spring cloud gateway

Introduction to spring cloud gateway

Spring cloud gateway provides a library for building gateway API on top of java and spring. It will provide an easy way for routing requests based on number criteria; it will also focus on monitoring and security of an application. Basically, the spring boot gateway provides a simple and effective way to route API's. Using the spring boot gateway, we are matching the routes of attributes of any request.

What is a spring cloud gateway?

- As we know, in a distributed application, we have to use services to communicate applications. Therefore, it is also known as communication of interservice.
- We have also creating use cases for application where client from the outside domain is hitting services from API, so we can expose the address of microservices which the application client called, or we can also create a

gateway service which is requesting different microservices, and then it will be responding to the application client.

- The main advantage of creating a cloud gateway in our application is that we do not need to maintain the security of each microservice; it will also be handling Meta information in a single place.
- To develop an application using cloud gateway, we need to add spring cloud starter Netflix eureka client and spring cloud starter gateway dependency in our spring application.

Below is the feature of the spring boot gateway is as follows.

1. The main important feature of cloud gateway is path rewriting.
2. Using cloud gateway, we can define the request rate limit of our application.
3. While using cloud gateway, it is easy to write filters and predicates.
4. Integration of circuit breakers is possible by using a cloud gateway.
5. We can implement cloud gateway using project reactor, spring boot 2.0, and spring framework 5.
6. Using spring boot gateway, it's possible to route filters and predicates.

- Spring cloud gateway is providing the API gateway, which was building on top of the spring ecosystem.
- Circuit breaker integration is possible by using a cloud gateway. Using a cloud gateway, it's possible to match the route of the attribute request.
- We need to add spring cloud starter gateway dependency to develop projects using cloud gateway.

Spring Cloud Gateway Architecture

- The below image shows cloud gateway architecture is as follows. The architecture is divided into three parts.
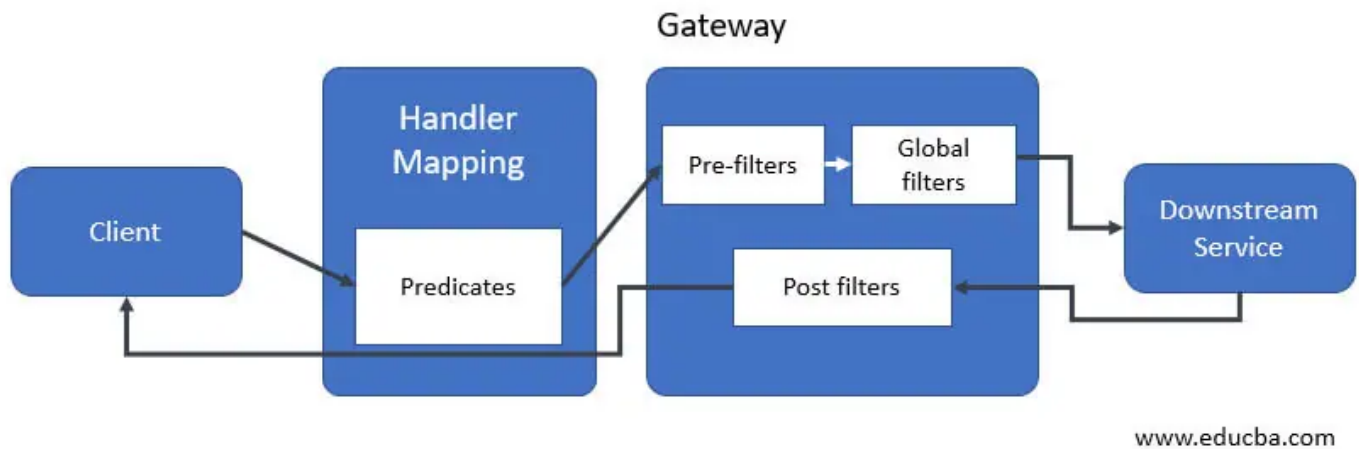
- This architecture consists following components are as follows.

1. Client
2. Predicates
3. Mapping handler
4. Pre-filters
5. Global filters
6. Post filters
7. Downstream service

- Once the request reaches to cloud gateway, the first work of the gateway matches the request from the available route.
- After matching the request from the route, the request is moving to the handler of the web, and then the filter is applying the condition on that request.
- There are multiple filters are provided by the gateway, which was used to modify the body and request header.

- Pre-filters are used to apply on the route, and global filters are applied on the authentication and authorization of requests with in one place.

