database to store information.