Using create routes spring cloud gateway

The below example shows creating routes by using cloud gateway is as follows. First, we are creating two services for cloud gateway.

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In the first step, we are creating the first service for the cloud gateway.

- **Create the first service −**
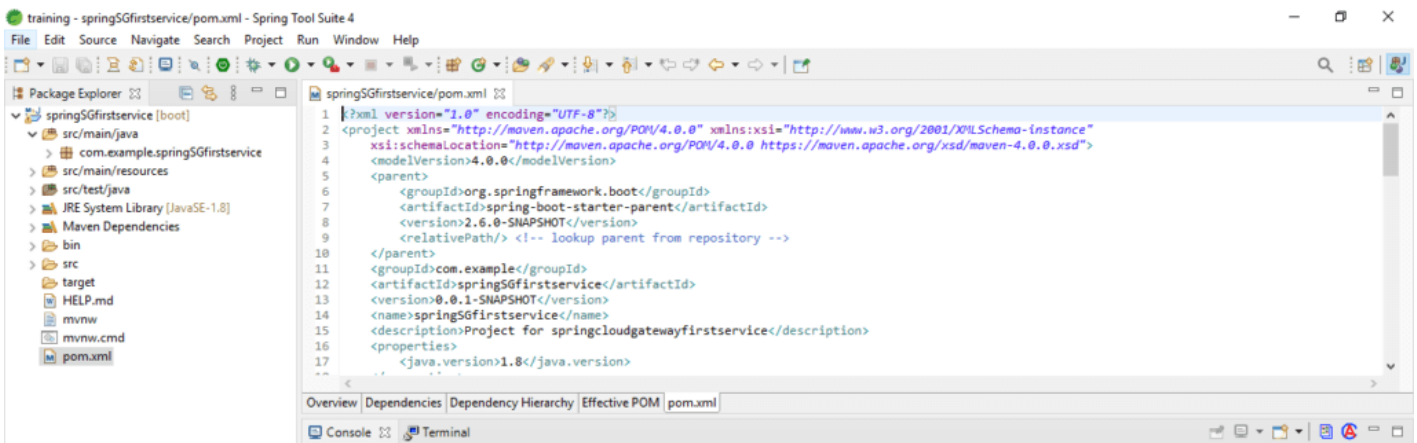
- **Create the second service –**
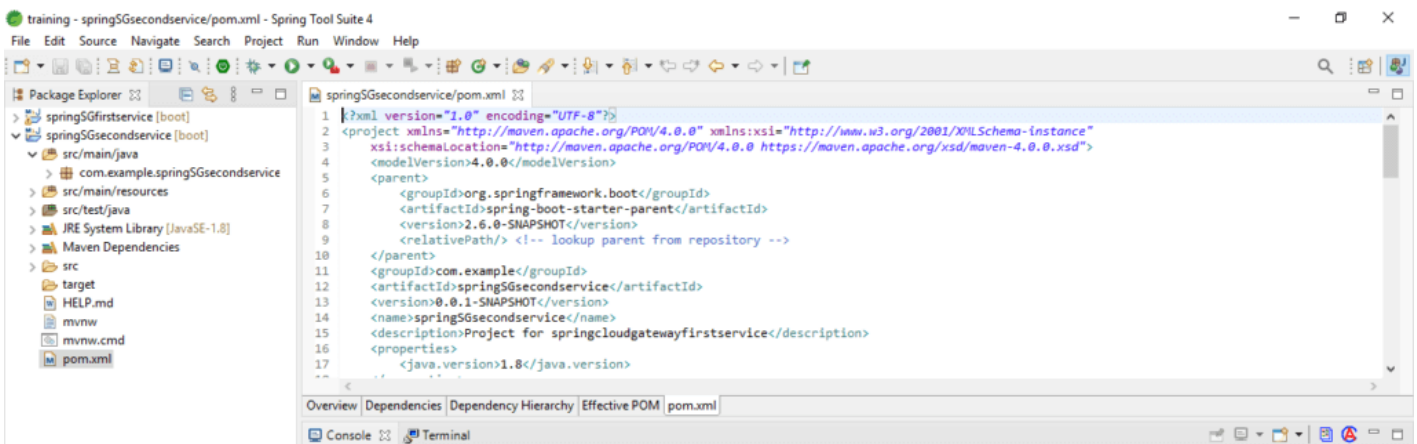
- **Create project template for spring cloud gateway application –**

In the below step, we have provided project group name as com.example, artifact name as springcloudgateway, project name as springcloudgateway, and selected java version as 8.

Group – com.example

Artifact name – springcloudgateway

Name – springcloudgateway
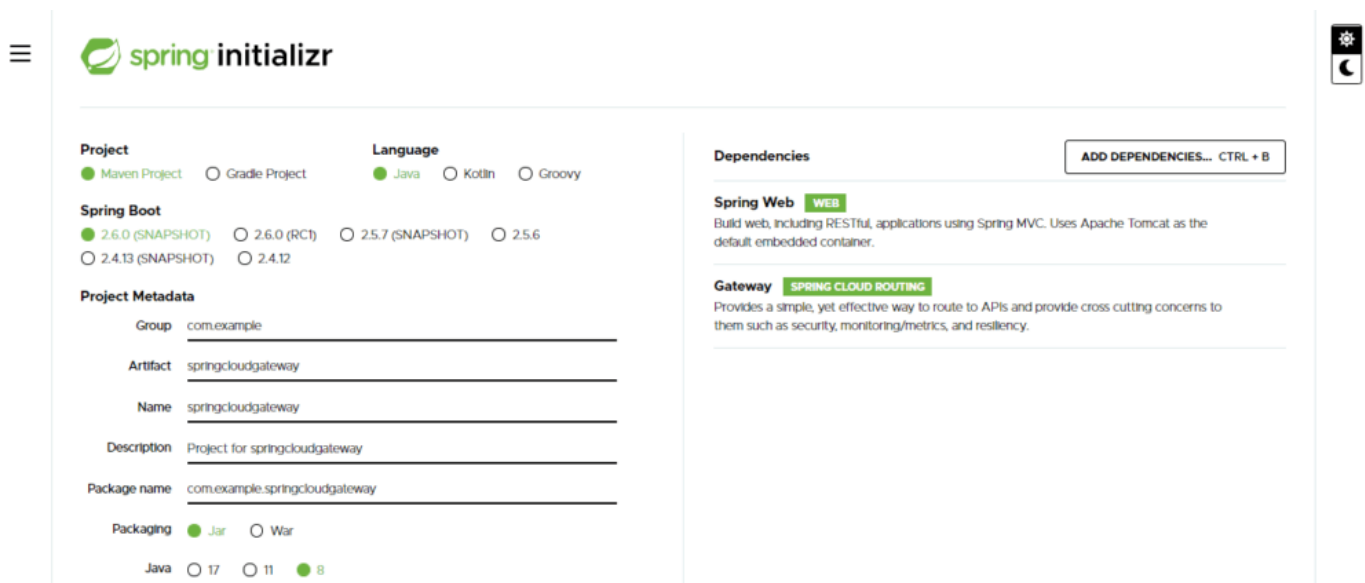
Spring boot – 2.6.0

Project – Maven

Project Description – Project for springcloudgateway

Java – 8

Dependencies – spring web, gateway

Package name – com.example.springcloudgateway

- **After generating project extract files and open this project by using spring tool suite –**

After generating the project using the spring initializer in this step, we extract the jar file and open the project using the spring tool suite.

- **After opening the project using the spring tool suite, check the project and its files –**

In this step, we are checking all the project template files. We also need to check maven dependencies and system libraries.

- **Add dependency packages –**
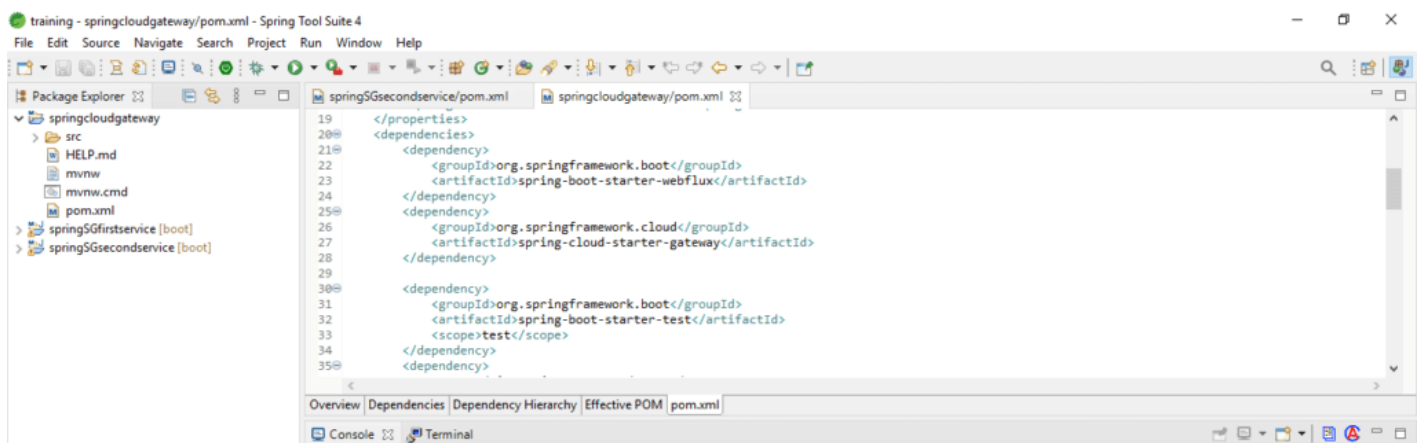
In this step, we are adding the required dependency to our project.

Code –

```
<dependency>    -- Start of dependency tag.
<groupId>org.springframework.cloud</groupId>    -- Start and end of grou
<artifactId>spring-cloud-starter-gateway</artifactId>  -- Start and end
</dependency>    -- End of dependency tag.
```
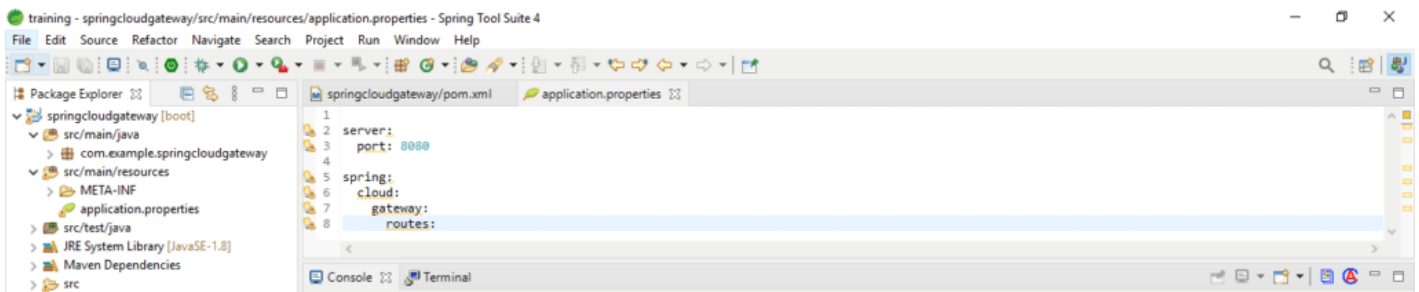

- **Configure application.yml file –**

Code –

```
server:
port: 8080
spring:
cloud:
gateway:
routes:
- id: emp
uri: http://localhost:8081/
predicates:
- Path=/emp/**
- id: cust
uri: http://localhost:8082/
predicates:
- Path=/consumer/**
```
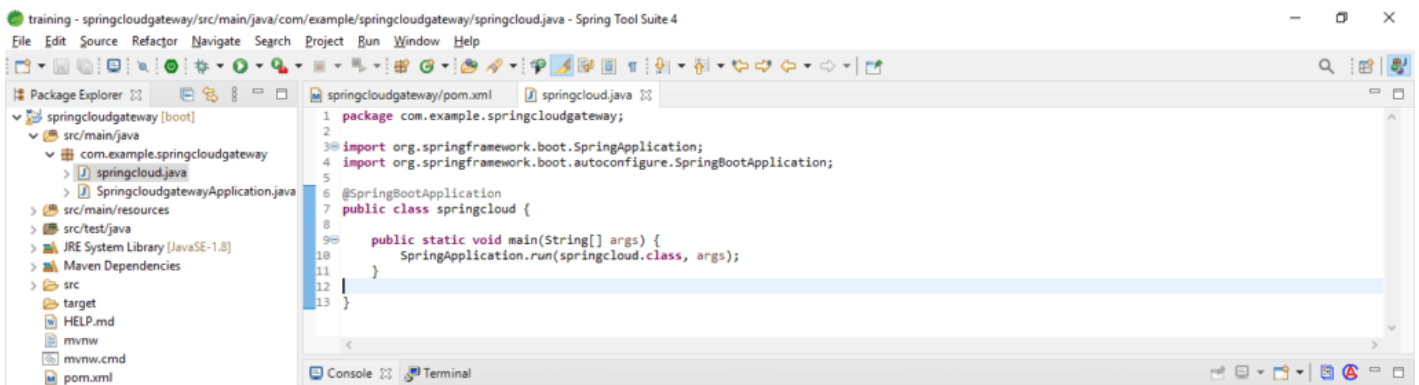
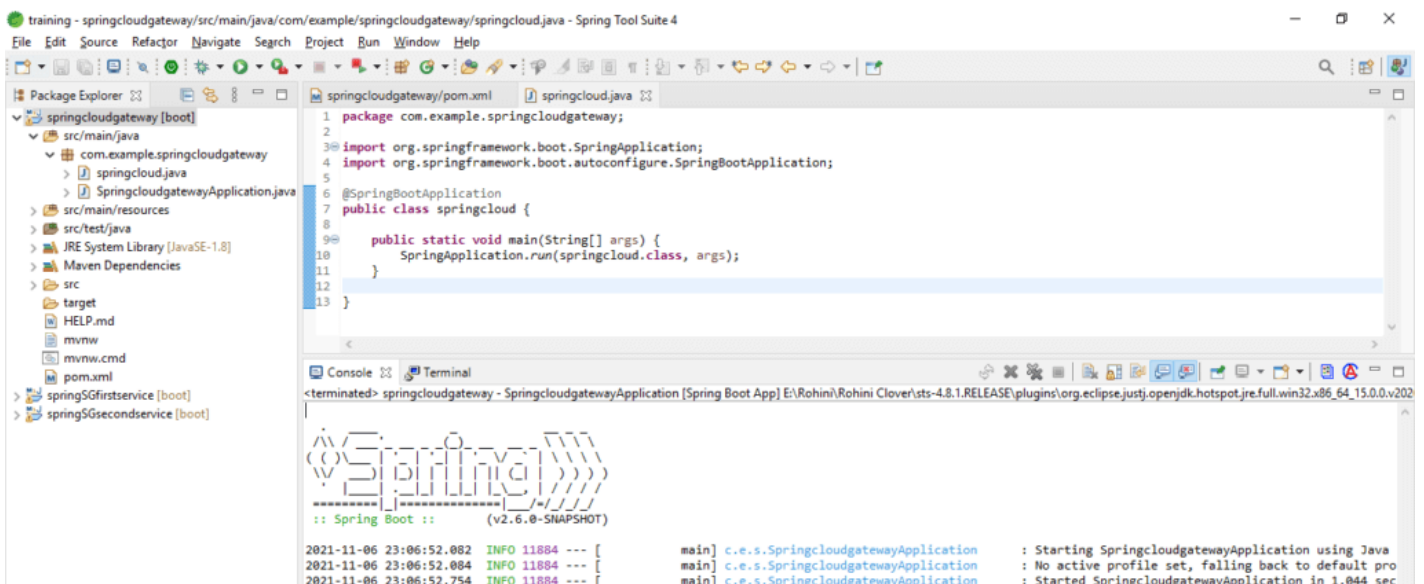- **Create a bootstrap class −**

Code −

```
@SpringBootApplication
public class springcloud {
public static void main /* main method of spring cloud gateway applicat
SpringApplication.run (springcloud.class, args);
}
}
```


- **Run the application −**

How does it work?

- The below example shows how cloud gateway is working in applications are as follows. It consists below components are as follows.
- Gateway client
- Gateway web handler
- Gateway handler mapping
- Service proxy.
- Proxy filter

- In the cloud gateway client first makes the request of the gateway. After matching the request, it will send to the web handler.
- Then handler filters that request; after filtering the request, the cloud gateway makes that request.

Spring cloud gateway – Core Functions

- Below is the core function of cloud gateway is as follows.

- Path rewriting

- Predicates and route filtering

- Request rate limit using cloud gateway

- Circuit breaker integration

- The main function of cloud gateway is path rewriting. We can rewrite the path using the cloud gateway.

- We can predicate the route filtering of applications using cloud gateway.

- Circuit breaker integration is also important to the function of a cloud gateway. We can also limit the request from applications.

Conclusion

Spring cloud gateway provides an easy way for routing requests based on a number of criteria; also, it will focus on monitoring and security of an application. cloud gateway provides a library for building gateway API on top of java and spring.

Recommended Articles

This is a guide to the spring cloud gateway. Here we discuss what a spring cloud gateway is and how it works, along with the examples and codes. You may also have a look at the following articles to learn more –

1. **Spring Cloud Components**
2. **Spring cloud stream**
3. **What is Spring Cloud?**
4. **Spring Boot Batch**

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